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Why Bank Capital Matters

Remarks by

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In my first speech as Vice Chair for Supervision in September, I said that the Federal Reserve Board would soon engage in a holistic review of capital standards. My argument, then and now, is that our review of regulatory policy must be a periodic feature of bank oversight. Banking and the financial system continuously evolve, and regulation must adapt to address emerging risks. Bank capital is strong, but in doing our review, we should and are being humble about our ability—or that of bank managers—to predict how a future financial crisis might unfold, how losses might be incurred, and what the effect might be on the financial system and our broader economy. That humility, that skepticism, will serve us well in crafting a capital framework that is enduring and effective. It will help make sure that we do not lose the hard-fought gains in resilience over the past decade and that we prepare for the future.

That review is still underway, and I have no firm conclusions to announce today. Rather, I thought it would be helpful at this early stage to offer my views on capital regulation and the role that capital standards play in helping to advance the safety and soundness of banks and the stability of the financial system.<sup>1</sup>

By “holistic,” I mean not looking only at each of the individual parts of capital standards, but also at how those parts may interact with each other—as well as other regulatory requirements—and what their cumulative effect is on safety and soundness and risks to the financial system. This is not an easy task, because finance is a complex system. And to make the task even harder, we are looking not only at how capital standards are working today, but also how they may work in the future, when conditions are different.

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<sup>1</sup> The views expressed here are my own and are not those of the Board of Governors or any of my fellow Board colleagues.

As I mentioned, we are approaching the task with humility—not with the illusion that there is an immutable capital framework to be discovered, but rather, with the awareness that revisions we conceive of today will reflect our current understanding and will inevitably require updating as our understanding evolves.

### **Why Do Banks Have Capital?**

Let me start by explaining why banks have capital. Banks play a critical role in the economy by connecting those seeking to borrow with those seeking to save.<sup>2</sup> A bank lends to its customers, including individuals and businesses, based on its assessment of the customer's creditworthiness. A bank's depositors benefit from having bank accounts that allow them to easily make payments to others and to maintain a balance of money in a safe and liquid form. A healthy banking sector is central to a healthy economy.

The nature of banking, however, along with the interconnectedness of the financial system, can pose vulnerabilities. Even if a bank is fundamentally sound, it can suddenly be threatened with failure if its customers lose confidence and withdraw deposits.<sup>3</sup> This inherent vulnerability can pose risks to the entire economy.

In the 19th and early 20th centuries, before the creation of the Federal Reserve and the Federal Deposit Insurance Corporation (FDIC), banking panics were frequent and costly to the economy.<sup>4</sup> Based on this experience—and similar experiences around the globe—many countries employ deposit insurance and other forms of a safety net to

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<sup>2</sup> Kashyap, Rajan and Stein (2002) describe the dual role that banks play in the economy, providing liquidity to both households and businesses. Fama (1985) notes that banks are special on both the asset and liability side of the bank's balance sheet.

<sup>3</sup> See the bank run literature developed by Diamond and Dybvig (1983) and others.

<sup>4</sup> Jalil (2015) concludes that “major banking panics either caused or amplified nearly half of all business cycle downturns between 1825 and 1914.” Bernanke (1983) shows that bank failures did economic harm during the Great Depression.

protect depositors and banks.<sup>5</sup> But offering this protection, shielding depositors and banks from risk, can have the perverse effect of encouraging risk-taking, creating what is called “moral hazard.” Supervision and regulation—including capital regulation—provides a critical counterbalance, to ensure that banks, not the taxpayers, internalize the costs to society of that risk-taking.

The impact of inadequate supervision and regulation was starkly revealed in the Global Financial Crisis, as banks and their functional substitutes in the nonbank sector borrowed too much to fund their operations.<sup>6</sup> While nearly all were “adequately capitalized” in theory, many were undercapitalized in practice, since their capital levels did not reflect future losses that would severely weaken their capital positions. And banks lacked appropriate controls and systems to measure and manage their risks.

That crisis also exposed the extent to which banks and broader financial system had become reliant on short-term wholesale funding and prone to destabilizing dynamics.<sup>7</sup> The sudden shutdown of short-term wholesale funding posed severe liquidity

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<sup>5</sup> According to the World Bank, 112 countries had explicit deposit insurance plans in 2013, up from 84 countries in 2003. <http://blogs.worldbank.org/allaboutfinance/deposit-insurance-database-newly-updated>. Furthermore, other elements of a government safety net for banks often include measures to support a well-functioning payments system and a collateralized lender of last resort facility.

<sup>6</sup> For another example, see the widespread failures of savings and loan institutions in the United States in the 1980s, Kane (1989). High leverage and lax supervision were key contributors to this crisis.

<sup>7</sup> Among other things, in the period leading up to the financial crisis, commercial and investment banks, as well as the government-sponsored enterprises, securitized a broad range of assets, including risky mortgages. This activity was largely funded by short-term wholesale funding, including overnight repo, provided by both banks and nonbank participants, including money market mutual funds and other institutional investors. These funding sources quickly pulled back when investors began to question the value of the underlying assets. This activity was, in part, driven by regulatory arbitrage. Banks that securitized assets benefitted from lower risk weights, even if they did not transfer the risk of those assets. See Acharya, Schnabl, and Suarez (2013).

challenges to large financial intermediaries, both banks and nonbanks, and caused significant dislocations in financial markets.<sup>8</sup>

The cost to society was enormous, with widespread devastation to households and businesses. Even with an unprecedentedly large response by government, six million individuals and families lost their homes to foreclosure. The crisis brought on the worst and longest recession since the Great Depression. It took six years for employment to recover, during which long-term unemployment ran for long periods at a record high, and more than 10 million people fell into poverty. The crisis left scars on families and businesses that are evident even today, and it was in part driven by imprudent risk taking by banks and nonbank financial institutions. This experience prompted the United States and other jurisdictions to revisit how supervision and regulation, including capital regulation, could have better contained that risk in both the bank and nonbank sectors. That is why capital levels today are strong. While we have learned from and adapted to the lessons from the Global Financial Crisis, this experience underscores the need for humility and continued vigilance about the risks we may not fully appreciate today.

### **What Bank Capital Is and Isn't**

Capital regulation—requiring a bank to operate with what is deemed to be an adequate level of equity based on its asset size and its risks—is a useful tool to strengthen the incentives for banks to lend safely and prudently.

First, I'll begin with what capital is—essentially shareholder equity in the bank. People sometimes use the shorthand of banks “holding capital” when speaking of capital

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<sup>8</sup> See Gorton and Metrick (2012) for a discussion of the role of repo markets during the crisis; He and Xiong (2012) for a theoretical treatment of the risks posed by short-term wholesale funding; and Barr (2012) and Duffie (2019) for retrospectives.

requirements; however, it's helpful to remember that capital is not an asset to be held, reserves to be set aside, or money in a vault; rather, it is the way, along with debt, that banks fund loans and other assets. Without adequate capital, banks can't lend. Higher levels of capital mean that a bank's managers and shareholders have more "skin in the game"—and have incentives to prudently manage their risks—because they bear more of the risk of the bank's activities.

Next, let me speak to how capital and debt work together to fund a firm's operations. In theory, companies should be indifferent to the mix of equity and debt they use to fund themselves, since the creditors of a safer firm will lend to it at lower rates and shareholders of a safer firm will accept a lower return on their investment.<sup>9</sup> That may not fully hold for banks because insured depositors are made risk-insensitive through deposit insurance and other creditors may provide lower cost funding if they believe the government may bail out banks in distress.<sup>10</sup> Forcing banks to fund more of their activities with equity, instead of debt, could raise the private costs of funding to the bank, and cause banks to pass those higher costs of credit to consumers. These considerations must be balanced against the public benefits of higher capital.

Empirical research supports the social benefits of strong capital requirements at banks, particularly when economic conditions weaken. While poorly capitalized banks may be forced to shrink during bad times, better capitalized banks have the capacity to support the economy by continuing to lend to households and businesses through

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<sup>9</sup> See Modigliani and Miller (1958).

<sup>10</sup> See Stern and Feldman (2004).

stressful conditions.<sup>11</sup> And to the extent bank capital reduces the frequency or severity of financial crises, the public is much better off with strong capital.<sup>12</sup>

Last, the highest standards should apply to the highest risk firms. Larger, more complex banks pose the greatest risk and impose greater costs on society when they fail. Higher capital requirements help to ensure that larger, more complex banks internalize this greater risk and counterbalance the greater costs to society by making these firms more resilient. Further, matching higher capital standards with higher risk appropriately limits the regulatory burden on smaller, less complex banks whose activities pose less risk to the financial system. This helps to promote a diverse banking sector that provides consumers greater choice and access to banking services.

### **Interactions with the Nonbank Sector**

Banks, of course, are part of a broader financial system. The share of credit intermediated outside of banks has grown considerably over the past 40 years. In fact, nonbank financial intermediaries, broadly defined, fund nearly 60 percent of the credit to the U.S. economy today as compared to approximately 30 percent in 1980.<sup>13</sup> Nonbank financial firms include money market funds, the insurance sector, the government-sponsored enterprises (Fannie Mae, Freddie Mac, and the Federal Home Loan Bank system), hedge funds and other investment vehicles, and still other nonbank lenders.

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<sup>11</sup> See Bernanke, Lown, and Friedman (1991); Hancock and Wilcox (1993, 1994); Berrospide and Edge (2010); Carlson, Shan, and Warusawitharana (2013), and Karmakar and Mok (2015) for papers that document this relationship for the United States and Kořak, Li, Lončarski, and Marinč (2015) and Gambacorta and Shin (2018) for papers that document this relationship based on cross-country bank-level studies. See also Rice and Rose (2016); Ramcharan et al. (2016); Aiyar, Calomiris, and Wieladek (2014); Peek and Rosengren (1997) and Gibson (1995).

<sup>12</sup> See Basel Committee (2010) for an assessment of the long-term economic impact of stronger capital requirements.

<sup>13</sup> Financial Accounts of the United States.

There are lots of reasons for these trends, including technological advancements, financial innovation, regulatory arbitrage, and quirks of history. Bank capital requirements, combined with the lack of strong or sometimes any capital requirements in the nonbank sector, are part of that.<sup>14</sup> We should monitor the migration of activities from banks to the nonbank sector carefully, but we shouldn't lower bank capital requirements in a race to the bottom. In times of stress, banks serve as central sources of strength to the economy, and they need capital to do so.

We need to worry, a lot, about nonbank risks to financial stability. During the Global Financial Crisis, many nonbank financial firms had woefully inadequate capital and liquidity, engaged in high-risk activities, and were faced with devastating runs that crushed the financial system and caused enormous harm to households and businesses. The collapse of Bear Stearns and Lehman Brothers, the failure of Fannie Mae and Freddie Mac, the implosion of the insurance conglomerate AIG, and many others, laid bare the weakness of nonbank intermediation, and the need to regulate risks outside the banking system.<sup>15</sup> Many of those risks remain today. In far too many cases, nonbanks rely on funding sources that are prone to runs and do not maintain sufficient capital to internalize their risks to society.

The answer, however, is not lower capital requirements for banks, but more attention to those very risks. Further, as stress in nonbank financial markets is often

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<sup>14</sup> See Begenau and Landvoigt (2022); Darst, Refayet, and Vardoulakis (2020); Dempsey (2020); and Plantin (2015).

<sup>15</sup> Other examples include money market funds that either broke the buck, froze withdrawals, or received a government bailout; the failure of the monoline financial guarantors; the default of AAA-rated securitization vehicles; and asset-backed commercial paper programs that suffered a run and were unable to roll over their debt.



transmitted to the banking system, both directly and indirectly, it is critical that banks have enough capital to remain resilient to those stresses.

### **Calibration of Bank Capital Requirements**

One of the threshold questions is how should we think about calibrating bank capital to a socially optimal level? There is not an easy answer to that question. In my mind, as I said at the outset, it starts with humility. Bank capital should be sufficient to enable the bank to absorb unexpected losses and continue operations through severely stressful but plausible events. Yet translating that principle into a quantum of capital involves an estimate of what future risks will emerge and what losses banks will suffer. I'm skeptical that regulators—or bank managers—know the answers to these questions. Despite complex regulatory risk-weights, or simple leverage ratios, or the internal models used by banks, at bottom bank capital ought to be calibrated based on that humility, that skepticism. Capital provides a cushion against unexpected risks and unforeseen losses, those a humble and skeptical person might be careful to not try to predict with too much precision. Those a humble and skeptical person might guard against.

That is the spirit in which I am approaching the Fed's holistic review of capital standards. There is a body of empirical and theoretical research on optimal capital, which attempts to determine the level of capital that equalizes the marginal benefits of capital with the marginal costs. While the estimates vary widely, and are highly contingent on the assumptions made, the current U.S. requirements are toward the low end of the range described in most of the research literature.<sup>16</sup> International comparisons also suggest

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<sup>16</sup> Several recent papers present quantitative, macroeconomic models of optimal bank capital regulation, including Begenau (2020); Begenau and Landvoigt (2022); Clerc et al. (2015); Elenev, Landvoigt, and Van Nieuwerburgh (2021); Martinez-Miera and Suarez (2014); Nguyen (2015); and Van den Heuvel

strong capital requirements support banks and the U.S. economy. We have strong capital levels today, and generally higher bank capital requirements in the United States after the Dodd-Frank Act have corresponded with healthy economic growth and have supported the competitiveness of U.S. firms in the global economy.<sup>17</sup>

Finally, some banks have asserted that the resilience of the banking system in the pandemic suggests that bank capital is already high enough. There were some positive signs from a Federal Reserve-conducted sensitivity analysis and subsequent stress test.<sup>18</sup> Banks did their part and lent strongly, based on their strong capital positions and widespread government support. But we didn't get a real test of resilience because Congress, the President, and the Federal Reserve rightly stepped in with massive assistance to avert an economic disaster. Furthermore, I'd observe that the recent experience of the pandemic suggests that large, unexpected shocks can occur with little notice. Our inability to predict such events would argue for a higher overall capital level than one based solely on historical experience. So let me return to where I began on this topic: figuring out the right level of capital requires one to be humble and skeptical.

### **Components of Bank Capital Requirements**

Let's turn to the design of capital requirements. U.S. capital rules contain many individual elements, including risk-based requirements, leverage standards, stress testing, and long-term debt requirements for the largest banks.

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(2008). Another strand of the literature builds on the long-term economic impact assessment study by the Basel Committee (2010), including Miles et al. (2013) and Firestone et al. (2019).

<sup>17</sup> See, for instance, World Economic Outlook, chapter 2, box 2.3 (October 2018).

<sup>18</sup> <https://www.federalreserve.gov/publications/files/2020-sensitivity-analysis-20200625.pdf>  
<https://www.federalreserve.gov/publications/files/2020-dec-stress-test-results-20201218.pdf>

The risk-based capital requirement is premised on the fact that a firm is likely to experience higher losses from its riskier activities; thus, sizing capital requirements based on risk will better estimate a firm's capital needs so that it internalizes the risks of its activities. The Basel III capital reforms, as implemented in the United States, aimed to address many of the shortcomings identified during the Global Financial Crisis. The international standards were developed to enhance the quantity and quality of regulatory capital, better reflect risks of banks' activities, impose a heightened capital requirement on global systemically important firms, and reduce procyclicality and promote countercyclical buffers,<sup>19</sup> among others. The last set of comprehensive adjustments to the Basel III Accord, now under consideration in the United States, would further strengthen capital rules by reducing reliance on internal bank models and better reflect risks from a bank's trading book and operational risks. I am working closely with my counterparts at the FDIC and the Office of the Comptroller of the Currency on the U.S. version of the Basel III endgame reforms. Any rule changes that might be proposed in capital standards would be deliberate, adopted through the notice and comment process so that we have the benefit of public perspectives, and implemented with appropriate transition periods to achieve the long-term goal of improving the capital regulation.

Risk-based capital requirements are important tools; however, they are complex, underinclusive under some conditions, and like all capital requirements, can be gamed.

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<sup>19</sup> For macroprudential regulation, a key risk is pro-cyclicality in the financial system, whereby leverage and asset prices move up together in booms and decline together in busts (see Adrian and Shin, 2010; Drehman, Borio and Tsatsaronis, 2011; Geanakoplos, 2010). While varying stress test scenarios with the cycle can help to offset some of the financial system's procyclical tendencies, other regulatory measures, such as a countercyclical capital buffer, may be better suited to address the specific vulnerabilities arising from procyclical leverage. The countercyclical capital buffer, or CCyB, is a capital buffer that is designed to be used as a macroprudential policy tool that could be increased in good times and reduced in bad ones.

Thus, a non-risk-based leverage measure can provide transparency and a further measure of resilience. Of course, one also needs to pay attention to how different capital measures interact with one another, and some have indicated that the leverage requirement for large banks is overly binding and may contribute to lower liquidity in Treasury markets, especially in stressed scenarios. We are exploring the empirical evidence and examining whether adjustments to the leverage ratio might be appropriate in the context of our holistic capital review, as well as in the context of broader reforms being undertaken by the Federal Reserve and a range of other agencies.

In addition to risk-based capital requirements, the Federal Reserve Board implemented a supervisory stress test that is used to set dynamic and risk-sensitive capital requirements for large banks.<sup>20</sup> The stress test adds risk sensitivity to the capital requirements and provides the public with information about the banks' risks and resilience. Moreover, the stress test can achieve a higher degree of risk sensitivity than the standard Basel risk weights. The stress test can also be more dynamic than the capital rules because a new test is conducted each year, reflecting a new set of hypothetical financial and economic conditions and updates to the banks risk profile. Lastly, the stress test can potentially counteract actions by a bank to "optimize" against the capital regime—for instance, lowering its risk-weighted assets without reducing its risk.<sup>21</sup> In this way, the stress test—along with strong supervision—can serve as a check on excessive bank risk-taking. As I'll return to in a moment, we are focused on ensuring

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<sup>20</sup> The stress test results feed directly into the capital buffer for large firms. The stress capital buffer is floored at 2.5 percent, which aligns with the capital conservation buffer applicable to smaller firms.

<sup>21</sup> Greenwood et al (2017).

that stress testing remains forward-looking and effective at requiring banks to have capital to cushion losses from emerging risks.

A final prudential requirement—a long-term debt requirement—complements the regulatory capital regime. Unlike regulatory capital—which helps a firm absorb losses as it continues operations through times of stress—long-term debt becomes especially relevant once a firm has already entered bankruptcy or resolution. At the point of resolution, equity can be written off and certain long-term debt claims can be written down to absorb losses. The remaining debt claims can be effectively converted to equity to provide flexibility to the bankruptcy court or resolution authority in managing the firm’s path through resolution. In particular, this equity can be used to help the firm continue critical operations as its operations are restructured, wound down, or sold, in order to minimize disruptions to the larger financial system. Long-term debt requirements were initially applied to global systemically important banks (GSIBs). The Board and the FDIC are currently considering whether the costs of a resolution of a large, non-GSIB may also justify the imposition of long-term debt requirements on such firms as well.<sup>22</sup>

### **Role of Stress Testing in the Forward-Looking Regime**

As I’ve said before, it is critical that our capital regime is forward-looking. And while the stress test is the most risk-sensitive and dynamic component of our regulatory capital framework, history has taught us not to become complacent or to shed our humility. In an environment of ever-changing risks, stress tests can quickly lose their relevance if their assumptions and scenarios remain static. Let’s not forget that for some

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<sup>22</sup> <https://www.federalreserve.gov/newsevents/pressreleases/bcreg20221014a.htm>.

years before the financial crisis, the agency regulating Fannie Mae and Freddie Mac conducted a regular stress test. Unfortunately, that test used models and scenarios that weren't regularly updated, a key reason why the test failed to detect risks building for years before the Global Financial Crisis, and why capital levels at Fannie and Freddie proved to be woefully inadequate.<sup>23</sup>

Stress tests are not meant to be predictions about the future. Humility suggests caution in that regard. But they should be stressful: poking and prodding at the system so we can attempt to uncover hidden risks that could become manifest under certain scenarios. This is particularly important in today's complex and interconnected financial system, in which problems can spread and lead to unexpected losses. For instance, we recently saw how exposure to interest rate risk at a set of leveraged pension funds in the United Kingdom, coupled with unprecedented large movements in rates, caused significant disruptions to the gilt market. This was not a risk that anyone saw coming, but it spilled over to the U.K. financial markets in a way that required a large-scale intervention by the government. Other recent examples, to name a few, include the messy failure of Archegos last year; Russia's war against Ukraine; tensions in and with China; the implosion of the crypto-asset exchange FTX and the resulting crypto-asset market dislocations; and volatility in the markets for fixed-income securities, affecting market liquidity.

We are currently evaluating whether the supervisory stress test that is used to set capital requirements for large banks reflects an appropriately wide range of risks. In addition, we are considering the potential for stress testing to be a tool to explore

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<sup>23</sup> For more details about these historical stress test experiences, see Frame, Gerardi, and Willen (2015) and Greenlaw, Kashyap, Shin (2012).

different sources of financial stress and uncover channels for contagion that lead to unanticipated consequences. Using multiple scenarios or adapting the stress test in other ways to better account for the high degree of interconnectedness between banks and other financial entities could allow supervisors and banks to identify those conditions and take action to address them. And banks should continue to invest in and prioritize development of their own stress testing and scenario design capabilities, regularly run scenarios to understand the changing risk environment, and incorporate the results of these stress tests into the bank's assessment of its risks and capital needs.

### **Conclusion**

Stress testing and all the other aspects of capital regulation that I have discussed today will be considered as part of our holistic review. We're starting from a good place because capital today is strong. I hope to have more to say about that review early in the new year. As I have argued today, capital plays a central role in how a bank manages its risks, and capital regulation is fundamental to bank oversight. History shows the deep costs to society when bank capital is inadequate, and thus how urgent it is for the Federal Reserve to get capital regulation right. In doing so, we need to be humble about our ability, or that of bank managers or the market, to fully anticipate the risks that our financial system might face in the future.

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