THE QUARTERLY JOURNAL OF *THE CLEARING HOUSE* Q1 2018, VOLUME 6, ISSUE 1

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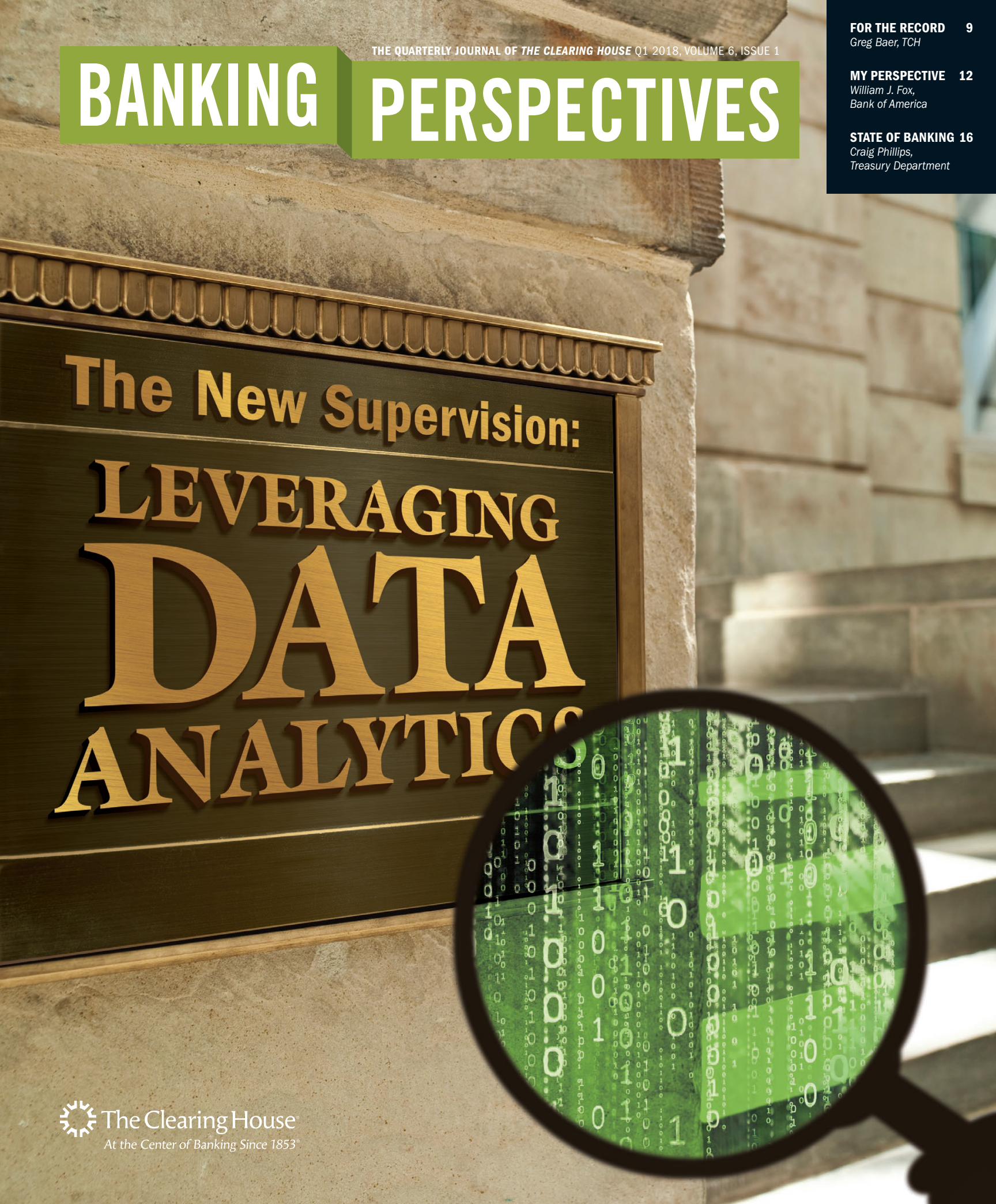

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BANKING PERSPECTIVES

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EDITOR Greg MacSweeney

DESIGN & PRODUCTION Big Yellow Taxi, Inc.

Banking Perspectives is the quarterly journal of The Clearing House. Its aim is to inform financial industry leaders and the policymaking community on developments in bank policy and payments. The journal is a forum for thought leadership from banking industry executives, regulators, academics, policy experts, industry observers, and others.

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FOR THE RECORD

Basel IV Requires Serious U.S. Review

BY GREG BAER, THE CLEARING HOUSE[1]

When the Basel Committee on Banking Supervision announced agreement on Basel IV capital standards at the end of 2017, U.S. reaction was muted. There were likely many reasons, including vague assurances that it would not raise capital on U.S. banks, fatigue with a years-long process, and a desire to avoid studying an extraordinarily complex agreement that remains years away from implementation. However, Basel IV is in concept – and potentially in application – a substantial departure from the current approach to capital regulation that requires serious review. Furthermore, a potential new approach to bank supervision – actually, a reversion to a traditional approach – makes the new Basel standard look all the more odd and inappropriate.

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A HISTORY OF THE BASEL CAPITAL STANDARDS IN 1.5 PARAGRAPHS[2]

Basel I was a government-devised, standardized approach to risk-based capital adopted in 1988 that grouped all assets into five categories, or risk weights. The categories were crude; for example, almost all corporate debt received the same risk weight and therefore the same capital charge. Basel II sought to address the crudeness of the Basel I approach by establishing a new "internal-ratings-based" (IRB) approach that, by requiring banks to employ sophisticated credit risk models to calculate their capital requirements, was more sensitive to risk. Basel II was adopted by the Basel Committee in 2004 but was not implemented for most U.S. banks prior to the onset of the global financial crisis.[3]

After that crisis revealed major flaws in other parts of the capital framework – namely, that it counted as capital certain instruments

> **European and Asian regulators simply negotiated a deal where their banks hold less capital** against a given corporate credit than U.S. banks, and U.S. regulators accepted that deal.

that did not prove loss absorbing under stress – the Basel Committee adopted a new Basel III package in 2010–2011. Notably, while Basel III made the capital framework more stringent in almost every way, it retained the fundamental innovation of Basel II – the IRB approach, or as it is known in the United States, the "advanced approaches." Large U.S. banks have been operating under Basel III since 2014.

It is important to note, as a historical matter, that the global financial crisis occurred with nearly all large global banks operating under Basel I – not Basel III or even Basel II. It was thus a crisis that occurred on the watch of a standardized approach to credit risk for capital purposes, and there is evidence that standardized measures contributed to that crisis.[4]

BASEL IV (OR IS IT III AGAIN?)

At the end of 2017, the Basel Committee adopted a new capital regime that in large part repudiates the use of risk-sensitive bank models in setting minimum capital requirements, as initially adopted as the core of Basel II and reaffirmed in Basel III. (For that reason, Americans generally refer to that package as "Basel IV." The Basel Committee, on the other hand, insists on referring to it as the "finalization of Basel III." However, it is the finalization of Basel III in the same sense that the Revolutionary War was the "finalization of British colonization.")

Basel IV reaches this outcome in several ways. First, it standardizes a large portion of the IRB approach for credit risk by substantially reducing the role of internal models. Basel IV prohibits the use of internal models for credit risk exposures to large and midsized corporate borrowers and banks and other financial institutions, and instead requires banks to rely on a standardized supervisory model devised by the Basel Committee.[5] (More on this extraordinary decision later.) And for those assets that do remain eligible for modeling under the IRB approach (e.g., credit cards and mortgages), Basel IV establishes a range of so-called "input floors" – in effect, limits on key parameters – that substantially govern the output of those models. The end result is that even the supposedly bank-model-centric IRB approach has itself been largely standardized, with the outputs of those models determined by static assumptions made by the Basel Committee and not an iterative process where banks model risks, back-test outcomes, and improve their processes.

Second, Basel IV includes a range of other changes to the standardized approach to credit risk. Some of these appear thoughtful, as they introduce more granularity and risk sensitivity into the standardized risk weights by permitting some variation depending on credit quality. Unfortunately, the benefit of these changes is generally available only to those jurisdictions that may use credit ratings in regulation. In the United States, the use of credit ratings in regulation is forbidden by law, and thus the more stringent version of the standardized approach that does not permit the use of credit ratings would continue to apply. (For those of us who were taught that one of the objectives of the Basel process is a global level playing field, this systematic discrimination is difficult to understand. Or another way of viewing the situation is that European and Asian regulators simply negotiated a deal where their banks hold less capital against a given corporate credit than U.S. banks, and U.S. regulators accepted that deal.)

Third, Basel IV significantly revises how market risk is measured for capital purposes, including the introduction of a new desk-level model-approval process, under which banks must obtain regulatory approval for the use of internal models, both at a consolidated level and for every individual "trading desk." In addition to back-testing, banks are required to apply a profit-and-loss attribution test to their models. A bank unable to satisfy these new requirements for

a trading desk must calculate capital using a revised standardized approach to market risk.

Fourth, Basel IV establishes an "output floor" whereby bank models under the internal model approaches cannot produce an outcome lower than 72.5% of the risk-weighted capital required under the Basel I-based standardized approaches. In releasing Basel IV, the Basel Committee estimated that 32.4% of internationally active banks would be bound by the output floor — that is, constrained in their ability to model risk for capital purposes. While that number alone is significant, it still understates Basel IV's impact because, as noted above, the IRB approach to credit risk *itself* has now been standardized to a large extent.

UNDERSTANDING THE STAKES

Some basic perspective is required to understand the significance of Basel IV. Any capitalist system is based on the notion that capital is best held in private hands, with businesses competing to offer products that consumers or other businesses wish to buy. Thus, unlike a centrally planned economy – where the state owns or dictates the operation of businesses – the private sector does so, allowing free choice and competition within that economy to produce more optimal outcomes than government would produce if it allocated capital or operated businesses. Of course, this means that some businesses will fail the test of competition, but this creative destruction is considered to produce an outcome that benefits the economy the most. (I seek forgiveness for trying to summarize capitalism in one paragraph.)

Central to American capitalism is a financial services industry that provides growing businesses with access to credit under these same principles. So, for example, we take for granted that if a business applies for a small-business loan at one bank and is turned down or offered poor terms, it can apply to another bank and may be able to obtain a different outcome. The same is true for a consumer seeking a credit card. That is because banks measure risk differently, and have different – not standardized – appetites for risk. Of course, this means that some banks will take more risk, and some loans may default that would not have been made if every bank were taking a standard, lower amount of risk, but such a system ultimately produces more credit more efficiently to more people and more businesses. And importantly, it keeps the government out of the business of determining which industries or businesses may access credit, and on what terms.

Basel IV is at least a partial rejection of that system. Basel IV's central premise is that banks cannot be trusted to model credit or market risk, and therefore that government must step in to model it for them.[6] In contrast, Basel II and III allowed bank modeling and trusted the supervisory process – including, in the United States, rigorous supervisory review of credit risk models – to ensure rigor in modeling.

Now, though, that regime has been increasingly displaced by reliance on models that were devised by subcommittees of the Basel Committee to calculate the credit risk of every U.S. (and global) company and financial institution, and the market risk of every U.S. (and global) security. (It is worth noting that we do not know exactly how they reached these decisions, as neither the underlying data nor other information used to calibrate those government models has ever been disclosed.)

The potential ramifications here are not hard to discern. Certainly, the Basel Committee has not taken on direct responsibility for underwriting credit or debt; however, the single most important factor in a bank's decision whether to make a loan or hold a security is its risk-adjusted return on capital. If capital ends up being set through a standardized model, the government inevitably will determine to a large extent who qualifies for credit and on what terms. It is also worth noting, as a matter of systemic risk, that when the government makes this decision for all banks, it inevitably concentrates bank assets in asset classes favored by the governmental model.

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MY PERSPECTIVE

Our AML/CFT Approach Must Be Modernized

BY WILLIAM J. FOX, BANK OF AMERICA

In a post-Sept. 11 world, it is critical for the overall health of our financial system and our national security to have a robust, effective national anti-money laundering (AML) regime that delivers a more transparent financial system and is designed to help protect that system from abuse here in the United States and around the world. Financial information is valuable to law enforcement because money doesn't lie, leaves a trail, and establishes connections. Information provided by financial institutions under our AML and combating the financing of terrorism (CFT) framework is critical for our national security. However, it is time to take a fresh look at the regime so that financial institutions can make their AML programs more innovative by adopting practices and technologies that let them address present-day illicit finance threats.[1]

> **It is time to take a fresh look** at the regime so that financial institutions can **make their AML programs more innovative.**

The U.S. AML/CFT regime is primarily codified in a collection of laws known as the Bank Secrecy Act (BSA). Most of these laws were enacted in 1970. They require financial institutions to keep certain records and make reports to the government, including reports on cash transactions greater than $10,000. The stated purpose for the establishment of the regime was to provide highly useful information to regulatory, tax, and law enforcement authorities relating to the investigation of financial crime.[2] Congress gave the authority to implement the regime to the Treasury secretary, thereby designating an agency with both financial and law enforcement expertise as its administrator. In addition, the BSA gave the Treasury Department examination authority over financial institutions to assess their compliance with the law, which Treasury has since delegated to various regulatory authorities according to institution type.[3]

In the 1990s, the BSA was amended to require financial institutions to detect and report their customers' "suspicious" transactions (suspicious activity reports or SARs). After the tragic events of Sept. 11, the BSA was further amended by the USA Patriot Act, which provided Treasury with additional tools to address terrorism-related financial risks and imposed additional AML/CFT requirements on financial institutions.

The enactment of the Patriot Act, in 2001, was the last time that Congress conducted a broad review or adopted significant amendments to our national AML/CFT framework. The current SAR regime remains largely unchanged since it was developed in the mid-1990s. Similarly, the requirements for reporting large cash transactions remain largely unchanged since the BSA was enacted. Just think of what has happened since 1970. Today, most banking business can be conducted from a cellphone, money and information move in microseconds, and it is simple and common to move money across borders. The SAR regime, which originally was intended to provide law enforcement with a written narrative lead, today is used as a data source for word searches and other data mining by the Financial Crimes Enforcement Network (FinCEN) and law enforcement.

At Bank of America, we invest significant resources into discharging our responsibilities under our nation's AML/CFT regime, and we're committed to this work. However, we have come to believe that the mechanisms through which we discharge our AML/CFT responsibilities are highly inefficient and that a significant portion of what we do and what we report ultimately is not as effective as it could be in achieving the desired outcomes of the regime.[4]

I have a team of employees worldwide who are fully dedicated to AML compliance, detection, and investigation work, as well as economic sanctions

compliance, filtering, blocking, and rejecting.[5] Today, a little over half of these people are dedicated to finding customers or activity that is suspicious. These employees train our customer-facing employees so they can escalate unusual activity; tune our detection systems to generate investigative cases; assess and analyze the financial crimes risks inherent in and the controls placed over our products and services; resolve investigative cases; and, when appropriate, report suspicious activity to the government. They also work on strategic initiatives aimed at understanding and reporting on significant financial crimes threats, such as foreign terrorist fighters; human trafficking, drug trafficking, and other transnational crime; and nuclear proliferation.

The remaining employees on my team, and the vast majority of employees dedicated to these efforts in the business and operations teams that support our program, are devoted to perfecting policies and procedures; conducting quality assurance over data and processes; documenting, explaining, and governing decisions taken relating to our program; and managing the testing, auditing, and examinations of our program and systems. Our focus on these processes has had positive effects; it has brought discipline and rigor to our work.

However, today's regime requires enhanced efforts relating to these broad categories that increase compliance costs and distract from those customers that present real risk. For example, we spend a significant amount of time collecting defined enhanced due diligence on broad categories of customers that have been deemed "high risk" in regulatory guidance manuals, yet we know from our activity monitoring of their actual behavior that many of the customers that fall into those categories aren't high risk. The danger is that at some point it becomes easier to exit certain businesses, or decline to serve legitimate customers, because the benefits of serving them are outweighed by the costs. When legitimate businesses or individuals cannot be served by mainstream financial institutions, it harms economic growth and job creation.

COMPLIANCE EXPECTATIONS

A core problem is that today's regime is geared toward compliance expectations that bear little relationship to its actual goal of preventing or detecting financial crime. This means that one can have a technically compliant program, but that program may not be effective at preventing or detecting – and reporting – suspected financial crime. These activities require different skill sets, tools, and work. Indeed, the Federal Financial Institutions Examination Council's (FFIEC) BSA/AML Examination Manual, which provides the blueprint for federal banking agency examiners to examine our programs, focuses on banks' programs, not on providing actionable, timely information to law enforcement, as the critical means to deter and prevent money laundering and terrorist financing.[6]

This focus has many repercussions but notably hinders the ability of financial institutions to create innovative AML programs and coordinate that innovation with their peers to address the evolving nature of illicit finance threats. At Bank of America, we have implemented robust transaction monitoring, sophisticated screening and filtering, and intelligence systems and processes, all of which assist us with AML/CFT and Office of Foreign Assets Control sanctions compliance. Earlier in this decade, we developed an innovative way to process and connect the disparate "events" that are produced by these systems, as opposed to reviewing each "alert" from these systems and resolving them in the order in which they were generated. This innovation enabled us to create investigative cases that contained more holistic information about potentially suspicious activity, which makes our reporting better. Since then, we have taken steps to significantly improve the stability and performance of our systems; however, we have found further innovation challenging to achieve.

One reason is that changes to the parameters of our systems are now subject to the same validation rigor

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employed against complex economic models. These changes to our systems, which used to take weeks, now take anywhere from nine months to a year to implement. In addition, the employees whose expertise is needed to innovate are the same employees who are now required to validate the changes we would like to make to our parameters. Like most financial institutions, we have begun to pilot innovative technologies commonly referred to as artificial intelligence (AI). But to make AI work, you need the substantive expertise to develop the innovative processes. We think Christopher Mims aptly described the limitations of today's sophisticated algorithms in his article titled "Without Humans, Artificial Intelligence is still Pretty Stupid" in the *Wall Street Journal.*

> **Finding out the general usefulness** of the reporting we provide would significantly help us **tune our systems, or innovate, more effectively.**

IMPROVING THE SYSTEM

A lot of work needs to be done to improve the national AML/CFT regime and make it more effective and efficient. I suggest the following:

TREASURY SHOULD TAKE A PREEMINENT ROLE IN SETTING POLICY, COORDINATING AND SETTING PRIORITIES, AS WELL AS IN EXAMINING INSTITUTIONS' COMPLIANCE WITH, AND ENFORCING, OUR NATIONAL AML/CFT REGIME. Our national AML/CFT regime suffers from the absence of an effective "captain" empowered to lead improvement and enforcement and to set national priorities and define desired outcomes. Under the BSA, there are no fewer than eight different entities with delegated responsibility to supervise, examine, or audit financial institutions.[7] In addition, law enforcement is no less disjointed, with five principal agencies with authority to investigate money laundering.[8] Each of these agencies has different, albeit intermittently overlapping, missions and areas of focus. However, Treasury is uniquely positioned to balance these sometimes conflicting interests as well as other U.S. priorities (e.g., financial inclusion). In addition, measurable outcomes or goals should be clearly and specifically defined for each component of our nation's AML/CFT regime, including financial institutions' AML programs, and agreed-upon ways to measure the achievement of those outcomes or goals should be set and reported. A focus on achieving measurable outcomes established for financial institutions' AML programs will encourage and enable innovation.

THE CURRENT REGIME NEEDS TO BE RATIONALIZED IN ORDER TO ENSURE THAT INFORMATION OF A HIGH DEGREE OF UTILITY IS REPORTED TO LAW ENFORCEMENT. As discussed earlier, financial institutions are subject to a wide range of record-keeping and reporting requirements under the BSA, some of which date back to the 1970s. From time to time, we receive anecdotal feedback from government agencies regarding the usefulness of our reporting in particular cases, which we appreciate. However, we do not receive direct feedback from the government on whether the bulk of our reporting is useful. Finding out the general usefulness of the reporting we provide would significantly help us tune our systems, or innovate, more effectively. This does not have to be complicated; it could be as easy as a simple "thumbs-up" when a particular report was useful. This feedback would provide meaningful assistance to financial institutions. Today, to measure the usefulness of our reporting, we have developed a metric that tracks when we get follow-up requests from law enforcement or regulatory agencies for backup documentation relating to our reports. We receive such requests in connection with roughly 7% of the reports we file.

Although we know reports can be useful in other ways that do not require a request for backup documentation, we are blind to which reports are

actually useful. A government-led effort to measure the usefulness of reports, or other BSA record-keeping and reporting requirements, would help determine whether these requirements are ultimately useful in achieving the goals of our AML/CFT regime. It would also potentially allow financial institutions to redeploy some of the resources currently devoted to "check-the-box" compliance efforts, moving them to more innovative and effective AML/CFT endeavors.

FINANCIAL INSTITUTIONS MUST BE ABLE TO INNOVATE ALONE OR IN CONCERT WITH THEIR PEERS AS NEW TECHNOLOGIES EMERGE THAT ALLOW FOR EFFICIENCY GAINS AND IMPROVED THREAT ASSESSMENTS. Advances in technology have the potential to change the way in which institutions approach illicit finance threats, which can only enhance our nation's AML/CFT regime. This coupled with tools provided by the Patriot Act, particularly tools relating to information sharing under Section 314(b), could change the way in which financial institutions and the federal government address money laundering and terrorist financing risks.

Such information sharing not only makes AML programs more effective and efficient, it focuses resources on the most important matters. The government should encourage this innovation and provide responsible yet sufficient leeway to test and utilize these new systems and processes. The authorized and appropriate sharing of information between the government and the private sector as well as the sharing of information between financial institutions is critical to efforts to address current illicit finance threats.

CONCLUSION

A 21st century U.S. AML/CFT regime should be one in which the government defines *what* needs to be accomplished and financial institutions are given the freedom to figure out *how* to accomplish the *what* in the most effective and efficient way that focuses on the people and entities attempting to abuse the system, and protects innocent customers. ■

ENDNOTES

1 See "A New Paradigm: Redesigning the U.S. AML/CFT Framework to Protect National Security and Aid Law Enforcement." The Clearing House. February 2017. https://www.theclearinghouse.org/~/media/TCH/Documents/TCH%20WEEKLY/2017/20170216_TCH_Report_AML_CFT_Framework_Redesign.pdf.

2 See 31 U.S.C. § 5311, which states that "[i]t is the purpose of this subchapter [the BSA] to require certain reports or records where they have a high degree of usefulness in criminal, tax, or regulatory investigations or proceedings, or in the conduct of intelligence or counterintelligence activities, including analysis, to protect against international terrorism." Note that the last clause was added by the Patriot Act in 2001.

3 See 31 CFR § 1010.810(b).

4 See supra Footnote 1. See also the FFIEC Bank Secrecy Act/Anti-Money Laundering Examination Manual – 2014, Introduction, on p. 7, which states that "[t]he BSA is intended to safeguard the US financial system and the financial institutions that make up that system from the abuses of financial crime, including money laundering, terrorist financing, and other illicit financial transactions.... [A] sound BSA/AML compliance program is critical in deterring and preventing these types of activities at or through banks and other financial institutions."

5 The number of employees in Global Financial Crimes Compliance at Bank of America is greater than the combined authorized full-time employees in Treasury's Office of Terrorism and Financial Intelligence and the Financial Crimes Enforcement Network.

6 See the FFIEC Bank Secrecy Act/Anti-Money Laundering Examination Manual – 2014, Introduction, on p. 7, which states that "[b]anking organizations must develop, implement, and maintain effective AML programs that address the ever-changing strategies of money launderers and terrorists who attempt to gain access to the U.S. financial system. A sound BSA/AML compliance program is critical in deterring and preventing these types of activities at, or through, banks and other financial institutions."

7 Agencies with examination or audit authority are the Federal Reserve Board, the Office of the Comptroller of the Currency, the Federal Deposit and Insurance Corporation, the National Credit Union Administration, the Securities and Exchange Commission, the Financial Industry Regulatory Authority, the Commodities Futures Trading Commission, and the Internal Revenue Service.

8 This includes the Federal Bureau of Investigation, Homeland Security Investigations, the U.S. Secret Service, the Criminal Investigation Division of the Internal Revenue Service, and the Drug Enforcement Administration.

> **Our largest takeaway is that the aggregate burden is significant.** Our work concluded that inappropriately tailoring regulation negatively impacts job and economic growth by **inhibiting the extension of credit** to consumers and businesses.

STATE OF

Craig Phillips, Counselor to the Secretary at the Treasury Department, discusses regulatory reform, the role of the Financial Stability Oversight Council, modernizing the Community Reinvestment Act, and the role foreign banks play in the U.S. economy with **Greg Baer**, President of The Clearing House.

GREG BAER, TCH: *Craig, you have spent most of your career in the business sector. What has been the biggest surprise about working in Washington?*

CRAIG PHILLIPS, TREASURY DEPARTMENT: Honestly, that there are more similarities with the private sector than I would have expected. While we play an important function in developing policy at the Treasury, there's a very large amount of operating responsibility such as financing the government and making what are effectively operating decisions. I have found a lot of similarity with the private sector in decision, planning, and execution processes.

BAER: *Following the financial crisis, the Dodd-Frank Act significantly increased regulation on the banking industry. What has been the impact of new bank rules on the U.S. economy, jobs, and consumers? What do you think a genuine cost-benefit analysis of the rules would show?*

PHILLIPS: The president issued an executive order that established core principles for the financial system. This executive order directed the Treasury to take a fresh look at the impact of all statutes, regulations, and guidance, much of which had changed quite a bit since the financial crisis.

I think our largest takeaway is that the aggregate burden is significant. Our work concluded that inappropriately tailoring regulation negatively impacts job and economic growth by inhibiting the extension of credit to consumers and businesses.

The reason regulation has had such an impact is the consequence of the complete transformation since the financial crisis. This has involved the roll out of literally hundreds of rules. We want to maintain the gains in safety and soundness that were achieved since the financial crisis, but to also consider the cost-benefit implications. In short, we think the cost exceeds the benefit in many cases, and that recalibrating the regulatory environment can improve the effectiveness and accountability of regulation.

BAER: *Much of the regulatory reform focus has been on bank lending, but your background is in the securities business. There are many concerns about how the capital markets will behave when they next come under stress. Has Treasury thought about how a next financial crisis might develop, and how a reduction in dealer inventory against a rising stock of fixed income issuance might play out when a lot of people want to sell and not a lot of people want to buy?*

BANKING

PHILLIPS: First of all, the U.S. economy derives a higher percentage of credit from the capital markets than all of the other developed economies, so capital markets are inordinately important to the United States. We think that's a strength, and we also think it is one factor that has shaped the recovery from the financial crisis.

Many of the regulations that we studied impact how market-making works and how banks use their balance sheets to support capital market activities. We do worry a bit that there are unintended consequences that may arise from the current regulatory requirements that might impair liquidity during periods of stress. Treasury recommended better tailoring of certain liquidity standards as well as of the Volcker Rule. We also recommended improving the calibration of rules impacting regional and community banks with limited capital markets activities.

Right now, the markets are in very good shape. The flow of credit is strong. Credit spreads are at historically narrow levels. We have experienced an extremely robust stock market over the last year. We have made recommendations to improve access to capital for smaller businesses and startups. At present the capital markets can support the U.S. economy and we do not see immediate threats on the horizon.

BAER: *I think some have been surprised at Treasury's focus on empowering and focusing the Financial Stability Oversight Council (FSOC), especially when it comes to reducing regulatory overlap. What do you see as the advantages of using the FSOC as a coordinating body and for improving information-sharing between agencies?*

PHILLIPS: Secretary Mnuchin has, from day one, identified FSOC as a very important convening authority. He believes that gathering the regulators to talk about matters across the markets that may impact financial stability and critically looking at cross-cutting issues across the different regulatory environments is extremely important. So, he values the body.

Having said that, we have issued a report recommending changes in the guidance that FSOC should follow in the designation of systemically important non-bank financial institutions. In short, we advocate for an activities-based approach regarding designation, with a greater reliance on identifying changes that can be implemented by primary regulators. The secretary looks forward to working with the council members in developing changes in guidance for designation that promotes greater transparency and accountability.

BAER: *Clearly one of the goals for the FSOC was to look across agency jurisdictions and identify sources of potential systemic risk. Now as you discuss those at FSOC, where do you see the potential for systemic risk arising these days?*

PHILLIPS: First of all, FSOC is a council, not an organization. The staff-level work of the council is done by a series of committees that are populated by the members. These committees focus on topics such as risk, data, designation, and other important topics.

To address your question more specifically, it is probably important to monitor lending standards in consumer lending, residential mortgage lending, and commercial real estate lending at this juncture in the economic and credit cycle. Maintaining a sensible approach to credit extension and avoiding credit conditions that become overheated should be a priority. It is exactly the type of dialogue that cuts across the various regulators that FSOC serves to convene.

BAER: *One of Treasury's early priorities has been a hard look at the Community Reinvestment Act (CRA) and ways to strengthen and focus that framework to better serve its underlying goal – providing communities with access to credit. What opportunities for improvement do you see there, and how can banks' CRA investments better align with the needs of the communities they serve?*

PHILLIPS: We indicated that Treasury would perform a review of the Community Reinvestment Act in our first executive order report. The secretary made it a priority to engage with banks, regulators, and community advocates in developing our perspectives, which we have been doing over the last four months. As we started this review, the CRA celebrated its 40th birthday, so it's a very old statute. We believe that regulatory practices for the CRA are in

need of modernization. It was created at a time when banks had very limited geographic footprints and for the most part operated within single states.

Banks now have multi-state activities and increasingly interact with customers through the internet and mobile devices rather than at branch facilities. As a result, there is a need to modernize the interpretation of assessment areas, so there could be a more accurate definition of what markets are being served by financial institutions for the purpose of CRA. Many of our other recommendations will relate to the options banks have to invest and support the communities that they serve.

We've found a very consistent view among banks, regardless of size, that there can be more accountability in the regulatory environment by having more specific guidance, more clarity on what actually counts and qualifies as either CRA investment or service, and more flexibility in defining those qualified investments based on the nature of the communities being served.

Treasury plans to make recommendations to the primary regulators that oversee the CRA, which include the OCC, the FDIC, and the Federal Reserve, that can enhance the value of the statute for communities. We look forward to sharing our recommendations.

BAER: *Let me shift the focus more internationally. The Treasury report on bank regulation also highlighted the role that foreign banks play in lending and capital markets in the U.S. and noted that targeted changes to our regulatory framework might better position them to strengthen that role. What are your views on the importance of foreign banks to U.S. markets? What regulatory changes might make sense?*

PHILLIPS: First of all, it warrants saying that foreign banking organizations operating in the U.S. play an extremely important role. We highlighted that in our recent report on banking. Treasury wants to encourage additional investment of foreign banks in the U.S. and in support of our domestic economy. Foreign banking presence also helps facilitate international trade and investment of non-U.S. corporations in the U.S. economy.

> **We advocate for an activities-based approach** regarding designation, with a greater reliance on identifying changes that can be implemented by **primary regulators.**

Regulations have been implemented for foreign banking organizations that to a large extent are driven by the size of the parent organization rather than the size of the U.S. footprint. It is our belief that reconsidering this regulatory approach, and the threshold for enhanced prudential standards, would encourage further investment in the U.S.

The foreign banking community has shrunk their U.S. balance sheets over the last several years. Much of that reduction has been in broker-dealer activities, reducing the role of foreign banks in U.S. capital markets. Success for us would be to have a level playing field between U.S. and foreign banks, encourage further investment of foreign banks in the United States, and base a bank's regulatory environment primarily on the size and complexity of the U.S. domestic footprint.

BAER: *There is a global trend toward ring-fencing, which makes economies less efficient in good times and may make the system more fragile under stress. The Fed's ring-fencing of foreign banks in the U.S. may have started this trend, and now the tax bill eliminates deductibility for the debt that the Fed is requiring foreign banks to issue to their banks. Are you concerned that that's going to further exacerbate these problems?*

PHILLIPS: The administration believes that tax reform will have an extremely positive impact on the U.S. economy and promote wage and job growth and greater prosperity for all citizens. A lower tax rate for all corporations, including banks, will help drive more investment in their business. It will also make U.S. banks more competitive internationally.

You correctly note that the implementation of the base erosion and anti-abuse tax (BEAT) in the recent tax law may impact some foreign banking organizations. Specifically, for banks with over $500 million of annual revenue in the U.S.,

> **Treasury plans to make recommendations to the primary regulators** that oversee the CRA ... that can **enhance the value of the statute** for communities.

certain deductions for payments to overseas parents may be added back in calculating tax liability. This could, in some cases, include interest payments on internal TLAC.

Treasury is working with the Federal Reserve, Treasury's office of tax policy and the Hill to review this issue carefully. We believe that many foreign banking organizations will achieve a net reduction in U.S. taxes under most scenarios as a consequence of tax reform. The intent of tax reform is not to promote additional ring-fencing of foreign banking organizations.

BAER: *Post-crisis I think we've certainly seen the growth in the importance and the expansion of the agenda of super-national bodies like the Basel Committee and the Financial Stability Board (FSB), among others. What do you see as the future of these international standard-setting bodies?*

PHILLIPS: U.S. participation in international standard-setting bodies is important, and is not inconsistent with the America First agenda set by President Trump. However, we believe that the participation at these bodies has to be properly calibrated and better and more consistently represent U.S. interests. The U.S. has a fragmented regulatory system. So, it's extremely important that the U.S. regulators coordinate their views expressed at standard-setting bodies. This has not always happened in the past.

We think that the basic structure of the decision-making process in these organizations warrants a fresh look. Both governance and decision-making processes should be properly calibrated to set better, clearer policy direction. We're happy to see the finalization of the Basel framework, but it's probably taken too long and been too complicated. We also recognize that implementing the agreement in the U.S. will need to be done in a thoughtful manner.

The final point is that most of these organizations have been primarily focused on bank regulation and are primarily staffed by banking regulators and central bankers. As a result, the standard-setting bodies have not always been effective in their approach outside the banking sector, in asset management and insurance, for instance.

BAER: *Lastly, FinTech continues to be the topic du jour, as it offers the potential to be a driver of significant change in the financial industry. However, there are also certainly risks and challenges with respect to how to change the regulatory framework to incorporate new participants. Should the public be concerned about the ability of cryptocurrencies to avoid anti-money laundering rules and other potential consequences of a move to a less-regulated financial system?*

PHILLIPS: We believe innovation is incredibly important in financial services, and we're undertaking a fourth and final report on the executive order covering non-bank financials and innovation, to include many aspects of FinTech. One consequence of the regulatory environment has been less innovation within the established, regulated banking sector. While we applaud innovation in FinTech, it raises the question, how do we keep encouraging innovation within traditional organizations? We're going to study that very closely.

If an entity providing financial services is not regulated or is lightly regulated, the line as to where regulation starts and ends is something that needs to be addressed, to promote appropriately tailored regulations across markets. Exploring the right regulatory approach at the federal and state levels is an important priority.

Cryptocurrencies are such a case in point. Tokens are linked to blockchain technology, an important innovation. In the last year, however, they have also been associated with speculative valuation activities, possible market manipulation activities, and potentially a significant amount of illicit activities that escape traditional anti-money laundering and anti-terrorist controls globally. So, cryptocurrency is an example of innovation at its heart, but also an example of the need to carefully look at how regulations are applied outside the traditional sector to protect investors and global security at the same time. ■

ATKearney

The emerging consumer need: data privacy

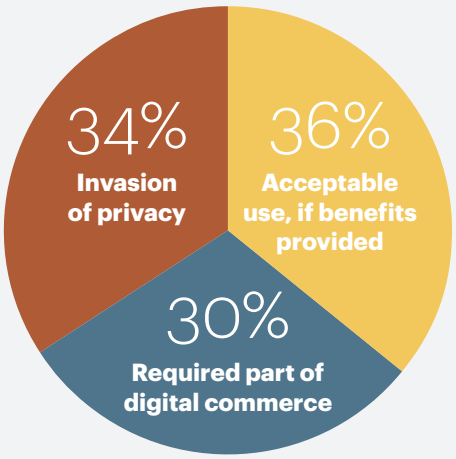
The banking and payments industry has historically operated under the assumption that customers are willing to share their data. Today's digital data-sharing behavior has been sometimes viewed as a constant into the future. This assumption, however, may no longer be a reasonable one. In fact, it may be strategically incorrect.

Recent A.T. Kearney research finds that 34 percent of US bank customers view sharing payments-related information as "an invasion of privacy." Another 36 percent view data-sharing as acceptable "only if there is a clear benefit to the consumer" (for example, special offers, direct compensation).

Only 30 percent of customers regard the use of their payment data as "just part of doing business digitally."

Consumer data privacy is the new emerging consumer need, providing both meaningful opportunities for marketplace differentiation and new consumer-centric service offerings.

Consumers' perception of the use of their payments-related data



Where is consumer data privacy on your strategic agenda for payments?

To learn more about the emerging needs and opportunities to help consumers manage their data privacy, email insight@atkearney.com or visit www.atkearney.com/financial-services.

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*Source: A.T. Kearney Q4 2016 Banking and Payments Study (N=7,013)

Perfection is out of the question, better is possible.[1]

– Hyman Minsky

THE PUBLIC DISCOURSE WILL CHANGE FOR THE BETTER IF THERE IS MORE TRANSPARENCY IN BANK REGULATION.

ARE BANKING REGULATORS SPECIAL?

BY MARGARET E. TAHYAR
DAVIS POLK & WARDWELL

BANKS ARE SPECIAL, but are banking regulators also special?[2] The answer is that the federal banking regulators operate in a cultural mindset different from other financial sector agencies and the larger administrative state.

Administrative law scholar Kenneth Culp Davis has argued the following:

> **The banking agencies of the federal government have long maintained systems of secret evidence, secret law, and secret policy. The result has been a degree of unchecked and unstructured discretionary power that is far greater than it should be. Sound principle calls for openness, so that discretion may be checked and structured. To some extent the systems the agencies have been following violate existing legal requirements. The banking agencies can and should make procedural changes that will increase both efficiency and fairness.[3]**

Surprisingly, this statement was made in 1966, and it remains fresh today.

History explains the separate cultural tradition. Banking supervision developed within the central paradigm of the confidential bank examination and the discretion to control access to bank charters. The tradition of transparency, accountability, and the rule of law is a more recent creature of the New Deal and the reactions to it. These two regulatory traditions have long lived in an uneasy truce, made possible during simpler times when banks engaged almost exclusively in taking deposits and making commercial loans. As market competition made the banking sector more complex, the unexamined truce was, counterintuitively, sustained by the expansion of both traditions. Today, we have both more secrecy and discretion and more transparency.

Some secrecy is justified by the need for financial stability but much of it, by design or happenstance, protects the federal banking regulators from public accountability and the

> **The tradition of transparency,** accountability, and the rule of law is a more **recent creature of the New Deal and the reactions to it.**

appropriate checks on their discretion that would be provided by more openness. The extensive scope of this shadow regulatory system has become untenable and unstable. The two contradictory traditions need to find a new balance in favor of more transparency, accountability, and the rule of law.

THE CENTRAL PARADIGM OF CONFIDENTIAL SUPERVISION

Confidential supervision and discretionary secret lore have a long history in the banking sector.[4] These traditions developed when federal regulation was limited, long before Federal Deposit Insurance, the creation of the Federal Reserve as the lender of last resort, the New Deal, and the Administrative Procedure Act (APA).[5]

The bank examination is two centuries old. The job of the traditional bank examiner was to look closely at the loans and liabilities of each bank and confirm that vault cash and reserves really existed.[6] His mission was to assess whether the bank was safe and sound in an era when rumors could lead to deposit runs and bank panics were frequent.[7] Thus developed the tradition of the secret bank examination, the crime of spreading false rumors about a bank,[8] and the view that bank supervision was best done inside a cone of confidentiality to avoid triggering a banking panic.

Central to the concept of a confidential bank examination is the need for a free flow of communication in conditions of high trust among bank management, the board of directors, and the supervisory authority. Examiners feel strongly about the need for this candid conversation, which has contributed to the creation of a common-law bank examiner's privilege that keeps reports out of the public domain and out of the hands of the plaintiffs' bar.[9]

The lack of a solid foundation in federal law for many of the secrecy traditions will surprise those who have accepted them as hallowed texts. There is a federal criminal statute that prohibits bank examiners from disclosing the results of an examination.[10] The comptroller may, if not satisfied with a national bank's response, disclose an examination.[11] There is no federal statute that explicitly prohibits nonexaminers from disclosing the bank examination or parts of it, such as CAMELS ratings.[12] Rather, the prohibition arises from the interesting assertion by the federal banking regulators that bank examinations are the property of the banking regulator.[13] This assertion derives not from a statute but a regulation promulgated in the late 1960s after the introduction of the Freedom of Information Act's exemption for confidential supervisory information. The authority to promulgate it is less solid than one might think, relying on a general statute relating to federal government property.[14] One suspects that the general federal property law was pressed into service by the banking regulators because no other statutory authority was available. The criminal prohibitions on banking organizations revealing bank examinations derive solely from this assertion.

The other central paradigm that infuses the culture of banking supervision is the discretion that banking regulators have over entry into the banking sector. As a result of a Supreme Court decision from the early 1970s,[15] a generation has grown to accept that the granting of bank charters is so up to the discretion of the bank regulators that the regulator need not even give reasons for a denial. It was not always so. An early comptroller of the currency thought he had no discretion to deny a request for a charter if the standards of the statute were met.[16] By the mid-1960s, there was a circuit court split on whether there ought to be hearings on charter denials. One of the leading APA scholars of that time criticized the comptroller for its policy of keeping secret applications for charters and the reasons for denials.[17] He suggested that the comptroller's withholding of its guidance for charters was illegal under the APA.[18] Today, we should question again how astonishing it is that the regulator can deny a bank charter without giving any reasons at all for the denial.[19]

The importance of the supervisory judgment exercised in the bank examination and the discretion afforded as to entry into the sector are the bedrock of confidential supervision and secret lore. They are routinely justified by the need for financial stability and to ensure the safety and soundness of individual banking organizations. Many have debated

whether confidential supervision and its secret lore are binding upon the banking organization. In a world where the supervisor can punish the banking organization and mold its behavior through these tools, from the perspective of those who receive it, the secret guidance and lore is binding.

THE OTHER TRADITION OF TRANSPARENCY

The central paradigm of the other regulatory tradition is that of the disinfectant of disclosure.[20] Created in the New Deal or as an immediate reaction to it, the norms of the securities disclosure laws and the APA are much newer. The APA is a "bill of rights for the new regulatory state" because it demands that regulations be public and subject to notice and comment. It has transparency and accountability as its central core.[21] The APA was the end product of a decade's worth of political wrangling between New Dealers, who fought to protect the highly discretionary administrative state, and those concerned with the rule of law and transparency when powerful agencies exercised quasi-legislative and quasi-judicial powers. A compromise was finally reached following Harry Truman's assumption of the presidency in a post-WWII environment more sensitive to the risks of authoritarian tendencies.[22]

While the New Deal and the APA may seem like long-ago developments, by the time of their passage, the cultural traditions and institutional path dependency of the banking regulators had already been set. Early versions of the bill that became the APA excluded the federal banking agencies from its scope.[23] The banking regulators might be forgiven, in the early years after the APA, for thinking that the APA only lightly applied to them. The APA and the norms of transparency and accountability for which it stands are approaching their 72nd year, and the time for cultural adjustment should be over.[24]

It is safe to say that none of the banking regulators, and certainly not the banking bar, noticed the passage of the Congressional Review Act in 1996. The Government Accountability Office (then the General Accounting Office) ruling that the leveraged lending guidelines are a legislative rule, although completely obvious under the APA, has been a surprise to the traditional cultural mode. From the perspective of the banking regulators, the leveraged lending guidance, originally developed as secret letters to banks, which could not disclose them to their clients, was an advancement in transparency and disclosure. They were, after all, public and had been subject to notice and comment. From the perspective of those who have been thinking deeply about the administrative law and its march toward transparency and accountability, they did not go far enough. The ruling is a cultural shock to the shadow regulatory system.

EXPANDING BOTH TRADITIONS

Both of these traditions have co-existed in an uneasy truce for so long for the counterintuitive reason that, as the banking sector has become more complex, both transparency and secrecy have expanded in scope. On the side of transparency, there is more disclosure of banking organization financial information, more notice-and-comment rulemaking, a greater tendency to publish guidance, interpretations and FAQs, and greater disclosure of formal and informal actions against banking organizations. On the side of confidential supervision and secret lore, the supervisors have steeply increased the scope of confidential supervision far beyond the traditional bank examination. They have relied upon this broader view to expand the realm of discretionary secret lore.

EXPANSION OF DISCLOSURE

The scope of financial disclosure by banking organizations and its companion market discipline has been expanding for a long time. Both banks and bank holding companies that are public companies are subject to the securities laws, where there is a strong tilt toward disclosure and the constraints of generally accepted accounting principles apply. Pillar 3 of Basel II, now in full implementation, also requires more disclosure. Even though Pillar 3 seeks disclosure in order to manage risk and improve stability, whereas the Securities and Exchange Commission disclosure philosophy is driven by investor protection and market efficiency goals,[25] the existence of subordinated debt, credit default swaps, and, more recently, total loss-absorbing capacity (TLAC) debt that might be bailed in, all push toward market-signaling functions.

These disclosures have become so embedded in our consciousness that many have forgotten that they were new and shocking not so long ago. Bank stocks were not subject to periodic reporting until 1964,[26] and the constraints of Guide 3 date from 1976.[27] Call reports were not made public by the Federal Deposit Insurance Corporation until 1972

> **The formal and informal punitive actions** of the banking regulators against banking organizations **have become increasingly more public.**

(and even then it was upon request, with a fee for search costs).[28] When first created, CAMELS ratings were not even disclosed to bank management.[29] It has been forgotten that the banking regulators once attempted a separate securities disclosure system for banks rather than incorporate by reference SEC regulations.[30] Vestiges of that differing cultural mode can be seen in the long-standing spat between the banking regulators and the SEC regarding the calculation of allowances for loan losses.[31] That particular clash was resolved by a detente in the early 2000s and a recent change in the accounting rules.[32] Even so, unresolved tensions remain between the requirements of the securities laws and the culture of confidential supervision.

The formal and informal punitive actions of the banking regulators against banking organizations have become increasingly more public. Banking regulators were not given formal enforcement powers until 1966. Before that, the banking regulator's main powers were behind-the-scenes moral suasion and "jawboning," backed by the nuclear threat – not used – to revoke a charter or terminate deposit insurance. Even after the banking supervisors were given the power to remove directors and officers, impose civil money penalties, and enter into informal written memoranda of understanding or formal consent orders or written agreements, they favored informal – that is, nonpublic – board resolutions and memoranda of understanding. The long litany of very public post-financial crisis consent orders and written agreements has changed that custom. Moreover, there is an increasing tendency to disclose informal and private memoranda of understanding in securities disclosure documents when their contents are material to investors with the express consent of the banking regulators.[33]

Many written interpretive positions were kept secret well into the 1990s. It was long a given that the only way to find out the Federal Reserve's interpretive letters was to file an FOIA request and hope for the best.[34] The development of the internet, which intensifies the culture of transparency, has meant that many, but not all, supervisory letters, guidance, FAQs, and other interpretive positions now find their way onto the banking regulators' websites. There is more in the public domain than ever before through notice-and-comment rulemaking. This trend started even before the financial crisis and the Dodd-Frank Act required 390 new rulemakings by the banking agencies.[35]

EXPANSION OF THE SECRET REALM

At the same time, the scope of what is considered confidential supervision information has expanded far beyond the traditional bank examination. All of the federal banking regulators used the passage of FOIA, a statute meant to expand the scope of information available to the public, to expand their zone of confidentiality beyond the scope of the traditional bank examination. The precise words of the FOIA statute's exemption, which were written by the banking regulators, encompass a range broader than an examination report and include matters "contained in or related to examination, operating, or condition reports prepared by, on behalf of, or for the use of an agency responsible for the regulation or supervision of financial institutions" from disclosure.[36] The result has been the creation of a nonpublic, shadow regulatory system that is neither transparent nor subject to accountability. It is only possible, due to the constraints of confidential supervisory information, to speak about those examples that have randomly become public, but many more exist. Those who are at banks or the regulators can fill in their own examples.

WIDENING THE SCOPE OF THE BANK EXAMINATION & POSITIONS TAKEN WITHIN IT. The traditional bank examination has morphed into something much wider in scope. Banking organizations are subject to multiple examinations, and the number of matters requiring attention or immediate attention have expanded. Operation Chokepoint, which purported to decide which sectors were morally appropriate to receive banking services, started in the bank examination. The leveraged lending guidelines, which purport to guard against the next asset bubble, began in the bank examination context. There have been attempts to take legal interpretations in the context of bank examinations. (In a democratic society, the concept of a secret legal interpretation of an economic regulation cannot be possible.)[37]

FEDERAL RESERVE POWER TO LIMIT THE ACTIVITIES OF A FINANCIAL HOLDING COMPANY. To qualify as a financial holding company (FHC), the holding company and all of its insured depository institution subsidiaries must be both "well managed" and "well capitalized." The Federal Reserve may impose limitations on the conduct and activities of an FHC that fails to satisfy either condition, and typically the FHC is required to enter into a nonpublic agreement to comply with those limitations.[38] Because the Federal Reserve treats the failure to be well managed as confidential supervisory information, the existence and scope of 4(m) limitations are confidential. One study that examined the securities disclosures of 60 FHCs between the years 2005 and 2017 noted that nearly all FHCs disclose that they are well capitalized but many do not disclose if they are well managed.[39] The public does not know the conditions on business activities or investments that exist through this mechanism and how long they might last.

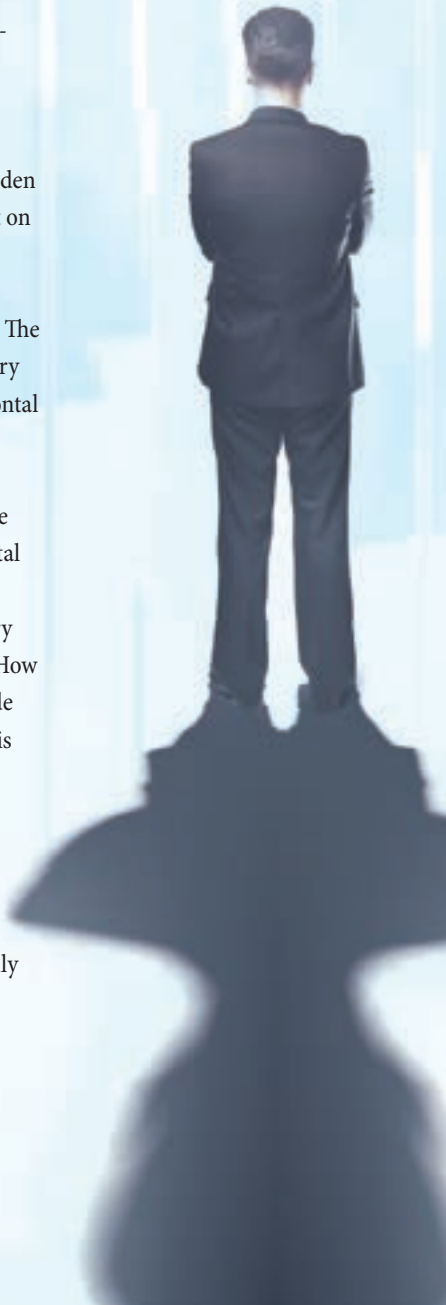
FEDERAL RESERVE POWER TO LIMIT INVESTMENT IN THE BANKING SECTOR. The Federal Reserve's legal staff has influence over who can invest in the banking sector through fluid standards on controlling influence and by creating secret lore surrounding the so-called teardown "rules," which take views on when an investor has broken controlling influence. These standards have not been subject to notice and comment, and most of them are not public. Vice Chair Randal Quarles recently described these standards as "ornate" and noted that "in some cases [they] cannot be discovered except through supplication to someone who has spent a long apprenticeship in the art of Fed interpretation," characterized in ad lib comments as akin to the relationship between "shaman and novice."[40]

LIMITS ON EXPANSION AND ACQUISITIONS. Another expansion of secret lore has come about due to the penalty box rules of thumb that the banking supervisors apply to banking organizations as a result of CAMELS ratings, especially as to management ratings, Bank Secrecy Act and anti-money laundering compliance reviews, and consumer compliance reviews. As noted by Greg Baer, tacit principles in the evaluation of management include the fact that any compliance problem resulting in an enforcement action will result in a downgrade of the management rating and that an entity cannot have a composite rating better than 3 if it has a management rating of 3. Bank expansion is not possible so long as a consent order is pending, meaning that banks of all sizes devote board and management time as well as technology resources toward even the most immaterial compliance concerns to ensure that regulators are fully satisfied. Appeals against adverse ratings are rare because appeals must be made to the same agency that issued the rating, part of the evaluation is the readiness with which management responds to regulator criticism, and banks are warned that "examiners have long memories."[41]

SUBSTITUTES FOR NOTICE-AND-COMMENT RULEMAKING. The lack of transparency and tensions with the APA in the requirements of Comprehensive Capital Analysis and Review is now being addressed by the Federal Reserve. It is, however, just one example of many where guidance is used as a substitute for notice-and-comment rulemaking. The living wills guidance is also instructive. Some of the guidance is public and some remains confidential. All of it has been created without public notice and comment, including the sudden imposition of a new secret binding liquidity constraint on some global systemically important banks.[42]

USES AND ABUSES OF HORIZONTAL REVIEWS. The banking regulators hide behind confidential supervisory information to perform secretive, unreviewable horizontal reviews of compliance with supervisory expectations, often moving the goal posts retroactively instead of prospectively. At the same time, bank organizations are largely prohibited from performing their own horizontal reviews of compliance with supervisory expectations lest they inadvertently disclose confidential supervisory information and risk criminal sanctions for doing so. How these horizontal reviews, especially when industry wide and not tailored to the institution, align with the APA is an open question.

NEGOTIATIONS IN APPLICATIONS. The long tradition of regulation by negotiation in the applications process is also a type of shadow regulatory system.[43] Sometimes regulators strategically use delays to encourage nonpublic withdrawals of applications or impose conditions in the applications process that are unrelated to the application itself. As a result, the staff conducting negotiations during the application process wield policymaking power.



> Since the financial crisis, **there has been a strong increase in leaks of confidential supervisory information,** often by the bank regulators themselves.

EXAMPLES ARE NOT COMPLETE. The actual list is much longer and the examples could be more specific. But the constraints of confidentiality constrain the public discussion. The key point is that the expansion of confidential supervisory information has created a realm where economic and social policy choices are being made in the shadows.

UNEASY TRUCE

The uneasy truce has become untenable and unstable. One canary in the coal mine is the increase in leaks of confidential supervisory information. The melody that canary is singing is changed societal mores about transparency in the digital age. But more important is the fact that the increase in confidential supervision makes it too difficult to hold the banking regulators accountable to the public for policy choices made in the shadow regulatory system.

Since the financial crisis, there has been a strong increase in leaks of confidential supervisory information, often by the bank regulators themselves. So far, each of the leaks below has been treated as a one-off situation. It is time to consider, however, whether they are a signal of the pressures felt by humans living in a digital society where there is a strong tilt toward transparency. Here is a list of recent examples that have made their way into the press: an examiner released 47.5 hours of tapes of private discussions about Goldman Sachs; a Federal Reserve of New York employee leaked the results of a management rating for a community bank to Goldman Sachs; someone leaked Deutsche Bank's examination results to *The Wall Street Journal*; someone leaked Deutsche Bank's state of play in negotiations, including a possible fine amount, with the Department of Justice; the FDIC rebuked personnel for downloading living wills files just before leaving for the private sector; someone leaked the results of 2015 living wills before they were sent to filers; someone leaked Wells Fargo's CAMELS ratings and state of play on enforcement actions; and, during the financial crisis, a member of Congress posted Wachovia's confidential exam report to a public website.[44]

There is also an increase in the officially sanctioned publication of confidential supervisory information by the banking regulators themselves. The New York State Department of Financial Services recently used its power to release information in the public interest to make public its otherwise confidential ratings of the Bank of Tokyo-Mitsubishi UFJ.[45] The decision about what is in the public interest and its timing is entirely in the hands of the regulators.[46] At the same time, banking organizations are silenced in the public arena when Congress or the media make statements that might otherwise be corrected except for the relevant information being considered confidential supervisory information, even when that information has been leaked by regulatory staff.

The lack of transparency and accountability makes it difficult to decipher when banking regulators are using the threat of confidential supervisory action as a sword against banking organizations or individuals and when they are using the confidentiality of supervisory information as a shield to preserve financial stability. There are a few telling examples that can be stated publicly. What is one to make, for example, of Henry Paulson admitting that he privately threatened to remove the management and board of Bank of America if it did not complete a merger with Merrill Lynch? He has since stated "[b]y referring to the Federal Reserve's supervisory powers, I intended to deliver a strong message." This message was not disclosed at the time. Operation Chokepoint, the penalty box, and many nonpublic examples involve similar threats of confidential supervisory actions. The increasing number of banks requesting to strengthen their ability to appeal examination results reflects the sense that confidential supervision can look like a weapon when it is shrouded in secrecy.[47]

The shadow regulatory system leads to another problem. Many have criticized the banking supervisors for not being hard enough on the banking sector after the financial crisis. This criticism may not be valid. How can Congress, scholars, and others assess whether there is cognitive capture (a well-established term in the field of economics to describe when the regulator begins to think like the regulated industry) or whether banking supervisors are being too tough or too easy on the banking entities they regulate and supervise if what is known publicly is only the tip of the iceberg? The public debate and scholarship are deformed when they know only part of the story.

Thankfully, there is a growing concern, including at the Federal Reserve, that the balance is askew. Vice Chair Quarles has suggested that increasing transparency and rethinking supervision are high on his agenda, characterizing transparency as a "necessary precondition to the core democratic ideal of government accountability – the governed have a right to know the rules imposed on them by the government."[48] This thoughtful relook will also align more with constitutional norms and the APA to "produce better regulation."[49]

WHAT POLICY PURPOSE IS BEING SERVED?

We can improve transparency, accountability, and the rule of law by narrowing the scope of the shadow regulatory system to the core minimum necessary to achieve its policy goals. For important policy choices affecting economic and social conditions, the tilt should be toward transparency. Going forward, three key questions ought to be asked about confidential supervision and discretionary secret lore. Each one of these questions would involve a new way of thinking.

1. **WHY IS THIS TOPIC BEING TREATED CONFIDENTIALLY?** Banking regulators and banking organizations should begin to ask themselves *why* a certain topic is being treated as confidential. There should be a tight link to financial stability and the need for candid conversations. There should be a serious re-examination, from first principles, of how the obligations of the securities laws and confidential supervision interact. One example is to ask why banks shouldn't have the option to make their CAMELS and other supervisory ratings public. After all, the results of Community Reinvestment Act examinations have been public since 1990.

2. **WHO OR WHAT IS BEING PROTECTED BY THE CONFIDENTIALITY?** Sometimes confidentiality protects the supervisor and shields its actions from public scrutiny. Why is part of the living wills guidance public and part of it private? How is it that the confidential penalty box constraints on banking organizations can exist for years?[50] Do CAMELS ratings really judge individual institutions or do they follow the trends of the business cycle? Some of these examples are areas where the supervisor knows that its actions would be controversial to the public and so a confidential route is chosen without much forethought. If confidentiality is chosen to protect the supervisor or a policy choice from public scrutiny, it is not appropriate.

3. **WHY IS THIS POLICY CHOICE OR REGULATORY INTERPRETATION BEING MADE UNDER THE RULE OF DISCRETION RATHER THAN THE RULE OF LAW?** Access to the banking sector via grants of bank charters is at the complete discretion of banking agencies, including the timing of responses and the ability to encourage often silent withdrawals. Why is that discretion not cabined? Why did Operation Chokepoint begin as a confidential element of examinations? Why did the leveraged lending guidance start as confidential letters? In an era of increased transparency and accountability, policy choices that have an impact on access to deposit and payment services, credit allocation, and investment in the banking sector - that is, on jobs and growth - should be open, not secret. We are far away from examining the quality of a bank's loans or the amount of cash it has in the vault to protect against the risk of bank runs as in the traditional bank examination context.

We should not jettison confidential supervision, but we ought to reform it. Following in the footsteps of economist Hyman Minsky, we should aim for better, not perfect. The public discourse will change and for the better. ■

ENDNOTES

Editor's Note: Due to the number of citations, the article with full references can be found online at www.theclearinghouse.org/banking-perspectives

ARTIFICIAL INTELLIGENCE

BY ADAM GILBERT
PRICEWATERHOUSECOOPERS

BANKS ARE USING AI IN THREE MAIN WAYS: BUILDING A BETTER CUSTOMER EXPERIENCE, REDUCING COSTS, AND STREAMLINING RISK OPERATIONS. THE TECHNOLOGY DOES, HOWEVER, BRING NEW CHALLENGES.

AND BANK PERFORMANCE

WE INCREASINGLY ARE SEEING artificial intelligence (AI) in our everyday lives, from speech-to-text features on our smartphones to voice-control digital assistants that can order groceries to the profiling and customization that lie behind a growing number of our commercial interactions. Unlike rules-based processes, such as robotic process automation (RPA),[1] AI algorithms can perform human-like tasks, such as applying new information to novel data sets. The field of AI also has produced a number of cognitive technologies, including machine learning applications, such as natural language processing (NLP) and natural language generation (NLG), which allow AI systems to analyze data and make more-informed real-time decisions.[2]

According to PricewaterhouseCoopers' research, the use of AI could lead to an increase in global gross domestic product of up to 14% – the equivalent of an additional $15.7 trillion – by 2030. The financial services industry, with its access to large data sets on customers and markets, is set to experience some of the biggest gains.[3] In fact, many banks are already investing heavily in these technologies. In 2017 about half (52%) of the industry confirmed they were currently making substantial investments in AI, and 66% said they expect to do so within the next three years.[4]

> **Banks can use AI to customize products and advertising based on need, life stage, and behavior** by combining information from transaction histories, prior inquiries, geolocation, customer's search history, and even social media sites.

The use cases for AI are constantly changing, but banks today are focusing on three main applications: (1) building a better customer experience; (2) reducing costs, not head count; and (3) streamlining risk operations. However, although AI can provide banks with many advantages, it also presents new challenges. Therefore, banks will have to balance the complex and often opaque nature of AI's algorithms with demands from customers, leadership, and regulators for transparency and security.

BUILDING A BETTER CUSTOMER EXPERIENCE

The financial services industry has experienced a significant shift in customer expectations over the past few years. Once limited to the industry's traditional set of one-size-fits-all products and services, customers now expect tailored offerings and seamless digital purchasing experiences. This trend is only growing stronger as comfort with digital banking grows and disposable income shifts toward younger, more digitally fluent customers. Traditional banks are therefore starting to embrace the digital transformation, and those that go further in adopting AI systems will have superior insight into their customers' needs and preferences, giving them the ability to better tailor their offerings and attract new customers.

Banks can use AI to customize products and advertising based on need, life stage, and behavior by combining information from transaction histories, prior inquiries, geolocation, customer search history, and even social media sites. For instance, a bank could analyze a customer's transaction history to recognize an airline preference and then send a notification via the bank's mobile app to inform the customer of a new credit card partnership with that airline.

Chatbots are one of the most visible forms of AI that banks are using today. The technology uses machine learning algorithms to study and mimic how customer service agents diagnose and solve customer problems. Chatbots are often used to help customers make payments, check their balances, transfer money, and even suggest products based on particular spending habits. The software learns from structured and unstructured data, such as resolved issue logs and call transcripts, as well as recommendations and corrections made by programmers. Chatbots can then take that data and apply it to new customer inquiries, improving the speed and quality at which customers get their questions answered.

Not only does the use of chatbots eliminate the need to wait for agents to help with basic inquiries, but agents will be free to focus on more-complex customer issues that need a human touch. Chatbots should, for example, be programmed to transfer calls to a human operator in situations of emotional distress, such as customers detecting fraud in an account or calling to report a death. Humans are also better able to handle situations where there may be an opportunity for a potential up-sell or cross-sell, such as a loan request or credit card inquiry.

With the ability to better understand their customers' behaviors, banks will be able to improve the customer experience by providing faster, more-personalized service and more-tailored product offerings.

REDUCING COSTS, NOT HEAD COUNT

REDUCING COSTS

Historically, banks have focused on driving down costs through lean operations and outsourcing, but in recent years many have begun to further reduce costs by using RPA for low-value-add activities. As technologies have matured and banks' comfort levels with emerging technologies have increased, they are now turning to AI to help reduce time and resources spent on a growing number of processes.

Banks often have relied on large internal teams as well as third-party legal and professional services firms to determine the applicability of regulations and identify gaps between regulatory requirements and internal policies and procedures. However, some banks are now leveraging NLP to do this work as well as to test for

ongoing regulatory compliance. Previously, this testing often required humans to manually read documents, such as loan applications, but by using optical character recognition (OCR) physical documents can be digitized and AI can evaluate them for compliance with relevant regulatory requirements.[5] For instance, OCR will be able to determine from a loan application whether notices related to a loan, such as approval or a counteroffer, were sent within the required time period. This has helped to reduce the need for third-party vendors and freed up internal compliance staff to focus on reviewing and remediating gaps identified by the AI systems.

In addition, one large bank is using intelligent process automation (IPA), which applies AI to RPA, to analyze documents, such as commercial-loan agreements, in an effort to extract important data points and clauses.[6] This would reduce the amount of time required to analyze such documents from hours to seconds, significantly reducing both internal and external legal costs. Further, both IPA and OCR have the added bonus of not requiring human oversight, so such processes can further enhance efficiency and reduce costs.

NOT NECESSARILY REDUCING HEAD COUNT

Although AI does reduce the need for human capital in certain areas, the purpose of this technology is not to replace bank employees. Instead, AI is designed to augment employees' intelligence by reducing the time it takes to sift through massive amounts of data, helping them to make better decisions with fewer errors, while providing improved and faster service to customers. In fact, human-supervised AI often achieves more accurate results than unsupervised AI.

A recent PwC survey shows that 62% of consumers believe AI can reduce the time it takes to get answers tailored to their preferences, and 43% of millennials would pay a premium for a hybrid AI system that also offers direct access to humans.[7] A hybrid system, for example, would be beneficial in instances where a human touch is necessary to deliver the best customer experience, such as when a customer has a particularly complex or sensitive matter to discuss, as described above.

However, just because AI will not replace employees does not mean the workforce won't change. Many AI tools require an understanding of which algorithms will work best for a particular problem and a particular data set. Therefore, banks will need employees who have technical backgrounds in data science and data visualization who are familiar with training AI, know which questions to ask the system, and understand what additional data is needed in order to bring the most value to the business. Although this will at times require banks to recruit outside talent, it also means investing in retraining existing staff.

> **One large bank is using intelligent process automation** to analyze documents such as commercial-loan agreements in an effort **to extract important data points and clauses.**

STREAMLINING RISK OPERATIONS

AI applications are able to analyze and organize vast amounts of unstructured data in order to derive insights, making them particularly well-suited for assisting with risk functions. For instance, generating risk and regulatory compliance reports is a labor-intensive process, but utilizing NLP to analyze text and NLG to distill that analysis into narratives allows banks to quickly transform data and efficiently present risk insights in real time. These features are particularly useful for CFOs, chief risk officers, and chief compliance officers in developing more useful and more-value-added information for key constituents such as boards, senior management, and regulators.

One of the primary risk areas where we have seen banks adopt AI is in their anti-money laundering (AML) compliance. Many banks previously used RPA for AML compliance but found that RPA is not sensitive or sophisticated enough to detect important factors, such as changes in patterns or behavior, or tone and sentiment in conversation.[8] As a result, many forward-thinking

banks have employed regulatory technology (RegTech) solutions that utilize NLP to surveil electronic and audio communication and flag any suspiciously used terms or phrases while accounting for tone and sentiment.

RegTech solutions also use AI-enabled advanced analytics to aggregate and analyze data, allowing investigators to visualize complex financial relationships and more easily detect AML violations. For example, in order to better monitor accounts for suspicious activity, one bank used an AI system to build a holistic view of its customers, including their relationships and transactional behavior. By studying complex details such as specific high-risk AML transaction patterns, including the strength of a customer's relationship with a merchant and their product portfolio, the system was able to improve the accuracy of alerts. It also identified patterns in customer attributes that can lead to an increased AML risk like a sudden increase in international transactions to high-risk countries. The bank could then use this information to refine the rules it used to generate alerts, increasing the number of investigations completed each day and further helping to reduce the number of false positives.

> **It is important for banks to deploy AI** that is explainable, transparent, and provable, thereby **gaining the trust of its leadership, customers, and regulators.**

In addition, banks are also adopting AI to flag patterns that most often lead to regulatory inquiries. The system analyzes past compliance issues and learns to recognize similar patterns in the bank's current data and alerts the compliance team to potential issues as they occur, thereby reducing regulatory risk by giving banks the opportunity to remediate issues before they self-report to the regulators [or the regulators themselves discover potential issues].

AI: A RISKY BUSINESS?

CYBERSECURITY

As with every new and emerging technology, especially those that require collecting personal data, adopting AI comes with its own risks.[9] While banks are using AI to improve their identity authentication processes and better detect suspicious activity, malicious actors are also using AI to create new cyberthreats and inject biased data into algorithms' training sets.[10] Vulnerabilities detected in AI systems can then be exploited by intelligent malware and ransomware that learns as it spreads.

Despite these risks, AI will also be part of the solution. In order to prevent such breaches, banks are establishing teams to design, build, and deploy AI systems that not only monitor ways malicious actors could "trick" algorithms but also identify "hot spots" where cyberattacks are surging.

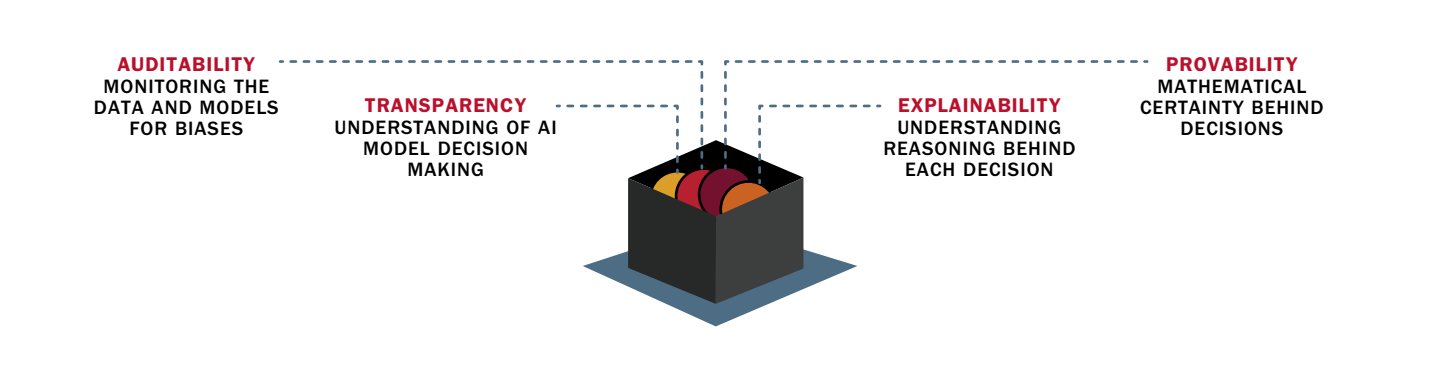
TRANSPARENCY

AI often functions in a sort of "black box" (see Figure 1), using algorithms that are beyond human comprehension, which makes it hard to (i) decipher how the system reached its conclusion and (ii) verify why a recommendation was made. This lack of transparency is a particular problem for applications of AI in financial services. If an e-commerce website uses mysterious algorithms to suggest a new shirt to a customer, the risks involved are low, but that is not the case when AI-powered software turns down a mortgage application using an algorithm into which the bank does not have complete insight.

Therefore, it is important for banks to deploy AI that is explainable, transparent, and provable, thereby gaining the trust of its leadership, customers, and regulators.[11] Further, since AI learns from both historical and real-time data, it is imperative that banks understand if there is any underlying bias in the data, the bias must be addressed. However, as with any other process, if every step must be documented and explained, the process becomes slower and more expensive.

Clearly AI presents great opportunities for banks in the realms of customer experience, cost reduction, and fraud detection. Ultimately, however, banks will have to balance the benefits of AI with the risks that come with its opacity and find which uses work best for their operating model. ■

FIGURE 1: WHAT IT MEANS TO LOOK INSIDE AI'S BLACK BOX



Source: PricewaterhouseCoopers

ENDNOTES

1 Robotic process automation is most often used to perform repetitive, routine tasks. Recently, the technology has started to evolve to include AI and machine learning to become intelligent process automation.

2 Machine learning refers to the ability of computers to learn a task that it is not specifically programmed for by identifying patterns in data and applying what it has learned from that data to new data or to draw inferences from data sets. Natural language processing refers to a computer's ability to understand written and spoken language. Natural language generation refers to computer software that turns data into written narrative.

3 See PwC's publication, "Sizing the Prize: What's the Real Value of AI for Your Business and How Can You Capitalize?" (2017). https://www.pwc.com/gx/en/issues/analytics/assets/pwc-ai-analysis-sizing-the-prize-report.pdf

4 See PwC's publication, "2018 AI Predictions: 8 Insights to Shape Business Strategy" (2018). https://www.pwc.com/us/en/advisory-services/assets/ai-predictions-2018-report.pdf

5 OCR is the conversion of different types of documents, such as scanned handwritten text, PDF files, or images into editable and searchable data.

6 Like other forms of AI, IPA can perform tasks in a human-like manner as well as learn and improve over time. Though still a rule-based system, unlike RPA systems, IPA systems can make decisions.

7 See PwC's publication, "Bot.Me: A Revolutionary Partnership" (2017). https://www.pwc.com/us/en/industry/entertainment-media/publications/consumer-intelligence-series/assets/pwc-botme-booklet.pdf

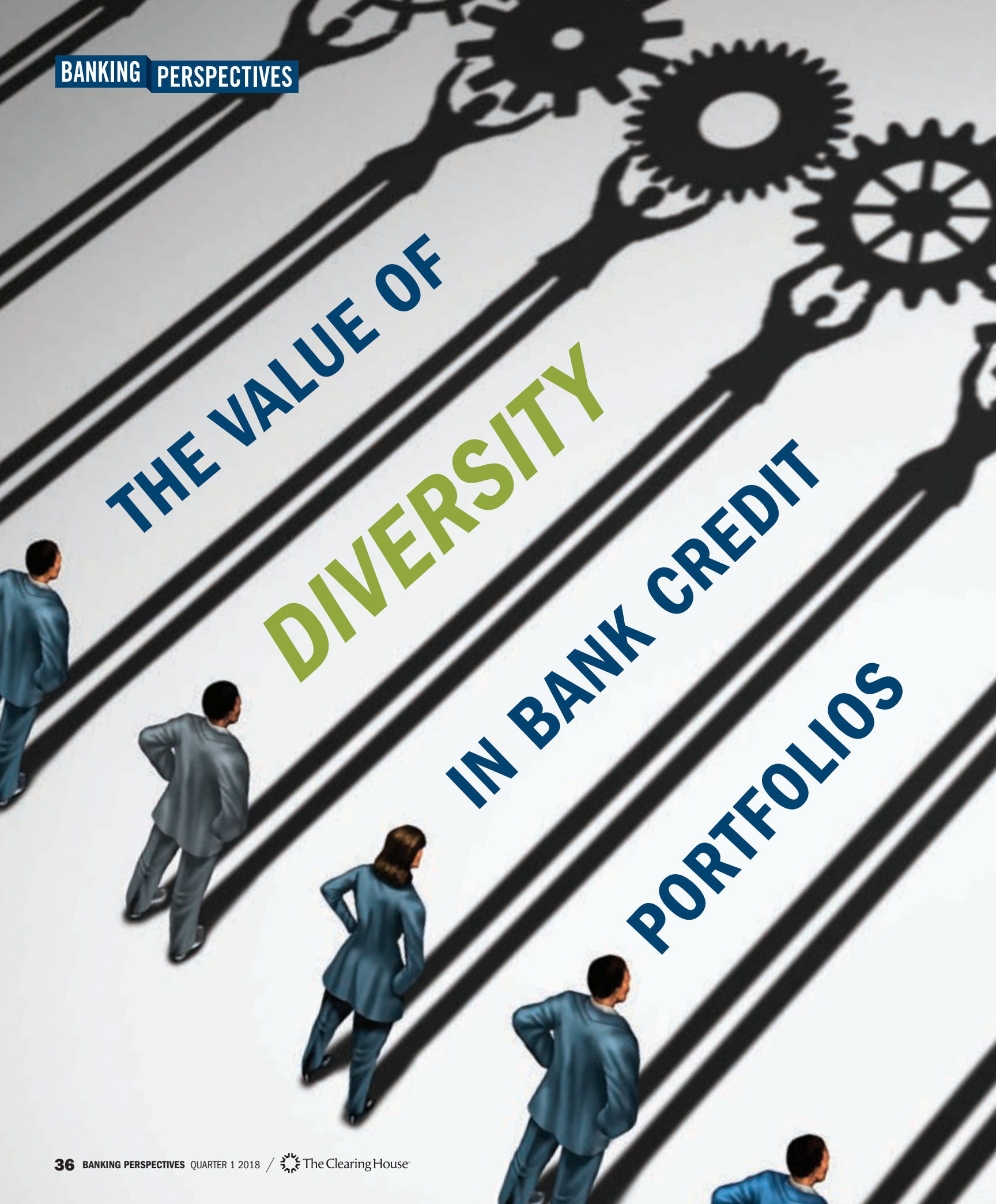
8 To learn more about AML and KYC, see PwC's Financial crimes observers, "AML: Do You Really Know Your Customer?" (January 2016), "AML: Who Is Your Customer? FinCEN Wants You to Know" (May 2016), and "AML Monitoring: New York Regulator Gets Prescriptive" (July 2016). https://www.pwc.com/us/en/financial-services/financial-crimes/publications/assets/fincen-know-your-customer-requirements.pdf, https://www.pwc.com/us/en/financial-services/financial-crimes/publications/assets/fincen-know-your-customer-requirements.pdf, https://www.pwc.com/us/en/financial-services/financial-crimes/publications/assets/aml-monitoring-nydfs-2016.pdf

9 For example, banks that operate in the European Union will have to comply with the General Data Protection Regulation, which provides customers with certain rights over their personal data, including the right to consent to data collection and to access, review, and request the deletion of such data. For more information, see PwC's "Operational impacts of the General Data Protection Regulation" (March 2017). Additionally, banks will have to comply with the New York Department of Financial Services' rules around personal data protection, which includes enhanced encryption requirements. For more information, see PwC's "Financial Crimes Observer, Cyber: New Approach from New York Regulator (January 2017). https://www.pwc.com/us/en/cybersecurity/broader-perspectives/operational-impacts-of-gdpr.html, https://www.pwc.com/us/en/financial-services/financial-crimes/publications/assets/NYDFS-cybersecurity-proposal-revised.pdf

10 A training set is a set of data used to train the AI and which the AI then uses to discover predictive relationships.

11 For example, the Securities and Exchange Commission's guidance on automated investment advising requires that banks providing such services disclose to customers information on how algorithms are used and related risks. For additional information, see PwC's regulatory brief, "Robo-Advisers: SEC Steps Up Scrutiny" (October 2017). https://www.pwc.com/us/en/financial-services/regulatory-services/publications/assets/sec-and-robo-advisers.pdf

THE VALUE OF DIVERSITY IN BANK CREDIT PORTFOLIOS



DIVERSITY CAN BE A POSITIVE FORCE FOR A HEALTHY CREDIT MARKET AND A SYSTEMICALLY HEALTHY FINANCIAL SYSTEM.

BY DAVID CARRUTHERS AND MARK FAULKNER
CREDIT BENCHMARK

DIVERSITY – IN NATURE AND IN HUMAN ACTIVITY – is usually seen as a force for good. This view has strong support among credit market participants, especially the banks that mobilize and deploy capital; they believe that there are economic and systemic benefits resulting from banks taking different views of risk. However, financial regulators are concerned about the role of this diversity in driving excess variability in risk-weighted assets. Regulators have argued for, and continue to impose, regulatory floors and ceilings to limit that variability; however, in some cases, these constraints could limit the scope for credit opinion diversity. Despite the differences in opinion, we find it encouraging that this important topic is now the subject of a constructive debate between the participants in the market and those who regulate it.

A broad and deep credit market is an essential element of a broad, deep, and robust economy, mobilizing idle capital and facilitating maturity transformation. But since the 2008–2009 crisis, credit markets have been subject to major and unprecedented distortions. Some of these have emerged from the markets themselves, but many have been imposed by central banks, politicians, and regulators.

Bank regulation is intended to prevent moral hazard and avoid undue risk-taking, but it inevitably acts as a standardizing factor. The challenge for regulators is to foster broader and deeper credit markets, while avoiding contagion across the banking system when an economic sector runs into credit problems. For a regulator, the ideal environment is one where different banks have different skill sets and make loans accordingly – encouraging diversification and limiting contagion. The task for the market and regulators alike is to successfully reach equilibrium between diversity and standardization and to identify when that point of balance needs to be moved. Bank-sourced data provides an effective way of tracking that balance.

This article uses bank-sourced consensus credit data to demonstrate changes in diversity over time and within different segments of the credit market. It will demonstrate that local and global diversity of credit opinions is measurable and suggests that this diversity can be a positive force for a healthy credit market and a systemically healthy financial system.

THE BANKING PERSPECTIVE

With imperfect information, financial systems gravitate toward fixed credit reference points to use as benchmarks. These are necessary in some form for planning and objective performance measurement. But the crisis of 2008–2009 revealed the risks when the system is anchored to a limited number of credit assessments.

Since then, the global banking industry has invested heavily in credit risk models to ensure that economic capital is aligned with its risk tolerance. The set of obligors captured in these assessments provides the building blocks of a large set of risk-diversified loan portfolios. However, paradoxically, many of these borrowers are outside the scope of traditional credit benchmarks: across a sample of the loan books of 20 global and major regional banks, more than 90% of the bank obligors are unrated by the major nationally recognized statistical rating organizations.[1]

THE REGULATORY PERSPECTIVE

According to The Clearing House Bank Conditions Index,[2] the resilience of the U.S. banking system is at a 20-year high across the dimensions of capital, liquidity, and risk aversion.

The largest banks now operate under the internal ratings-based (IRB) approach, known in the U.S. as the advanced approaches. These banks have mobilized their sophisticated (and diverse) credit assessments to ensure greater efficiency in risk-weighted asset (RWA) capital management than would be possible with standardized approaches. The Basel Committee on Banking Supervision (BCBS) restricts the scope for deploying these models for RWA purposes, with the implication that a "freedom to model" could be misused. But detailed analysis[3] suggests the opposite: large IRB and advanced-approach bank models are conservative and not a source of undue risk.

The BCBS's recent changes to the capital framework took longer than expected to be finalized, and one of the reasons was the considerable disagreement around the standards contained in the original proposals. These disagreements were not just between regulators and large banks; they were also between regulators themselves.

At one end of the spectrum, there is a regulatory view that all banks should operate on a standardized basis, an approach that would ensure that regulatory capital could be compared on a strictly like-for-like basis. A stylized version of this view can be characterized as: All banks have access to the same public information about XYZ Corporation, so they should all have the same assumptions about credit risk for that company.

At the other end of the spectrum, there is a view that the same public information can still lead to alternative views of creditworthiness through the exercise of judgment, different risk appetites, or in some cases through experience with the borrower (e.g., where some banks have private information, whether that is about the individual company or its sector or region). After all,

bank lending best substitutes for, and is most necessary with, companies about which there is less-robust public information. Does a credit assessment represent a one-to-one relationship between current data and the single, correct credit view, or is it a one-to-many? For example, is Apple Inc. a relatively low-risk pile of billions of dollars of cash or a fashion-driven product company with all the risks that a change in the fickle world of global fashion might pose?

Although there are concrete steps that regulators can and do take to monitor systemic risk, this alternative view is also aimed at promoting diversity in loan books in order to discourage "herding" (the tendency for a common, but possibly erroneous, view to emerge due to banks pursuing the same sectors). This aim can be supported by a mature and diverse credit market while maintaining the existing capital management framework at the individual bank level. In this approach, regulators are observers of a well-diversified system while retaining the power to intervene if signs of herding emerge.

CREDIT PORTFOLIO MANAGEMENT AND THE VALUE OF DIVERSITY

Like any commercial business, a bank aims to maximize risk-adjusted returns. The theory is well known, but the practical implementation can be challenging and depends on the type of asset. One established approach used by the investment industry to link theory and practice is the work of Grinold and Kahn.[4] Their "Fundamental Law of Active Management" framework was developed to construct and manage investment portfolios against a chosen index benchmark. With some modifications, this can also be applied to credit portfolios.

The law is summarized by this simple formula:
Return per unit of risk = Skill x √ Breadth

Return per unit of risk, *e.g., information ratio, or average return versus benchmark index divided by the standard deviation of those returns.*

Skill *is the correlation between the expected and actual outcomes for individual assets*

Breadth *is the number of independent portfolio positions.*

> For a regulator, the **ideal environment is one where different banks have different skill sets** and make loans accordingly **— encouraging diversification and limiting contagion.**

Actual breadth is the number of independent constituents of the portfolio in a given time period.[5] If all assets move together by identical amounts, then they are not independent and the manager cannot outperform – relative return is only possible if there is some diversity in asset returns. Equally, if asset returns are very diverse, then the manager needs a high level of skill to select the concentrated subset that will outperform.

Diversity is key for differentiated returns as well as for risk management. But problems arise when the apparent diversity is not true diversity. In times of financial stress, correlations between similar types of assets tend to increase; diversity decreases when banks collectively abandon an entire sector that is in trouble, or more generally when there is a broad "flight to quality."

For credit portfolio management, each portfolio can be viewed as having an expected annual return (the exposure weighted average loan rates net of expected defaults), balanced against the risk of the portfolio that is driven by the covariance (correlation and volatility) of the borrower default risks in the portfolio. Ideally, the covariances should be zero (independent exposures and risks), but this can be difficult to measure due to the sparse nature of default data. Bank-sourced data provides monthly ex-ante views of default risk across a large obligor set, opening a new set of calibration possibilities for estimating default covariances.

The same framework can be applied to systemic banking risk. If all banks have similar loan portfolios, then systemic breadth is low. If the probability of default (PD) estimates are similar across loan books, then it is difficult for any one bank to outperform (or underperform) the others. The challenge for banks is that these similarities usually become apparent only after herding has happened.

In this context, diversity is a function of the number of banks that are actively assessing credit risk. The collective wisdom of the bank crowd in estimating PD values can be formalized in the "Diversity Prediction Theorem (DPT)":[6]

Crowd error = Average error – Diversity

Crowd error *is based on the differences between the average (i.e., group) PD prediction and the true PD value.*

Average error *is based on the individual bank prediction differences versus the true value.*

Diversity *is based on the differences between the individual bank predictions and the group prediction.*

A "wise crowd" will have a small crowd error. But if the average crowd estimate is significantly different from the true value, then the crowd error will be large, because the average error is much larger than the diversity. In other words, the diversity of the crowd is small because each bank is anchoring on a similar, erroneous PD value. If the crowd is made up of independent experts, then "anchoring" (the tendency for individuals to base their own estimates on those of others) is less likely and diversity is high.

The key unknown here is the true PD value. Historical data can help, but most systemic problems arise when the historical data is patchy or is not relevant in the current context. Examination of bank-sourced data over time can provide clues about the diversity of views within the banking system; it can also provide a rich set of comparative region and industry data, which can highlight where there are inconsistencies in the collective bank view.

BANK-CONTRIBUTED CONSENSUS CREDIT DATA SET

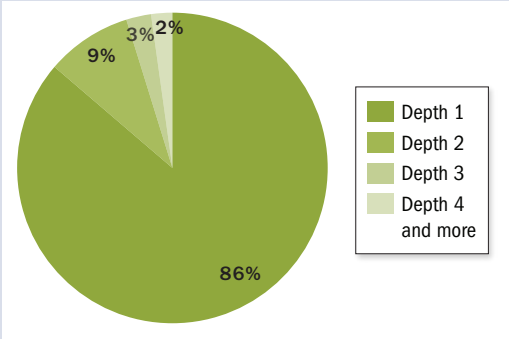
Credit Benchmark collects and publishes heavily anonymized credit estimates based on contributions from 20 banks which use the IRB/advanced approaches to manage and report regulatory capital.

This data set is collected monthly, with history currently available from May 2015. The data is published in the form of single obligor consensus credit estimates (a simple average of credit risk probabilities where there are three or more estimates from different banks), as well as in the form of aggregate indices and transition matrices. It covers sovereigns, corporates, financials, and funds.

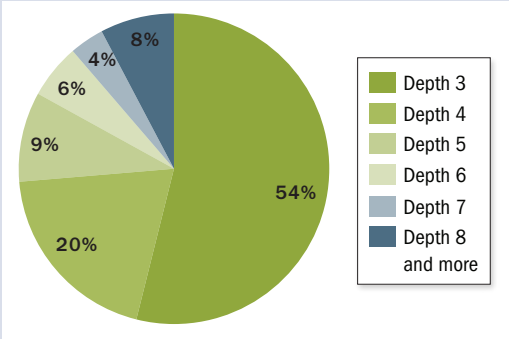
Figure 1 shows the contribution structure of bank-sourced credit data for a sample of U.S. and U.K. corporates.

FIGURE 1: CONTRIBUTION STRUCTURE OF BANK-SOURCED CREDIT DATA (U.S. AND U.K. CORPORATES)

All Mapped



All "Quorate" (i.e., 3 or more contributors)



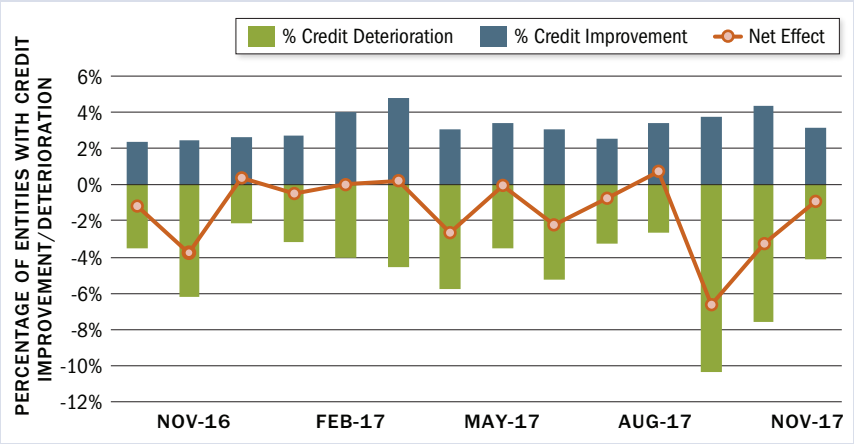
Source: Credit Benchmark

The chart on top shows that most (86%) borrowers in the current mapped data set are clients of only one of the large banks. This reveals a high level of diversity across banks at the individual obligor level. This data set can be used to derive credit trend indices and transition matrices, providing aggregate geographic and industry-level benchmarks.

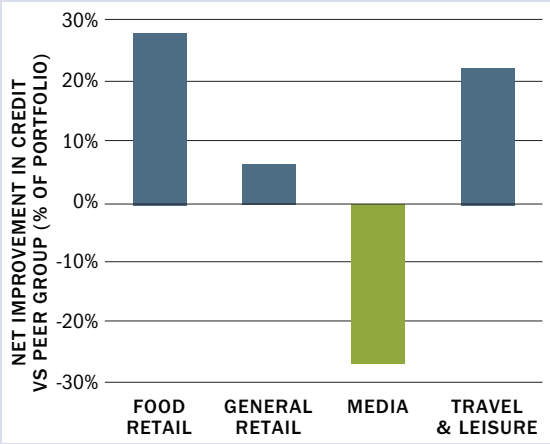
The chart on the bottom shows the "quorate" subset of the mapped data set that can be anonymously published in single name form, because there are three or more contributing banks. Contributing banks use this data to provide like-for-like regional and sector benchmarks as well as for detailed obligor-level comparisons of individual credit risk estimates.

FIGURE 2: BENCHMARKING EXAMPLES

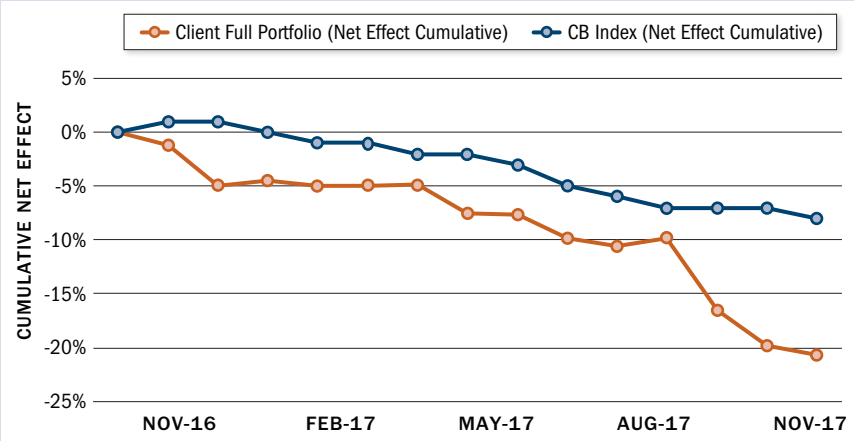
Single Bank Portfolio: Upgrades vs. Downgrades over time



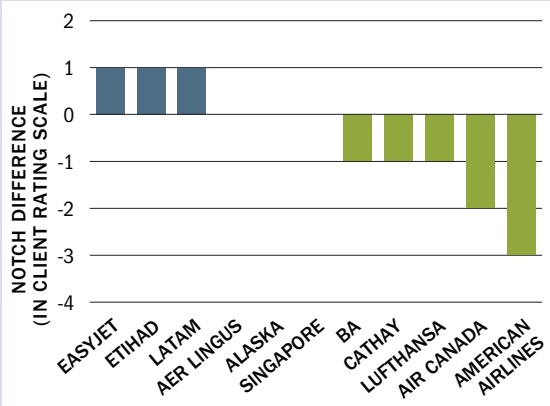
Peer Group Comparison: Net Upgrades by Sector



Single Bank Portfolio: Cumulative Net Effect by Sector



Peer Group Comparison: Single Name Notch Differences, with Peer Converted to Common Rating Scale (Airlines Sector)



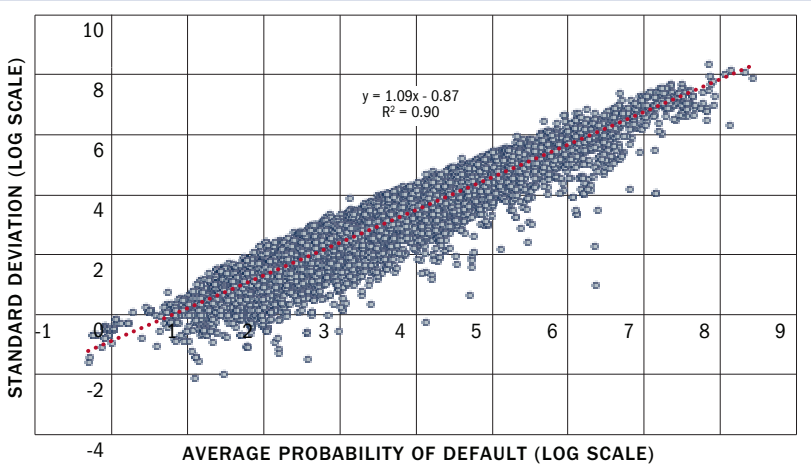
Source: Credit Benchmark

Figure 2 shows some examples of this benchmarking process in practice. This enables contributing banks to understand and assess their position relative to peers as it changes monthly.

These charts are part of a growing set of reports that are designed mainly by the contributing banks for internal use.

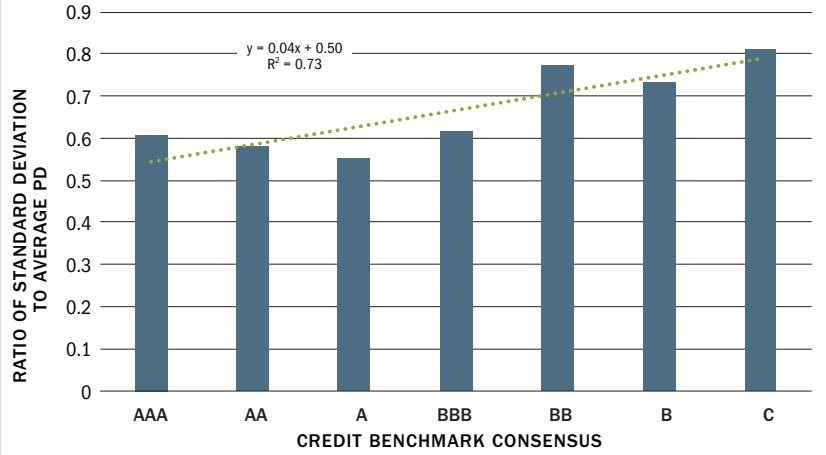
1. **DIVERSITY IN BANK CREDIT ESTIMATES – EVIDENCE FROM THE BANK-SOURCED DATA SET**
   Based on the Credit Benchmark obligor-level data, Figure 3 shows the logarithmic relationship between the (unweighted) average probability of default (X axis) and the standard deviation of bank estimates that make up the average (Y axis).

FIGURE 3: PD DISPERSAL (ALL QUORATE OBLIGORS, NOVEMBER 2017)



Source: Credit Benchmark

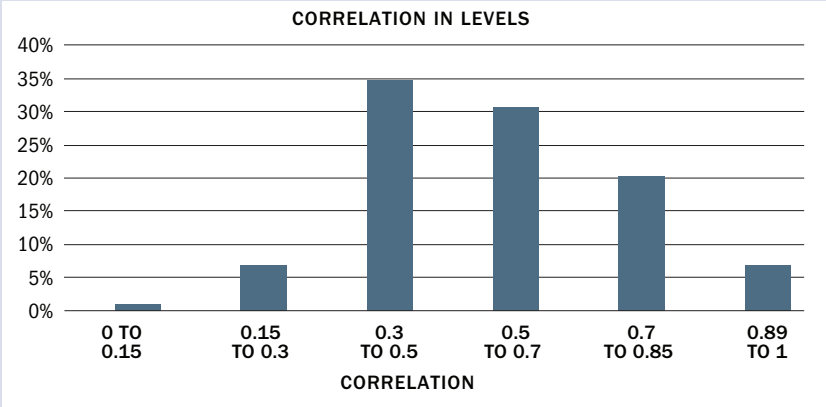
FIGURE 4: RELATIVE STANDARD DEVIATION BY CREDIT CATEGORY (ALL PUBLISHED OBLIGORS)



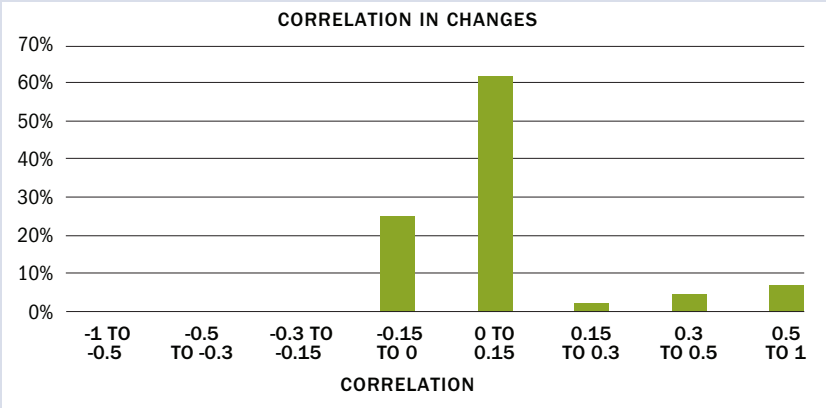
Source: Credit Benchmark

FIGURE 5: CORRELATIONS BETWEEN BANK PD ESTIMATES

Levels (November 2017)



Changes (January 2017 through November 2017)



The relationship is very strong and log-linear, although there are some noticeable individual outliers. This chart suggests that the standard deviation of the contributions – the "diversity" in DPT terms – is a positive function of the average PD level. If the average PD estimates are unbiased predictors of the true default frequency, then the crowd error will be low. This collection of bank experts will represent a "wise crowd."

Figure 4 shows the same data, grouped by credit category and normalized by PD to show the relative standard deviation.

This shows significantly higher uncertainty for non-investment-grade obligors – i.e., the diversity is higher.

A key concern with any contributed data set is the scope for feedback loops, mainly in the form of mean reversion. If every contributing bank has access to a report like that in Figure 2, there is scope for estimates to be revised to reduce outliers; over time, this could lead to reversion to the mean. This process is not a given, however; IRB and advanced-approaches banks use back-tested structural models for PD estimates; changes to these will affect an entire subgroup and will be fully audited. Ad hoc adjustments for single obligors are highly unlikely, and this type of data is as likely to be used to identify opportunities for contrarian positions from either a risk or return perspective.

To assess this, Figure 5 shows the correlations between individual bank PD estimates for fixed sets of obligors.

This shows a moderate to high correlation in PD levels but a low correlation in PD changes. In other words, banks tend to have similar views of the general level of credit risk for an obligor, but changes to those estimates are not synchronized.

Table 1 assesses mean reversion over time, for the period November 2016 to November 2017. This table uses various dispersion metrics, with the rationale that mean reversion across banks will appear in the form of lower dispersal on a like-for-like obligor basis.

TABLE 1: VARIOUS MEASURES OF MEAN REVERSION BASED ON CONTRIBUTIONS TO QUORATE PD AVERAGES

	STANDARD DEVIATION OF CONTRIBUTIONS	RELATIVE STANDARD DEVIATION OF CONTRIBUTIONS	MAXIMUM CONTRIBUTION - MINIMUM CONTRIBUTION	STANDARD DEVIATION OF LOGARITHM OF CONTRIBUTIONS	RELATIVE STANDARD DEVIATION OF LOGARITHM OF CONTRIBUTIONS	MAXIMUM CONTRIBUTION - MINIMUM CONTRIBUTION (LOGARITHMS)	AVERAGE ACROSS ALL MEASURES
Reversion (R)	52.1%	46.1%	46.2%	48.5%	45.2%	42.6%	46.8%
No Change	4.1%	4.1%	14.6%	4.1%	4.1%	14.5%	7.6%
Diversion (D)	43.8%	49.8%	39.2%	47.3%	50.7%	42.8%	45.6%

Source: Credit Benchmark; sample of 3,007 quorate obligors

This table shows that three of the metrics indicate a small majority for contributions that move closer together over time (reversion) and three of the metrics indicate a major that move further apart (diversion).

These results depend on the type of metric. For example, the linear distance between the maximum and minimum contribution values and the unadjusted standard deviation metrics are biased toward reversion. The relative standard deviation metrics and the logarithmic distance between the maximum and the minimum are biased toward diversion. Because PD values follow an approximately logarithmic distribution, these metrics may also reflect some adjustment for bias. Overall, the striking feature here is the dynamic nature of the data – very few of the observations show no change.

CONCLUSION

This article shows how the consensus data sets are being used by the banking industry to develop its own form of dynamic benchmarking at the obligor and credit portfolio levels. Bank-sourced data shows that credit opinions are updated frequently and diverge as often as they converge. The contributed data set also implies that bank views are especially diverse for low-quality obligors. Bank-sourced data also provides portfolio benchmarks for a broad range of sectors and individual companies, including those that are not covered by rating agencies. Within this set of benchmarks, banks can use their individual credit views as a business differentiator.

On a global basis, dynamic credit benchmarks can provide some of the key elements of a systemic risk monitoring infrastructure, and the use of bank-sourced credit data in this role ultimately can support a broader, deeper, and more robust global credit market. While diversity of credit opinions is thus alive and well within the leading global banks, likely with benefits for systemic risk, this diversity continues to face threats from well-intentioned regulation. There is clearly scope for a more open debate between regulators and the banking industry to agree the appropriate level of diversity at the local and global level. ■

> **Dynamic credit benchmarks can provide some of the key elements** of a systemic risk monitoring infrastructure, and the use of bank-sourced credit data in this role can **support a broader, deeper, and more robust global credit market.**

ENDNOTES

1 Source: Credit Benchmark.

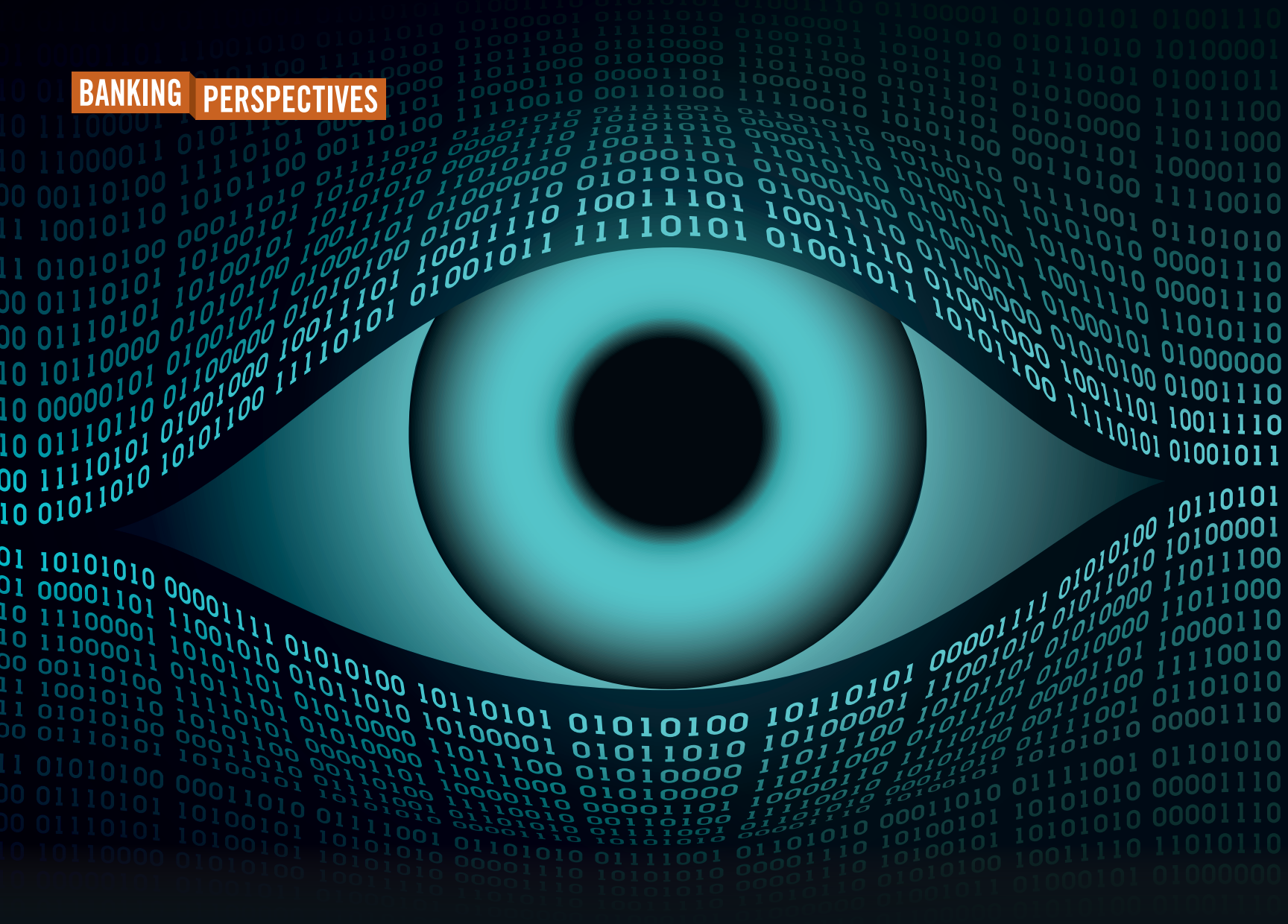
2 TCH Bank Conditions Index, Banking Perspective, Q3 2017, pp. 90-91.

3 https://www.creditbenchmark.com/research/impact-bcbs-proposals-irb-banks

4 Grinold, Richard, and Ronald Kahn. Active Portfolio Management. New York: McGraw-Hill, November 1999 (with reprints).

5 Note that skill also has a time dimension, so the annualized risk-return ratio may reflect the application of skill over multiple short time periods, as is typical of bank trading desks.

6 Hong, Lu, and Scott Page. "Interpreted and Generated Signals." Journal of Economic Theory, 144, no. 5 (September 2009): 2174-2196.



THESE POWERFUL NEW TOOLS ARE CHANGING THE WAY FINANCIAL PRODUCTS AND SERVICES ARE PRODUCED, DELIVERED, AND CONSUMED, BUT THEY COME WITH NEW RISKS.

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THE ROLES OF BIG DATA AND MACHINE LEARNING IN BANK SUPERVISION

INTEREST IN BIG DATA and machine learning recently has been expanding at what seems an exponential rate. Reductions in data storage costs have permitted the development of very large databases (big data), and increases in computer processing power and advancements in computer algorithms have greatly enhanced our ability to identify patterns in economic data using machine learning (ML) techniques. As a result, the combination of big data and ML is likely to transform the way financial services are produced, delivered, and consumed. This transformation would likely result in faster, better, and cheaper financial products and services. Big data and ML also could disrupt the entire financial landscape, affecting a wide variety of financial services, ranging from the way small dollar loans are delivered to the way institutional investors allocate funds.

This ongoing transformation is also likely to have important public policy implications. On the one hand, the use of big data and ML could help financial firms become more efficient and effective in meeting regulatory compliance obligations and make it easier for bank supervisors to monitor compliance. On the other hand, the use of big data and ML could be used by financial firms (both traditional banks and those in the shadow banking sector) to avoid financial regulations and make it more difficult for bank supervisors to monitor regulatory

compliance. Given the potential for these developments to have both positive and negative implications for the attainment of public policy goals, regulators will have an important role to play in overseeing the development of banking firms' ML processes. As a part of their efforts to allow the benefits while limiting the costs of big data and ML, financial regulators have had numerous meetings and conversations with industry practitioners on a variety of issues, for example, with consumers, traditional lenders, and innovative lending platforms to better understand the application of these technologies to retail lending.

"Along with providing customers with better, faster, and cheaper services, BD/ML is being used by **financial firms to improve the effectiveness and reduce the costs of regulatory compliance.**"

Because big data and ML have the potential to change so many parts of banking, they raise a wide variety of policy issues. Many of these public policy concerns relate to consumer protection (fairness, equal opportunities, and privacy), efficiency, and, financial stability.[1] However, as these bigger-picture concerns are being debated by scholars, policymakers, and market participants, practitioners throughout the financial systems around the globe are moving ahead with real-world applications of big data and ML. This article examines some of the issues in implementing these advanced technologies from a supervisory perspective.[2] We will start by highlighting the ways in which these technologies are being applied and then discuss the supervisory aspects and emerging risks.

WIDE VARIETY OF ML USAGES

Both existing financial firms and new entrants have been applying big data and ML (BD/ML) in a variety of areas, such as to provide better products and services to their customers and to lower their own costs. A complete listing of the ML applications is far beyond the scope of this article and, in any case, the list would likely be out of date by the time this gets published, given the dramatic speed with which BD/ML is being applied. However, a partial listing of recent developments will help to highlight the diversity of potential benefits of BD/ML applications.

One of the BD/ML applications that has attracted considerable attention involves its use by lenders in making credit decisions: consumer and small-business lending. Along with the incumbent lenders that have long used advanced analytics, a number of newer FinTech lending platforms have entered this market. Another BD/ML application that has generated considerable interest is "robo advisers," which deploy big data and ML algorithms to deliver investment advice and financial planning services to retail customers. Many incumbent retail investment firms have adopted robo advisers and now rank among the largest providers of these services.

In addition to serving retail customers, big data and ML are starting to play an important role in providing stock recommendations and analysis of incoming information for investors. For example, Goldman Sachs has invested in the ML startup platform Kensho and used its services to provide automated analysis of breaking news, such as from the National Bureau of Labor Statistics, and compile that information into regular summaries. Wells Fargo has its own process, AIERA (artificial intelligent equity research analyst), to issue buy and sell call options on stocks, though the bank's official recommendation still comes from a human.

In the wholesale payments market, Bank of America/Merrill Lynch has a process called Intelligent Receivables Solution, using cutting-edge ML technology to improve its reconciliation of incoming payments and help post its receivables faster. Last but not least, ML algorithms are being used by the legal department at JPMorgan's COIN (Contract Intelligence) to extract 150 relevant attributes from commercial loan agreements.

Along with providing customers with better, faster, and cheaper services, BD/ML is being used by financial firms to improve the effectiveness and reduce the costs of regulatory compliance. Such uses of technology fall under the umbrella of "RegTech" and are being used for compliance with

various laws, such as compliance with the Bank Secrecy Act (BSA) and related anti-money laundering and know-your-customers regulations. Citigroup also uses ML to help meet its stress-testing requirements.

Financial supervisors themselves are also turning to big data and ML to assist in their monitoring responsibilities. For example, the Office of the Comptroller and the Currency and the Federal Reserve use big data in certain aspects of their supervision of large systemically important banks and bank holding companies. The Federal Reserve uses big data in its Comprehensive Capital Analysis and Review (CCAR) stress-testing process. The Federal Reserve System has been collecting monthly data on each individual loan (mortgages, home equity products, and credit cards) originated by CCAR banks. This big data has been used to project CCAR losses for each retail product.

Big data and ML are also being applied by securities market regulators. The Financial Industry Regulatory Authority (FINRA), which tracks potential rule violations of its members, has been using ML to look beyond these set patterns to further understand which situations truly warrant red flags. The U.S. Securities and Exchange Commission is using ML to extract actionable insights from its massive data sets to better enable the agency to regulate market activities for compliance, facilitate automated security registration processes, and assess corporate risk (to identify risk of corporate misconduct from corporate filings and look for unusual patterns in the data to identify possible violations).[3] In Europe, the London Stock Exchange has teamed up with IBM Watson and cybersecurity firm SparkCognition to develop its artificial intelligence (AI)-enhanced market surveillance.

Financial supervisors' interest in big data and ML goes beyond merely ensuring compliance with existing regulations; they seek to understand how these tools are changing the financial system for better and worse. As an example, one of us (Julapa Jagtiani) teamed up with Cathy Lemieux in 2016 and 2017 to study the growth of FinTech lending platforms and their impact on consumers.[4] The team found that the use of big data and ML could make consumers better off by allowing lenders to identify low-risk subprime borrowers (with poor credit scores) to access credit at lower costs.

SUPERVISORY EXPECTATIONS

Given that BD/ML involves some new technologies with potentially transformative implications, one might be tempted to think they necessitate a fundamental rethinking of all aspects of supervision. However, financial firms and their supervisors have long operated in an evolving environment characterized by innovations and changes. As a result, supervisory expectations for financial firms to a large extent have been built on solid principles that have stood the test of time.[5] One core element is that financial institutions are expected to understand the risks being taken by their various operations and to manage these risks in a safe and sound manner. This principle has been supplemented with more-detailed guidance addressing the issues raised by institutions' use of BD/ML technologies.

Financial supervisors' interest in big data and ML goes beyond merely ensuring compliance with existing regulations; they **seek to understand how these tools are changing the financial system for better and worse.**

DATA

Data accuracy and reliability may sound like a broad concept. Given the increasing roles in quantitative supervision in the past decades, data accuracy and reliability play an important role in prudential quantitative modeling and supervision. Banking institutions have long been required to submit data and file various financial reports with their regulators, such as the quarterly Call Reports and FR Y-9 Reports, the annual CRA Reports and, recently, monthly loan-level data on the FR Y-14M report. The development of ML has only made the role of big data more critical to the supervisory process because data is the essential raw input into most types of ML algorithms. Specifically, banking firms are expected to develop rigorous processes around data collection, understand their data and its limitations, appropriately define the variables, and use a representative sample of their data in the ML process. Note that where historical data is used, as it is in a wide

variety of instances, care should be taken to make sure that the historical data (over the years or decades) is accurate.

An unavoidable problem in many cases is working with an incomplete data set. The ideal data set has complete information across the full range of situations where the output from the BD/ML might be applied. However, such complete information is rarely available. Almost all BD/ML applications rely on historical data, and thus there will be limitations in its usefulness if some important conditions are not present in the data set.[6] For example, if the historical data does not include observations from an economic downturn, then any analysis based on the data would have limited usefulness in measuring risk under stress. Another limitation of historical data is that the data could have been censored – that is, by design it excludes certain relevant observations. For example, a historical data set on retail lending may exclude categories of consumers such as higher-risk borrowers. Thus, it is necessary to understand the process by which individuals are included or excluded from the big data set.

> **The development of ML has only made the role of big data more critical** to the supervisory process because data is the **essential raw input into most types of ML algorithms.**

INTERPRETATION OF THE ML PREDICTION

It has been natural for financial firms to enter new markets and to be creative in adopting new innovations. The expectation from banking supervisors consistently has been that prior to entering into new activities, banks need to have conducted an appropriate level of due diligence to fully understand costs/benefits and the risks involved. In addition, banking firms should have layers of control points to ensure that there are appropriate controls and oversights over those applications and technologies. One area of special concern about ML is that its users may not fully understand the limitations of the technology. It would be unreasonable for financial firms to just believe that their AI/ML process is immune to problems simply because it is purported to be "intelligent" or that it can "learn." Two basic problems that experienced users of ML have encountered illustrate some of these ML limitations.

First, it is important to differentiate between correlation and causation. The ML process may identify statistical correlations in the data, while it may not be saying anything about the causality of the relationships. That is, correlation does not necessarily imply causation. Causation comes from theory, and statistics merely confirm those predictions. Understanding causality in the relationship could be achieved, but not without some further steps. For example, one could adopt an "experimental and iterative" procedure where ML results from large samples are tested in the real world in small experiments to determine which ML relationships can be usefully exploited. Second, it is possible that a supervised ML analysis would come up with a model that fits the data too well, a problem called model overfitting. A model that fits the data almost perfectly in the sample (because it fits all of the characteristics, including some random quirks of the data set) will often perform poorly when applied outside of the sample. Financial firms that use these ML algorithms should make sure that they fully understand the analytical process of their supervised ML and be able to provide documentation that supports their modeling choices. Any necessary analytical procedures that they have developed or utilized to mitigate these risks should also be well documented.

ML TRANSPARENCY AND DOCUMENTATION

An important part of evaluating the risks associated with a given procedure is to fully understand how that procedure works. Obtaining such an understanding can be a problem with ML, depending upon which ML algorithms are being used. The way in which some ML algorithms produce their predictions could be easily understood by someone who has a general understanding of multivariate statistics such as the use of logit models for classification. However, the way that most other complex ML algorithms models generate their output may not be readily interpretable even by the person who did the analysis.

Most ML processes used in finance take the form of either supervised or unsupervised learning. For supervised

ML, the data is labeled with the correct answer or outcome (the loan did or did not default). For unsupervised ML, the input data is not clearly labeled. The most common use of unsupervised ML is to detect patterns in the data so that similar observations can be clustered together. The choice of which patterns are most important is determined according to certain algorithm rules, but the resulting clusters are not necessarily the only ways of grouping the data. For many uses, such as when banking firms use these ML algorithms to project CCAR losses or for credit decisions, only supervised ML should be used so that the analytical processes and conclusions are fully transparent and could be documented with step-by-step details. There are, however, cases where the ML process potentially could be allowed to be unsupervised, such as when the algorithms are used to flag potential fraud. In these cases, ordinarily there would be no need for bank supervisors to review and monitor for possible biases in the analysis.

DEEP LEARNING

Even within the family of supervised ML, there are also some algorithms whose analysis is not very transparent. For example, deep learning, such as a deep neural network, uses multiple layers of "neurons" with each layer having potentially hundreds or thousands of cells analyzing the data. This approach can be used for supervised and unsupervised learning. The power of these algorithms has made them one of the most rapidly growing areas of ML. However, while these algorithms could perform extremely well with strong predictive power, they are often referred to as "black boxes" because of users' limited ability to understand how the processes derived their predictions.

This inability to understand how predictions are made can be problematic in a variety of settings. For example, credit decisions based on deep learning ML potentially could contain biases against a protected group under the Fair Lending Act without the lenders being aware of it. This could happen even if the input data (the set of variables entered into the process) does not include a variable for a protected class (such as race, sex, or age), because the other variables that enter the process could serve as a good proxy for status in a protected class. Banking supervisors potentially could get involved at this early development stage to help guide the ML process at lending institutions – to ensure that the firm's compliance could be monitored.

EMERGING RISKS

THIRD-PARTY VENDORS

Many financial institutions rely on outside vendors to take advantage of the promises of AI. Many key AI technologies are available as open source protocols, but identifying and securing training data as well as the computational and technical demands inherent in AI projects, often necessitate the use of outside specialists. There are concerns that vendors may not meet the standards required for banking institutions. Compliance with vendor risk management guidance is an important question all banks must contend with as they explore the potential of AI through an outside vendor. While "there may be value to examining the vendor risk management guidance" in light of recent technological developments,[7] many of the longstanding guidelines for general outsourcing services transcend technological change.

Supervisors have long emphasized that banks' risk management programs should be risk-focused, in that they should provide oversight commensurate with the level of risk presented by the outsourcing arrangements. Newly developed AI tools are not likely to change this supervisory expectation. It follows that "[t]he depth and formality of the service provider risk management program" associated with a bank's use of their AI and ML services "will depend on the criticality, complexity, and number of material business activities being outsourced."[8] For example, the risk management practices employed in the case of an AI tool that flags potential fraud for further investigation by a human will necessarily differ from those needed to safeguard a tool that is used for account-access identity authentication or for final credit decisions. In other words, there will be no one-size-fits-all compliance solution across various AI tools, and, in most cases, the initial compliance questions should be based on pre-existing frameworks that were intentionally crafted to be technologically neutral.

Another concern is that if banks subscribe to the same outside vendors for their AI services, banking firms could be exposed to risks from the same vendors – potentially resulting in increased interconnectedness and could have an impact on the overall stability of the banking system. Further, potential errors in the AI process at one vendor could result in widespread problems across all banks that subscribe to that vendor.

CYBERSECURITY RISK

The growing use of big data and ML only add to the importance of banks' cybersecurity programs. Specifically, big data and ML may create new points of access vulnerability. As in other areas related to cybersecurity, contingency plans for cyberattacks, information sharing, and monitoring of a bank's own system are important elements of a comprehensive cybersecurity program. Moreover, these concerns should apply not only to outside vendors that are processing a bank's data but also to outside sources that supply data used in the bank's ML analysis.

> **There will be no one-size-fits-all compliance solution across the various AI tools**, and, in most cases, the initial compliance questions should be based on pre-existing frameworks that were intentionally **crafted to be technologically neutral.**

CONCLUSION

Big data and ML, powerful new tools currently used at financial firms and by their supervisors, have started to change the way some financial products and services are produced, delivered, and consumed. New types of risks come with these powerful new tools. Bank supervisors would expect users of these tools to follow some well-developed principles of risk management in financial services. Among these principles are that decisions will be made based on accurate and complete data, that financial firms will understand the limitations as well as the strengths of these technologies, and that firms will follow sound principles in managing their risks with third-party vendors. These developments may also increase various types of cyberrisk, thus increasing the importance of robust cybersecurity programs at financial institutions.

The supervisory process has long been adapting to the new financial landscapes and will continue to do so, while maintaining the same goals of safety and soundness of the financial systems and consumer protection. Ideally, the use of big data and ML would allow financial firms to provide superior products and services to their customers without sacrificing banking safety and soundness and overall financial stability. ■

ENDNOTES

1 The financial stability issues raised by AI and ML are discussed by the Financial Stability Board: "Artificial intelligence and machine learning in financial services, market developments and financial stability implications." November 1, 2017: http://www.fsb.org/wp-content/uploads/P011117.pdf. See also Larry D. Wall (2017), "Some Financial Regulatory Implications of Artificial Intelligence." Federal Reserve Bank of Atlanta Working Paper, September 17, 2017. https://www.philadelphiafed.org/-/media/bank-resources/supervision-and-regulation/events/2017/fintech/resources/some-financial-regulatory-implications-of-artificial-intelligence.pdf?la=en

2 There are other deep issues around the use of big data and ML that we are not addressing in this paper, such as ownership of the data, market structure, and financial stability implications of widespread adoption of ML—especially in financial markets where machines may be trading with other machines.

3 The SEC process is not fully automated as it relies on human expertise and evaluations to train the machine and uses the ML results to inform enforcement and compliance. Bauguess notes that the SEC is using ML only to flag activities that might violate existing regulations and not to be a "robocop" that imposes penalties without further investigation by people. See Scott W. Bauguess (2017), "The Role of Big Data, Machine Learning, and AI in Assessing Risks: A Regulatory Perspective." June 21, 2017. https://www.sec.gov/news/speech/bauguess-big-data-ai

4 See Julapa Jagtiani and Cathy Lemieux (2016), "Small Business Lending After the Financial Crisis: A New Competitive Landscape for Community Banks," Economic Perspectives, Federal Reserve Bank of Chicago, Number 3. Also, Julapa Jagtiani and Cathy Lemieux (2017), "Fintech Lending: Financial Inclusion, Risk Pricing, and Alternative Information," Federal Reserve Bank of Philadelphia, Research Working Paper RWP #17-17.

5 This is not to deny, however, that BD/ML may raise new issues. For example, the issues surrounding consumers' control over their own data, including their ability to ask one financial services provider to share that data with another provider.

6 A ML technique called reinforcement learning does not necessarily rely on historical data. For example, when applied to learning games such as Go, it is possible for the machines to generate their own training data by playing against each other.

7 Brainard, Lael. "Where Do Banks Fit in the Fintech Stack?" April 28, 2017. https://www.federalreserve.gov/newsevents/speech/files/brainard20170428a.pdf

8 See Board of Governors of the Federal Reserve System: Division of Banking Supervision & Regulation, Division of Consumer & Community Affairs, Guidance on Managing Outsourcing Risk (Dec. 5, 2013), https://www.federalreserve.gov/supervisionreg/srletters/sr1319a1.pdf; Office of the Comptroller of the Currency, Risk Management (Oct. 30, 2013), https://www.occ.gov/news-issuances/bulletins/2013/bulletin-2013-29.html ("A bank's use of third parties does not diminish the responsibility of its board of directors and senior management to ensure that the activity is performed in a safe and sound manner and in compliance with applicable laws."); Federal Deposit Insurance Corporation, Guidance for Managing Third-Party Risk (June 6, 2008), https://www.fdic.gov/news/news/financial/2008/fil08044.html.

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CRISIS MANAGEMENT IN THE BANKING INDUSTRY

THERE IS NO SUBSTITUTE FOR PREPARATION TO MEET CHALLENGES AND CRISES.

BY MARY JO WHITE AND DAVID L. PORTILLA
DEBEVOISE & PLIMPTON

TODAY, ALL INSTITUTIONS FACE a range of potential crises, including significant accounting and financial fraud issues, allegations over a range of matters, such as sexual abuse and misconduct by senior executives, discrimination claims, hacking of sensitive customer information, global Foreign Corrupt Practices Act problems, and mistreatment or defrauding of customers and clients, to name just a few. For banking organizations, these issues can be even more serious than for other institutions because of regulatory expectations, the political focus on the banking sector, and the special role that banks play in our day-to-day lives.

The skills needed to successfully manage particular crises will vary, and decisions made at the outset, including choosing the right legal and public relations advisers, may dictate in large part whether the crisis is contained or spirals out of control. If a crisis is not handled properly and quickly, regulatory and reputational risks can cascade, potentially leading to damage to reputation, stock price, and financial well-being, and may even endanger the existence of the organization.

This article reviews key considerations for crisis response, in particular: regulatory expectations relevant to crisis management, the heightened role of trust and reputation for a banking organization facing a crisis,

considerations for whether to form a special committee of the board to respond to a crisis, and practical principles to help manage a crisis effectively.

REGULATORY EXPECTATIONS AND CRISIS MANAGEMENT

While crisis management is an important issue for all companies, the boards of banking organizations face increased pressure that raises the stakes when a crisis hits. The increased pressure primarily emanates from the overlay of regulatory expectations that apply to boards of banking organizations and the fact that reputation and customer trust are at the core of the banking industry. Put a different way, although the board of any company needs to thoughtfully work to fulfill the standard fiduciary duties of care and loyalty, the boards of banking organizations face additional expectations from regulators and their clients, customers, and counterparties.

> **Decisions made at the outset,** including choosing the right legal and public relations advisers, **may dictate in large part whether the crisis is contained or spirals out of control.**

For example, the Office of the Comptroller of the Currency (OCC) has adopted "heightened standards" for the boards of large institutions that the agency regulates. Under the OCC's expectations, a board is expected to actively oversee risk-taking activities and hold management accountable for adhering to the firm's risk governance framework. In addition, the Federal Reserve Board (FRB) in August 2017 proposed guidance setting out expectations for "effective" boards of large institutions that it regulates. The FRB's proposed guidance outlines five key attributes that boards will be expected to possess.

Each of the attributes touches on issues that arise in responding to a crisis. For example, the FRB's proposed guidance expects boards to provide clear, aligned, and consistent direction on strategy and risk tolerance, both issues that can contribute to a crisis and may be necessary to examine when the underlying causes of a crisis are evaluated. A board also is expected to make sure that it stays informed and holds senior management accountable. These, too, can be key points when responding to a crisis. Further, the proposed guidance provides that boards should support the independence and stature of independent risk management (including compliance) and internal audit and work to maintain a board composition and governance structure that supports the needs of the firm. Again, each of these issues can require careful examination when evaluating what caused a crisis and how to respond.

In summary, beyond the normal corporate law fiduciary duties that all companies face, banking regulators expect the boards of institutions they regulate to be highly focused on issues that are directly relevant when a crisis arises, in terms of evaluating the causes of the crisis, how to respond in the near term, and whether any changes to the organization should be made in the longer term.

HEIGHTENED ROLE OF TRUST AND REPUTATION

In addition to regulatory expectations, nearly all crises can cause a company to lose the trust of its important customers, clients, and counterparties. This risk is even more pronounced for banking organizations, whose business model and marketing are built in large part on public trust and important customer and other relationships. At one level, a banking organization's most important task when responding to a crisis is to avoid a cascading loss of trust and relationships, with not only its regulators but also its clients, customers, and counterparties. Erosion of trust and relationships can be precipitous and quickly turn an otherwise isolated incident into an existential crisis for the organization.

CONSIDER A SPECIAL COMMITTEE

One decision that may be especially important when a potential crisis arises is whether a special committee of the board is necessary to investigate and determine the appropriate response. These types of committees are established on an if-and-as-needed basis through board resolutions that provide for their membership, resources, responsibilities, and authority.

At the outset, it is important to note that not all crises require the use of a special committee. They typically are needed only when there is suspected internal wrongdoing at a company's management level. Even in these cases, some internal investigations may be handled by the company's internal counsel. However, when there are indications of serious corporate wrongdoing, it is vital that the board thoughtfully consider appointing a special independent committee to handle the investigation. This is especially true when any corporate executives or directors are alleged to have participated in any misconduct, the suspected misconduct relates to financial statements or false or misleading statements in public disclosures, the misconduct otherwise could have material effects on the company, the misconduct involves bribery of foreign officials, or there is a possibility for regulatory sanctions. If the board determines a special committee is necessary, several key attributes should be carefully considered.

First, the special committee must be credible. Credibility will be built in a number of ways, including by adhering to the attributes noted below. In the end, however, credibility is the most important attribute, as it will dictate whether the committee's work is viewed as trustworthy by regulators, law enforcement, and other interested constituents.

Second, the special committee should have a mandate to be comprehensive; it should be given the authority and resources to fully pursue the investigation and thoroughly carry out its charge. It is important that there not be any limitations placed on the committee that could lead regulators, law enforcement, or others to question the committee's thoroughness and, as noted, its credibility in pursuing unbiased answers.

Third, to be comprehensive, the special committee must be independent and bring objectivity to its task. To meet this standard, the committee's members should not have conflicts of interest with respect to the bank or the matter being addressed. Otherwise, the committee's process and conclusions could be questioned (i.e., seen as not credible), which would obviate the goal of forming the committee.

Fourth, the special committee's process should be well documented and explained. Credibility requires that interested parties be able to understand what the committee considered and how it conducted its process. This type of transparency adds to credibility and supports the committee's role in providing an objective, independent view of a sensitive matter.

> **Although the board of any company needs to thoughtfully work** to fulfill the standard fiduciary duties of care and loyalty, the boards of **banking organizations face additional expectations.**

Fifth, the special committee should work as quickly as possible. As discussed below, an institution that faces a crisis generally should respond as promptly as practical. The committee should have the resources and authority to move swiftly to conduct its work.

PRACTICAL PRINCIPLES FOR RESPONDING TO A CRISIS

Crises that threaten a company's brand, reputation, and even its existence are not new phenomena, but they have certainly proliferated and unquestionably move much more quickly as communication technology has developed. Today's crisis managers face incidents captured by smartphone cameras that go viral on YouTube and other forums, 24/7 media coverage, and the politicization of many issues that in the past could be managed without the added attention and publicity of congressional hearings, stump speech tirades, and presidential tweets. Hence, there is a heightened need today to be well prepared for a potential crisis and to move quickly, decisively, and thoughtfully when a significant crisis does occur. The following practical principles may be useful as basic guidelines to follow in the event a crisis occurs.

1. First and foremost, it is imperative to make sure the company has assembled the right crisis response team, including the outside advisers that it needs. In a crisis, this group typically will include in-house and outside counsel and representatives from the bank's investor and

public relations, business operations, government affairs, treasury, finance, and compliance divisions. Institutions should take into account the particular experience and expertise that is needed to successfully manage the kind of crisis it is facing. The choice of advisers must not be driven by familiarity, convenience, or (apparent) cost. Failure to put in place the right team with appropriate resources at the outset will have a ripple effect on the decisions and events that follow, and may dramatically increase the ultimate costs and burdens on the company.

> **"The buck stops here,"** irrespective of personal involvement or the lack thereof. It is essential **not to minimize the issue or blame customers or other parties.**

2. Keep in mind all of the various constituents you need to address during a crisis (the public, regulators, auditors, the board, shareholders, employees, analysts, the press, Congress, state authorities, lenders, customers, counterparties, vendors, etc.). Formulate a plan for each, including with regard to the requisite communications. Consider that communications with respect to one constituent will have implications for others (e.g., damaging congressional testimony may undercut the company's position in court and with enforcement agencies, and it could harm the company's reputation with customers, clients, counterparties, and shareholders).

3. Have your regulators in mind and communicate with them. Let them know what has happened, and make it clear to them and the public that you are actively addressing the issue. Try to coordinate your response to regulatory investigations and align their resolutions if you can. Be careful not to make statements claiming that no wrongdoing occurred or that disparage the government's investigation. This rule applies even if you think that the company or individuals currently in the crosshairs ultimately will be exonerated.

4. Be, and appear to be, promptly responsive to the crisis. In some cases, this will require the chief executive to be on-site where the crisis is centered or at least to speak personally about it. All board members of a company facing significant crises should be present and prepared at contentious annual shareholder meetings. Listen to your lawyers, but don't let them impede what you need to do and say at the outset of a crisis. That said, it is also important not to overreact or make a statement about every over-the-top comment or online post. It is important that neither the CEO nor other company spokespeople speak publicly about the potential crisis until the institution has determined what its message will be. Do your best to control leaks and careless disclosures by well-meaning employees. Listen to the advice of your public relations consultants to avoid giving legs to a story that would die quickly on its own.

5. Commit to the public and regulators to get to the bottom of the issue to determine its root cause and to engage in the appropriate remediation to prevent a recurrence (see the earlier discussion about forming a special committee of the board). However, be careful to avoid overpromising by pledging to give full, factual updates by a certain date. The company will need flexibility with respect to the content and timing of disclosures. Also, avoid promising something you cannot deliver (e.g., "after the enhancements we have made, there will never be another data breach").

6. If continuing customer harm is involved, make addressing that paramount. Make sure that you immediately stop or correct the problematic practice that continues to cause or risk harm. In these situations, it is a grave mistake to perform cost-benefit analyses. Such analyses will likely be Exhibit A in any future proceedings and congressional hearings.

7. Speak with one voice on the crisis, take responsibility, and apologize early, often, sincerely,

and from the top. Remember, "the buck stops here," irrespective of personal involvement or the lack thereof. It is essential not to minimize the issue or blame customers or other parties. Emphasize that you are proactively figuring out the scope of the problem and will take appropriate action in response. The principle that "the customer is always right" must govern. At the same time, don't concede legal liability immediately. There is a crucial distinction between acknowledging responsibility and conceding liability.

8. Focus on what can be promptly remediated and quickly develop a plan for longer-term remediation (again, in this regard, a special committee may be helpful). The remediation plan should be discussed with relevant regulators, keeping in mind their supervisory expectations. Also, be sure to think beyond what is quantitatively material. A relatively small number of clients who experienced harm could nevertheless present a compelling story that other clients and the public may view as important. Keep in mind that the actual customer harm is not always an indicator of the impact or significance of the misconduct.

9. Take decisive actions with respect to those allegedly responsible and make it clear publicly and internally that you have done so. Think beyond those directly responsible to consider those who had oversight responsibilities. If senior executives or other key employees are implicated in wrongdoing, do not spare them when meting out deserved discipline. Banks may consider suspending bonuses or other incentives until it is clear who is directly and indirectly responsible.

10. Attend to running your business and to helping your employees focus on their jobs. One pillar of good crisis management is to ensure that you continue to address all of the demands and challenges of your enterprise that are necessary for its present and future well-being. Banking organizations' greatest resources are often their people, and maintaining company morale during a crisis should always be a focus and priority. Those people and their morale are key for maintaining trust with clients, customers, and counterparties. Even a significant crisis must not be allowed to overshadow your day-to-day responsibility to run the company. You may need to insulate part of your management team in order to effectively manage both. Don't let the lawyers who are (rightly) focused on government investigations and shareholder suits, for example, impede you from being in front of customers, getting your financials done promptly, talking to analysts, and doing all of the other things that are necessary for the long-term success of the business.

Banking organizations' greatest resources are often their people, and maintaining company morale during a crisis **should always be a focus and priority.**

CONCLUSION

These are the cardinal principles of optimal response in most crisis situations. Although many of them may seem obvious, it is stunning how often they are not followed, sometimes as a result of knee-jerk reactions, the absence of a crisis management team equipped with a comprehensive plan with clear lines of execution, or naiveté about what is required to successfully navigate a crisis today and what regulators expect. There is also no substitute for preparation to meet and anticipate challenges and crises.

Market glitches, data service interruptions, and other unanticipated events inevitably will occur, and having an identified group ready to spring into action, as well as templates of appropriate public communications, will make the initial response quicker and more effective. Having open lines of communication with key regulators also is important; calling on key regulators for the first time when a crisis hits is not ideal. Planning and forethought also will help ensure that the expectations that regulators put on the boards of banking organizations are satisfied. Crisis management, before the crisis hits, should be basic training for all executives, boards, and key employees. ■

THE RESURGENCE OF DEBT AS CAPITAL

DEBT, SCORNED AS A PART OF THE CAPITAL STRUCTURE OF A BANKING ORGANIZATION BY THE COLLINS AMENDMENT, HAS THE POTENTIAL TO BE COST EFFICIENT, ABSORB LOSSES, AND FOSTER MARKET DISCIPLINE. IT IS STAGING A COMEBACK BOTH IN THE UNITED STATES AND ABROAD.

BY OLIVER IRELAND, JEREMY JENNINGS-MARES, AND ANNA T. PINEDO
MORRISON & FOERSTER

BEFORE THE FINANCIAL CRISIS, the Federal Reserve Board (FRB) had explored the use of hybrid capital instruments at the bank holding company (BHC) level that combined the cost efficiency (including favorable tax treatment) of debt with loss-absorbing capacity. These instruments inspired little investor confidence as an indicator of a bank's condition or "going concern capital" during the crisis and were precluded from use in meeting existing capital requirements by the Collins Amendment in section 171 of the Dodd-Frank Act.

Nevertheless, in 2015, the Financial Stability Board (FSB) adopted its Final Principles on Loss-absorbing and Recapitalization of G-SIBs in Resolution, which established a total loss-absorbing capacity, or TLAC, requirement in excess of otherwise applicable capital requirements.[1] The additional loss-absorbing capacity requirement, over and above otherwise applicable capital requirements, can be met with debt instruments, excluding deposits, secured debt, derivatives, and debt instruments with derivative-like features. In implementing these principles in the United States, the FRB went a step further by not only allowing debt instruments that meet specified terms to count toward TLAC, but also requiring that a specified portion of TLAC be met by eligible debt securities. Under the FSB Principles and the FRB's implementation of those principles, TLAC may absorb losses directly or may be converted into equity in a new banking organization created to replace a failed global systemically important bank (G-SIB).

The idea of requiring banking organizations to issue debt instruments did not originate with TLAC. The Feasibility and Desirability of Mandatory Subordinated Debt was the subject of a report to Congress in December 2000, required pursuant to Section 108 of the Gramm-Leach-Bliley Act.[2] One purpose of this report was to assess whether such a requirement would bring market forces and market discipline to bear on the operation of, and the assessment of the viability of, large banking organizations, the failure of which could have adverse effects on economic conditions or financial stability. Although the report assessed a number of potential objectives for issuing subordinated debt, the first objective was to determine whether the subordinated debt issuance costs would provide an incentive for the issuing entity to refrain from taking excessive risks because market perceptions of risk would be reflected in the price of the issuer's debt securities. Another objective was to increase the size of the issuer's financial cushion, or loss-absorbing capacity, to facilitate resolution.

Debt issued to meet the FSB's requirements implemented into national law by foreign jurisdictions for G-SIBs and the FRB's TLAC requirements for U.S. domestic banking organizations that are G-SIBs and intermediate holding companies of foreign G-SIBs will provide loss-absorbing capacity – that is, a cushion – for resolution purposes. However, the debt will be subject to differences in the triggers that would result in the debt being used to absorb losses. These differences do not impair the debt's ability to absorb losses under the respective resolution schemes or to provide that loss-absorbing capacity more economically than might be the case for other capital instruments. However, the differences do limit the utility of using market rates for TLAC debt as a tool to assess market perceptions of the condition of individual banking organizations issuing the debt.

EU RESOLUTION SCHEME AND THE ROLE OF LOSS ABSORPTION

Under the EU's Bank Recovery and Resolution Directive (BRRD), which applies to all EU banks, not just G-SIBs, all liabilities of the bank in resolution can

be written down or converted to capital ("bailed in"), unless they are excluded from bail-in. Liabilities can be excluded either by virtue of being a type of liability that is expressly excluded under BRRD, or by virtue of being excluded as a result of the exercise of the resolution authority's discretion. Expressly excluded liabilities include but are not limited to deposits subject to a guarantee scheme, secured liabilities, liabilities arising from a fiduciary relationship, liabilities to EU credit institutions or investment firms with an original maturity of less than seven days, and short-term liabilities owed to payment or securities settlement systems or their participants.

Resolution authorities are provided with discretion in exceptional circumstances to exclude, in whole or in part, certain liabilities from bail-in, in circumstances under which, for example, it is not possible to bail in that liability within a reasonable time, the exclusion is strictly necessary and proportionate to achieve continuity of critical functions and core business lines, or the exclusion is strictly necessary and proportionate to avoid causing widespread contagion that would severely disrupt the financial markets. To the extent the exercise of a discretionary exclusion results in the need to increase the extent of the bail-in applied to liabilities, such an increase is permitted, so long as it does not breach the principle that no creditor will be worse off than the creditor would have been in liquidation (referred to as the NCWOL Principle). If such a discretionary exclusion would require a contribution from the relevant member state's resolution financing arrangement, the European Commission must be notified and the commission has the power to prohibit or require amendments to the proposed exclusion.

In a bank failure, either before or in conjunction with any resolution action (including the use of the bail-in tool), the resolution authority may write down or convert to equity the bank's regulatory capital instruments. Such action is permitted if the bank is failing or likely to fail and there is no reasonable prospect that any action other than a write-down or conversion of regulatory capital would prevent failure. In this circumstance, Common Equity Tier 1 capital (CET1) is written down and in the case of shares, canceled or transferred or, if the resolution valuation demonstrates that the bank has a net positive value, diluted by Additional Tier 1 capital (AT1) and/or Tier 2 (T2) capital being converted into common shares. Once bail-in action is taken, either after or in conjunction with the write-down or conversion of capital instruments, any CET1 capital (including common shares issued pursuant to a write-down or conversion) will first be written down, followed by any remaining AT1 capital by the extent necessary, and then followed by any remaining T2 capital as needed. If further bail-in is required, this must be satisfied first by writing down non-T2 subordinated debt as needed, and thereafter, other liabilities eligible for bail-in, provided that any contingent convertible bonds or other instruments containing contractual loss-absorption language have absorbed losses. In bailing in unsecured, unsubordinated eligible liabilities, the creditor insolvency hierarchy that would apply on a normal winding-up must be respected.

> **TLAC may absorb losses directly** or may be converted into equity in a new banking organization created **to replace a failed global systemically important bank.**

As discussed further below, a bail-in action can only insulate the public sector from the cost of a bank failure to the extent that the bank has sufficient total loss-absorbing capacity. Generally, under the FSB Principles, which are implemented into national legislation in the EU, G-SIBs are subject to a TLAC requirement that equals the sum of a G-SIB's resolution entity's (1) T1 and T2 regulatory capital instruments that are in the form of debt, plus (2) other eligible TLAC that is not regulatory capital, and is equal to or greater than 33% of the G-SIB's minimum TLAC requirement. Regulatory capital instruments may count toward the minimum TLAC requirement, subject to certain conditions. Eligible TLAC must contain a contractual trigger or be subject to a statutory mechanism that permits the resolution authority to write down or convert it to equity. There is no separate eligible long-term debt requirement as part of the FSB Principles – although, as we mention below, under the BRRD, each EU bank (not just G-SIBs) must hold a certain amount of MREL (minimum requirement for own funds and eligible liabilities), as prescribed on a bank-by-bank basis by its resolution authority.

> **In a bank failure,** either before or in conjunction with any resolution action, the resolution authority may write down or **convert to equity the bank's regulatory capital instruments.**

U.S. APPROACH TO RESOLUTION AND THE ROLE OF LOSS ABSORPTION

In December 2013, the FDIC requested comment on the single point of entry (SPOE) strategy that is based, at least in part, on its experience in dealing with failed banks. The proposed U.S. SPOE approach would require that only the BHC of the failed G-SIB be placed in receivership. Title II of the Dodd-Frank Act requires that the BHC be liquidated with losses imposed on the stockholders and creditors of the BHC. The stockholders of the BHC would bear the first losses, and the claims of holders of the BHC's long-term debt obligations would be converted into equity that would be used to capitalize the successor entity.

This approach assumes that the BHC truly functions, in the FRB's terms, as "a clean holding company" in which business is conducted by the entity through its operating subsidiaries. The Federal Deposit Insurance Corporation generally is expected to treat creditors of the failed entity within the same class and priority of claim similarly. However, the FDIC can favor creditors, such as vendors, that provide critical services. Title II of the Dodd-Frank Act sets out the following priority for claims: administrative costs of the receiver, amounts owed to the government; employee salaries and benefits; general or senior unsecured liabilities, subordinated debt obligations, salaries for directors and officers, and shareholder claims. To date, a statutory mechanism for bail-in or conversion to equity has not been adopted, so there are no detailed mechanisms or principles like those set out in the BRRD.

The SPOE strategy contemplates that the assets of the failed holding company, including ownership interests in and intercompany loans to the holding company's operating subsidiaries, and these operating subsidiaries would be transferred to a bridge financial company established by the FDIC. The bridge financial company would be capitalized first by the bail-in of outstanding long-term debt of the failed BHC, which presumes that sufficient long-term unsecured debt would be outstanding at the holding company level. As noted above, in order to address this, the FRB's final rules create a total of loss-absorbing debt and equity instruments at the top-tier holding company. This is the total TLAC number, which is the sum of T1 capital issued directly by the G-SIB BHC and the amount of eligible external long-term debt (LTD) together with the G-SIB surcharge and applicable regulatory capital buffers.

This distinct eligible LTD requirement is intended to facilitate the SPOE resolution approach. Given the need for simplicity and efficiency in a resolution, the eligible LTD requirement must be met by plain-vanilla debt, which is paid-in, issued directly by the covered BHC, is

unsecured, is governed by U.S. law, and has a maturity of greater than one year from the issuance date. The bridge financial company, which would be the new holding company for the failed G-SIBs operating subsidiaries, would be capitalized by the bail-in of the eligible external LTD of the failed BHC.

MULTIPLE INSTRUMENTS, DIFFERING TERMS

The FSB has stated that it expects at least 33% of a G-SIB's minimum TLAC requirement to be met in the form of debt regulatory capital instruments (because, for EU banks, certain instruments that are debt securities for accounting purposes still qualify as regulatory capital) and other TLAC-eligible liabilities that are not regulatory capital. For example, for European G-SIBs, contingent capital instruments that qualify as additional Tier 1 and Tier 2 capital can satisfy this category of TLAC if the contingent capital instruments are subordinated to all those liabilities that the FSB expressly excludes from TLAC eligibility. Generally, in the case of a contingent capital instrument, the conversion to equity or the write-down of principal occurs before the failing financial institution enters resolution, rather than in a bail-in on failure of the institution. EU banks, not just G-SIBs, are also mandated by BRRD to hold a certain amount of MREL. The amount of MREL will consist of a loss-absorption amount (which as a baseline default will equal its prudential capital requirements, including Pillar 2 and the combined buffers) plus an amount required to recapitalize the bank in order to ensure both that it meets the conditions for authorization (its licensing requirement), with a minimum of 8% of its total risk exposure amount, and that it can ensure market confidence following resolution.

Like the FSB's TLAC requirement, the MREL obligations can be satisfied with contingent capital instruments. The eligibility requirements for a liability to count toward MREL are similar to the eligibility requirements for TLAC. However, MREL requirements are set on a bank-by-bank basis, and are set as a percentage of the bank's non-risk-weighted assets. Currently, there are a number of differences in the features of liabilities that are excluded from MREL eligibility, compared to those excluded from TLAC eligibility, as well as differences relating to the subordination of MREL (to liabilities that are excluded from MREL eligibility). However, it is expected that once certain harmonizing legislative amendments are made, there should be no substantive differences between TLAC and MREL for EU G-SIBs.

> **A bail-in action can only insulate** the public sector from the cost of a bank failure to **the extent that the bank has sufficient total loss-absorbing capacity.**

Where subordination of MREL is required, subordination may be achieved by contractual language, by statutory subordination, or by structural subordination. As bailing in some classes of unsubordinated senior liabilities but not others increases the risk of breaching the NCWOL Principle, it became clear that there is a need for banks to satisfy a significant portion of their MREL requirements with liabilities that rank junior in insolvency to ordinary senior unsecured liabilities but senior in insolvency to other subordinated debt liabilities (so-called "senior non-preferred" or "Tier 3" liabilities).

Several individual member states (such as France and Germany) have already amended their national insolvency laws to allow for just such a new class of liabilities, albeit with different features and with different results for TLAC eligibility purposes. The United Kingdom had no need to introduce legislation, because U.K. banks rely on structural subordination rather than statutory subordination. In an effort to ensure that banks in all member states would have at least one TLAC-eligible option for senior nonpreferred debt, the European Commission introduced a new directive, the Insolvency Hierarchy Directive, which should come into force in the EU in early 2018. This new directive will require member states to amend

the creditor hierarchy in their national insolvency laws to allow for a new class of senior nonpreferred debt, which must have an initial maturity of at least one year, must have no derivative features, and whose contractual documentation must specifically refer to its ranking in insolvency.

> The FSB has stated that it expects at least **33% of a G-SIB's minimum TLAC requirement to be met in the form of debt regulatory capital instruments** and other TLAC-eligible liabilities that are not regulatory capital.

CONCLUSION

Additional loss-absorbing capacity can be achieved through a variety of instruments with varying terms, and cost efficiency can likewise be achieved through different instruments, including instruments having different triggers that may result in that debt being used to absorb losses ahead of other liabilities or triggers that result in conversion into equity. However, the use of such instruments as tools to compare the market's assessment of the issuer's credit risk prior to a resolution event is limited.

As set forth above, the post-crisis regulatory framework now includes, in the case of European banks, debt instruments that may count for regulatory capital purposes. These may include contingent capital instruments, the principal of which may be written down or which may convert to equity before the bank issuer's failure or resolution. Likewise, these also include debt securities that convert into equity at the point of nonviability, and certain of these instruments, depending on the jurisdiction, may allow for regulatory discretion with regard to the non-viability assessment. Even in the case of a "plain-vanilla" debt security that for U.S. purposes would constitute eligible LTD, a holder might be subject to a different creditor hierarchy and different outcome in a resolution. The differences in approaches to resolution across EU jurisdictions, when added to the differences in the features of TLAC instruments, are likely to preclude the development of risk-sensitive pricing differences that would assist supervisors in assessing the credit quality of the issuers in anything but the most extreme circumstances. The lack of comparability in EU jurisdictions is compounded by differences between the EU requirements and the U.S. requirements, including that the U.S. bail-in process, which is articulated in policy, is not built into law as is bail-in under the BRRD.

We believe that for the foreseeable future this result is inevitable given that each jurisdiction will adopt its own regulations to implement Basel and other internationally agreed-upon standards. It is also probably inevitable to the extent that supervisors retain discretion in triggering the resolution process. Certainly, it is unlikely that pricing will accurately reflect risk when investors cannot be expected to understand the differences among jurisdictions, differences among eligibility criteria and requirements, etc. Nevertheless, given the increases in T1 capital, which is viewed by investors as an indicator of the viability of a banking organization as a going concern, the differences in the terms and triggers for debt that provides additional loss-absorbing capacity in the event of a failure and the lack of comparability should not impair the role of T1 capital and should help supervisors to limit the market disruption resulting from the failure of a banking organization. ■

ENDNOTES

1 See "Principles on Loss-absorbing and Recapitalization Capacity of G-SIBs in Resolution and Total Loss-absorbing Capacity (TLAC) Term Sheet," available at http://www.fsb.org/wp-content/uploads/TLAC-Principles-and-Term-Sheet-for-publication-final.pdf

2 See "The Feasibility and Desirability of Mandatory Subordinated Debt," available at https://www.federalreserve.gov/boarddocs/rptcongress/debt/subord_debt_2000.pdf. Under the FRB's implementation of TLAC, TLAC debt may or may not be subordinated to other unsecured liabilities.

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THE FUTURE OF BANKING

REPORTS OF THE DEMISE OF FINANCIAL INSTITUTIONS ARE GREATLY EXAGGERATED. AS THEIR RICH HISTORY HAS SHOWN, BANKS HAVE ALWAYS USED NEW TECHNOLOGIES TO IMPROVE THEIR BUSINESSES AND PROVIDE BROADER REACH FOR THEIR CUSTOMERS, AND THIS TREND SHOULD CONTINUE FOR A LONG TIME TO COME.

BY PETER DAVEY
THE CLEARING HOUSE

LOANS
LOANS
BUSINESS
PAYMENTS
BUSINESS
TECHNOLOGY
PAYMENTS
DEPOSITS
DIGITAL
PAYMENTS
DEPOSITS
INTERNET
BUSINESS
INTERNET
DEPOSITS
PAYMENTS
TECHNOLOGY

IT'S NOT UNCOMMON to read opinion pieces on "the death of banking." However, financial institutions often have faced difficult times during their history, and have overcome them. One thing has been constant: banks have turned to technology in order to stay relevant and grow. Let's look back at the beginning of banking before turning to predict the industry's future.

Banking's history can be traced to Assyria and Sumer around 2000 B.C. At that time, there wasn't a formal structure and banking usually consisted of merchant-led lending and money exchanges within the confines of temples. Since those earliest forms of banking, it has had quite an evolution.

In the modern era of banking in the United States, the first commercially chartered national bank was the Bank of North America,[1] followed by the formation of the Bank of New York shortly thereafter (1784).

The first financial institutions were all paper based, highly localized, and very relationship driven. Banks were a part of the local community and bankers tended to know when a customer had a major event, such as a marriage or the arrival of a new baby, or if a business was growing or falling on hard times. Banking was based on very local and personal relationships.

> "For close to 170 years, banking remained mostly a manual, paper-based business. Then, **around 1950, the modern era of computerized banking started.**"

Financial Institutions had to be local because of the manual nature of deposits and accounting. Paper ledgers were kept for deposits, and withdrawals and loans were entered by hand. There was no ability to replicate the records without copying the journals, which could lead to error. These trusted guardians played a key role in the early days of the U.S. economy and provided a place to safely store money, receive financial advice, or procure a loan.

MODERN-DAY BANKING

For close to 170 years, banking remained mostly a manual, paper-based business. Then, around 1950, the modern era of computerized banking started. Bank of America is largely credited with using the first computer in banking in 1954 with a system called ERMA (Electronic Recording Method of Accounting).[2] At around the same time, the MICR (magnetic ink character recognition) code was developed for checks. Both of these innovations led the way to some of the first back-office automation for banks.

At this time, though, technology wasn't cheap or readily available. By comparison to today's costs and standards, the first hard disk drive was developed for commercial use by IBM in 1956 and was a whopping 5 MB at a cost of $10,000 per megabyte,[3] which means that a 1 GB hard drive (which wasn't available until around 195[4]) would have cost you $10 million. Compare that with the cost of 1 GB of hard drive space today at around $0.03 per gigabyte[5].

The industry has obviously come a long way when it comes to leveraging technology to improve its operational performance, reduce errors, and make financial institutions safer, as well as enable anywhere/anytime access for customers. However, the financial industry still has a long way to go as new customer demands and new competition (FinTechs) are transforming the business with new technologies.

For instance, artificial intelligence (AI), the theory and development of computer systems to perform

tasks that normally require human intelligence, is being explored in many aspects of banking. Full AI can augment human intelligence or even help to make complex decisions. Although the concept of AI has been around for a long time, the constant improvement in computational power, structure of data, and access to a greater amount of information have propelled it into a more accessible technology.

Along with the development of AI for banking, "bots" are becoming more commonplace in the industry as well. The widest use of bots tends to be in the online customer service area; however, many companies are looking at them for exceptions processing and other repeatable tasks. When programmed correctly, bots learn from their mistakes and don't tend to make the same error twice. From a customer servicing perspective, chatbots can help streamline the responses to customers and can quickly escalate a customer's chat to a human customer service agent – with all the context of the conversation – when the customer needs more attention.

Another innovation is the new Real-Time Payments (RTP) system from The Clearing House, which is really exciting. We now have a 21st century payment rail that operates the way you would want a payment system to operate – in real time. Leveraging a single message switch with assured delivery and response that will operate 24/7 with no holidays allows for major innovations in the payments space. RTP is fully automated and doesn't require banks to add staff to pull down and process files or exceptions or manually post transactions.

END-USER ADOPTION OF TECHNOLOGY

End customers, in a way, have driven the rapid adoption of innovative technology in the economy and in financial services by taking advantage of the reduction in technology cost and the wide availability of the internet. The Pew Research Center's study of the evolution of consumer technology adoption and usage indicates that the number of U.S. adults who now have access to the internet is around 88%, and 77% of adults own a smartphone. The younger population of 18- to 29-year-olds has a nearly ubiquitous adoption rate for smartphones, at 92%.[6] If you are anything like me, you would rather take out your smartphone or tablet when you are home rather than opening your laptop or using a desktop computer. The recent Apple iPad Pro commercial drove this home when a kid was asked by her neighbor if she was playing on her computer, and the answer was simply "What's a computer?"[7]

The rapid adoption of technology by consumers is also changing the work environment. Many companies have implemented "bring-your-own-device" (BYOD) policies, instead of funding or subsidizing phone, tablet, and computer purchases. This is less about the company saving money and more about giving the employee the ability to use the devices that make them the most comfortable and productive. It also allows for an easier upgrade path for more technically savvy users.

> **Many financial institutions have implemented digital-native tools** that can be deployed on their customers' devices in the form of an app and in **some cases have taken a digital-first approach to new features.**

This end-user adoption of technology by both consumers and businesses has changed the way banks are offering products and services to their customers. Many financial institutions have implemented digital-native tools that can be deployed on their customers' devices in the form of an app and in some cases have taken a digital-first approach to new features, enabling them on the app first and then determining the path to make them available through a traditional website.

The adoption of intelligent personal assistants, such as Alexa and Google Home, has allowed some banks to extend their customer service to a digital device that can interact with the customer. The combination of AI, chatbots, and voice response have created an ecosystem in which customers can now get basic questions answered related to balances or branch locations, and financial

institutions are now enabling more advanced functionality such as personal financial management insights, including how much money they may have at the end of the month – based on current spending habits or how much they have spent in entertainment versus household expenses over the past month. All of this leads to a lower overhead of 24/7 live support and a happier customer base.

In the business world, integrated inventory, order, and payment management allow for greater insights and the ability to capture additional information from customers when they engage, including social connections, email address, and preferences.

> **The way customers interact with their financial institutions will continue to evolve** – even though the core tenets of banking (lending, deposit taking, and financial advice) will more than likely **continue to be at the center of the banking customer relationship.**

THE FUTURE

So, what does the future of banking look like with access to all of this technology? The way customers interact with their financial institutions will continue to evolve and will leverage the technologies laid out in this article – even though the core tenets of banking (lending, deposit taking, and financial advice) will more than likely continue to be at the center of the banking customer relationship.

The bank of the future will include the following characteristics:

ALWAYS-ON

Although most banks already have achieved a mostly universal presence through a website, mobile applications, and smart ATMs, other capabilities such as underwriting and lending, financial advice, and even payment transfers may not be available after normal banking hours or on weekends. The 9-to-5 society doesn't exist anymore, whether for consumers or businesses, and therefore enabling nearly all services in a 24/7 fashion will likely become commonplace. Banking will be no different.

DIGITAL NATIVE

Today's back office for most financial institutions tends to still have legacy technologies, batch processes, and manual intervention. Although it will be some time before all financial institutions can completely modernize their infrastructures, you can't necessarily achieve an "always-on" end state without reducing the friction in a company's back office. A digital-native approach will lead to a higher degree of automation for financial institutions and their customers along with deeper integration into a customer's business and life.

TAILORED AND INSIGHTFUL

Much like the early days of banking, when it was local, had deep roots in the community, and was very personal, financial institutions can get back to that place through an always-on and digital-native strategy. The data insights that financial institutions can get by offering services such as Real-Time Payments and integrating those services into their customers' business routines and daily lives will allow banks to understand when their customers need them and even highlight to their customers when they should potentially look for a loan or take advantage of various discounts. The market tries to do this today with cross-sell offers and discounts. Often, however, it is a poor customer experience because most financial institutions are not able to see a complete picture of their customers. By having more access to transaction data and having deeper integration with their customers, a more complete picture of spending habits becomes available. Armed with this information, a financial institution can deliver more tailored, insightful, and usable advice or offers to their customers.

OMNIPRESENT

To truly be more useful to customers, banks need to be where the customers need the bank to be

at the time they need you – or even when the customers don't realize they need their bank. For the most part, financial institutions have tended to try to make customers come to them either by visiting a branch, using a bank mobile app, or using a bank's website. One of the biggest benefits of having customers come to the branch is security; however, with the advances in security and technology through APIs, biometrics, and other authentication technologies, it is possible to extend the reach in a safe and secure manner. The end state of being omnipresent is a much longer journey than the always-on, tailored-advice, or digital-native features. Many of the technologies to do this are in their infancy, and the standards around things such as digital identities are a long way from enterprise standards for security and safety. That said, a world in which payment details are embedded in any digital connection that would allow someone to send a payment in a safe and secure manner without having to open my banking app is quickly approaching. This would be especially useful in the business world with integration into electronic records processing, accounts payable, and accounts receivable electronic systems.

REAL-TIME

Last, but not least, the push for real-time processing will be a necessity in the future. Almost every aspect of current life is in real time – whether it be a text message or access to media or news. Some of the functionality The Clearing House has in its new RTP system will help financial institutions achieve this through having a 100% real-time assured delivery and response system. There will be no more loose ends in the payment process, including the presentment of a bill, invoice, payments request, and finally the acknowledgment by the receiver of the payment. These are the types of interactions we have come to expect from today's technologies and can enable in the future of banking.

In general, our banks will continue to become much more deeply integrated into our lives. The numerous articles in the press about the demise of financial instructions are greatly exaggerated. As their rich history has shown, banks have been some of the first to take advantage of new technologies to improve their businesses and provide broader reach for their customers. This trend will continue, and as financial institutions continue to modernize and continue to enable the capabilities discussed in this article, they may play an even more significant role for their customers in the future. ■

ENDNOTES

1 Chartered on May 26, 1781, in Philadelphia.

2 https://about.bankofamerica.com/en-us/our-story/bank-of-america-revolutionizes-industry.html

3 https://www.pcworld.com/article/127105/article.html

4 http://www.mkomo.com/cost-per-gigabyte

5 https://www.backblaze.com/blog/hard-drive-cost-per-gigabyte/

6 http://www.pewresearch.org/fact-tank/2017/01/12/evolution-of-technology/

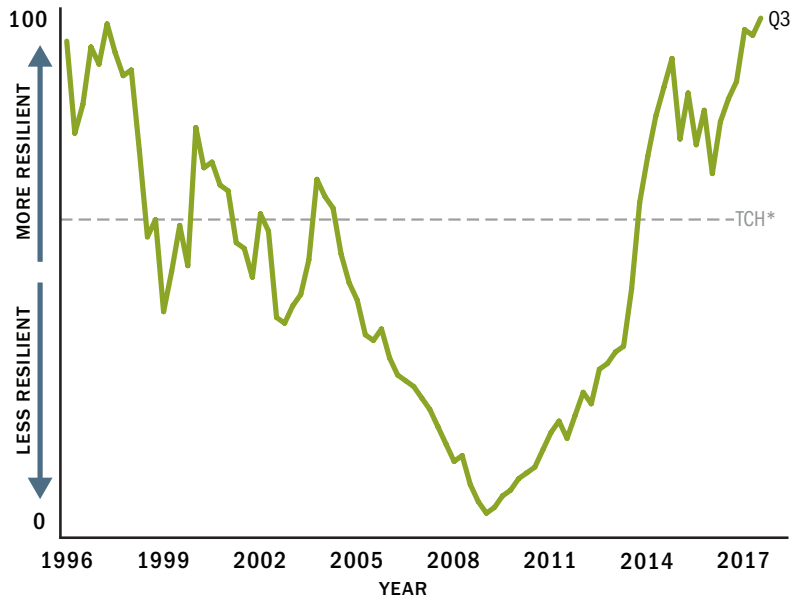
7 https://www.youtube.com/watch?v=sQB2NjhJHvY

TCH Bank Conditions Index

As shown in Exhibit 1, the Clearing House Bank Conditions Index (TCHBCI) rose in the third quarter of 2017 and registered its highest level of resiliency since the start of the sample in 1996. Overall, the degree of resilience of the large majority of the subcomponents of the index – capital, risk aversion, asset quality, interconnectedness, and profitability – rose. As shown below, the increase in the level of resiliency is evenly distributed across these five subcomponents. The only exception was the liquidity category, which experienced a slight decline, but it remained close to its highest level of resiliency.

Exhibit 2 depicts the heat map of TCHBCI and for each of the six categories that make up the aggregate index. Values near 100 (higher resiliency) are shown in blue, while values near 0 (higher vulnerability) are shown in red. There are two categories of the index worth emphasizing, capital and risk aversion. The increase in the degree of resilience in the capital category was driven mainly by the increase in V-Lab's measure of market leverage ratio under stress, which reached its highest value since the second quarter of 2007. The rise in the market leverage under stress indicates that banks' post-stress leverage ratios have improved in recent quarters, driven by increases in banks' equity valuations. V-Lab's measure uses a stress scenario defined by a 40% fall in the stock market over a six-month period.

EXHIBIT 1: AGGREGATE INDEX OF RESILIENCE OF THE U.S. BANKING SYSTEM



Note: TCH* denotes the estimate of the optimal level of the TCHBCI – that is, the value of the index that maximizes the contribution of TCHBCI in tracking future GDP growth.

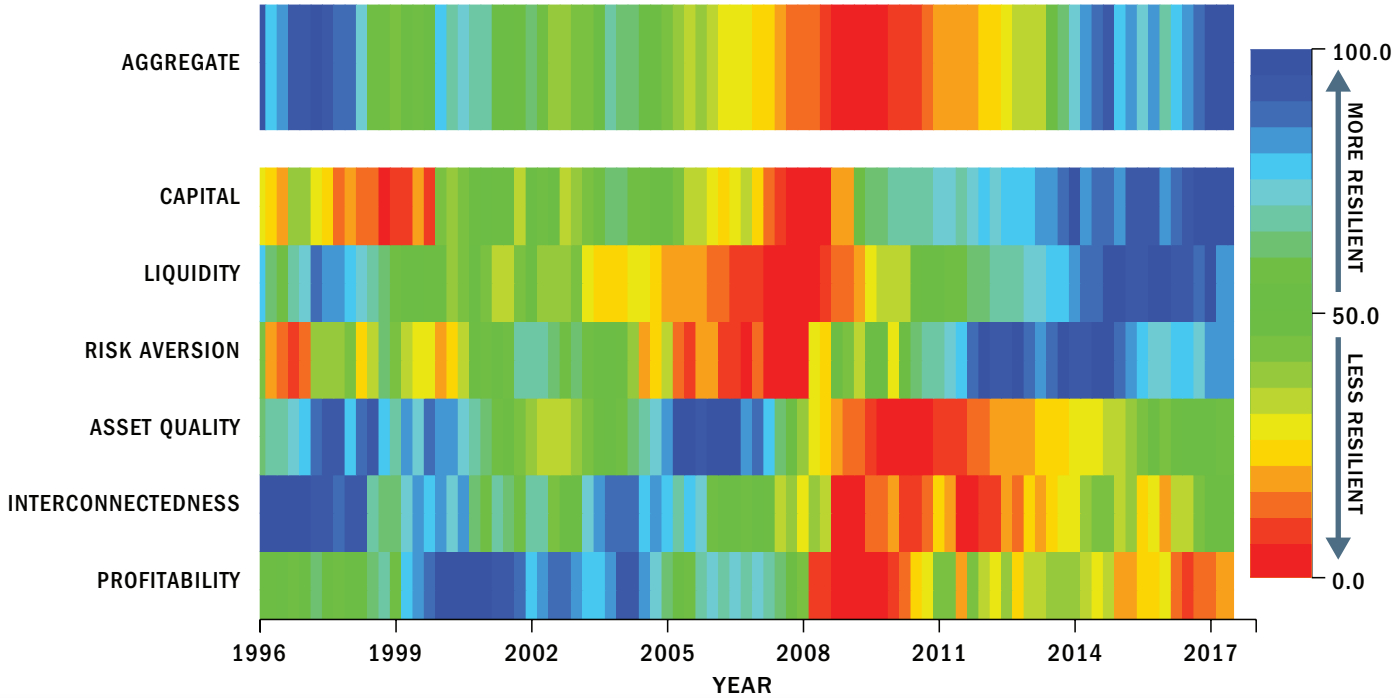
The rise in risk aversion was mainly driven by a slight decline in the ratio of loans to nominal GDP. Although results from the Federal Reserve's most recent Senior Loan Officer Opinion Survey indicate that banks experienced weaker demand for business loans in the third quarter, headwinds arising from tighter banking regulations have likely also continued to put downward pressure on loan growth, particularly on loans to borrowers with less-than-perfect or insufficient credit histories.[1] In particular, annual loan growth slowed from 7.25% in 2016 to 4.5% in the third quarter of 2017.

The other categories of the index shifted toward levels consistent with greater resilience in the banking sector. Banks recover from adverse shocks primarily by rebuilding capital through retained earnings and retaining it, so a more profitable banking system is more resilient. Although bank profitability is still subdued relative to historical standards, it rose in the third quarter of 2017, driven by improvements in net interest margins. In addition, all subcomponents of the asset quality and interconnectedness categories improved over the quarter.

In contrast, the slight decline in resiliency observed in the liquidity category was driven by a continued increase

1 See The Clearing House blog post "TCH's Take on the Business Loan Growth Conundrum" (January 6, 2018), available at https://www.theclearinghouse.org/research/articles/2018/01/business-loan-growth-conundrum

EXHIBIT 2: HEAT MAP OF ALL CATEGORIES OF TCH BANK CONDITIONS INDEX

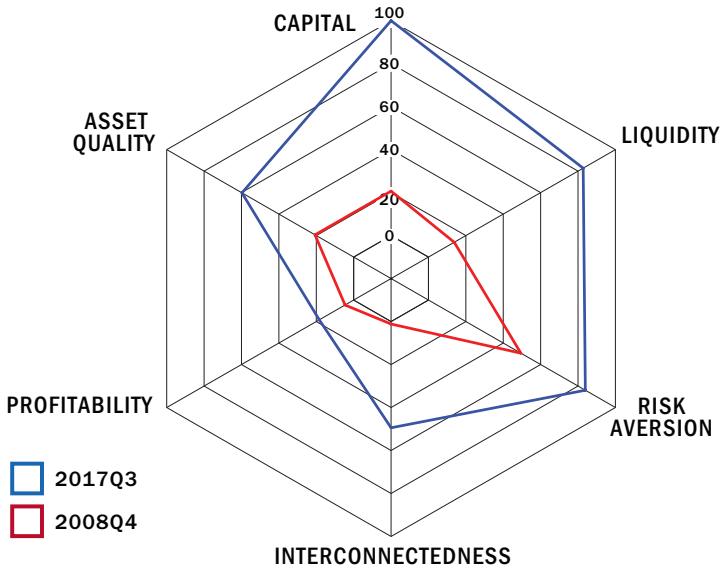


in the gap between the maturity of assets and liabilities held by banks. U.S. banks continued to have highly liquid balance sheets and sizable liquidity buffers, and banks' share of high-quality liquid assets edged up.

Finally, Exhibit 3 provides the readings on each of the six categories that make up TCHBCI at two different points in time: (i) the end of 2008, the nadir of the past crisis, and (ii) the third quarter of 2017. Points plotted near the center of the chart indicate a high degree of vulnerability in that category, while points plotted near the rim indicate high resiliency. As shown by the red line, in the fourth quarter of 2008, the quarter immediately after the failure of Lehman Brothers, almost all categories of the aggregate index were at very low levels, indicating the presence of acute vulnerabilities.

Over the years since the crisis, almost all categories of the index have improved considerably, as shown by the blue line, especially the capital and liquidity positions of U.S. banks. These improvements largely reflect the efforts of banks to increase their capital and liquidity following the financial crisis, the more stringent capital and liquidity requirements that are part of Basel III, improved risk management, and the U.S. stress tests. ■

EXHIBIT 3: COMPARISION OF RESILIENCE DURING THE FINANCIAL CRISIS AND IN MOST RECENT QUARTER



Research from Around the Industry:

ACADEMICS, THINK TANKS, AND REGULATORS

Research Rundown provides an overview of the most groundbreaking and noteworthy research on critical banking and payments issues and seeks to capture insights from academics, think tanks, and regulators that may well influence the design and implementation of the industry's regulatory architecture.

CAPITAL

BIS WORKING PAPER: BANK CAPITAL ALLOCATION UNDER MULTIPLE CONSTRAINTS

(Goel, Lewrick & Tarashev)

The authors derive a model for how banks optimally reallocate capital across business units when risk increases or internal risk management tightens. Applying this model to U.S. bank holding companies revealed that capital reallocation generates spillovers across business units and time. In particular, when credit or market risk increases, market-making attracts capital and shrinks lending. Conversely, when risks are low, leverage constraints lead banks to reduce market-making and increase lending.

ECB WORKING PAPER: CAPITAL AND LIQUIDITY BUFFERS AND THE RESILIENCE OF THE BANKING SYSTEM IN THE EURO AREA

(Budnik & Bochmann)

This paper explores the effect of capital and liquidity buffers on the evolution of bank loans in periods of economic distress. The study shows that lending volumes at banks with high capital and liquidity buffers were less sensitive to adverse macroeconomic and monetary policy shocks. Highly capitalized banks were even willing to take on more balance sheet risk in adverse scenarios, while most banks cut loans and interest rates to the non-financial sector. Loan volumes were responsive to monetary policy easing, however, with the majority of banks increasing long-term loans to the non-financial sector and reducing short-term and household loans. The findings provide a substantial link between lending activity and prudential and monetary policy controls.

LIQUIDITY AND LENDING

REGULATING HOUSEHOLD LEVERAGE

(DeFusco, Johnson & Mondragon)

This paper shows the response to policy constraints on household leverage, particularly the Dodd-Frank "Ability-to-Repay" rule. The authors find that the policy increased interest rates on certain loans by 10 to 15 basis points, reduced the mortgage market by 15%, and reduced leverage by an additional 20%. While the policy did cause lenders to ration credit, the estimates provided in the paper suggest that such policy would not have played a significant role in mitigating defaults during the crisis if it was in place.

HOW DID BANK LENDING TO SMALL BUSINESS IN THE UNITED STATES FARE AFTER THE FINANCIAL CRISIS?

(Cole)

This article analyzes trends in bank lending to small businesses following the financial crisis, taking into account the magnitude of bank failures, which makes it difficult to distinguish the effect of post-crisis credit-tightening policies. The results show that bank lending to small businesses remained low after the crisis despite a slight recovery in bank lending to businesses overall. In addition, large banks and banks in worse financial condition lent less to small businesses than smaller and healthier banks. This suggests that problem banks should be resolved more quickly so that their assets can be passed on to banks that will lend and boost the economy post-crisis.

BIS WORKING PAPER: INTEREST RATES AND HOUSE PRICES IN THE UNITED STATES AND AROUND THE WORLD

(Sutton, Mihaljek & Subelyte)

This paper analyzes the effect of short- and long-term interest rates on house prices in advanced and emerging economies. Using a long distributed lag of interest rate changes over 1970–1999, the authors found that a fall in short-term interest rates generated a rise in house prices. This implies that the bank lending channel of monetary policy plays an important role in house price fluctuation where securitization of home mortgages is less prevalent. In particular, interest rates in the United States can affect house prices outside of the U.S.

OFR WORKING PAPER: THE INTERSECTION OF U.S. MONEY MARKET MUTUAL FUND REFORMS, BANK LIQUIDITY REQUIREMENTS, AND THE FEDERAL HOME LOAN BANK SYSTEM
(Anadu & Baklanova)

This working paper analyzes trends among Federal Home Loan Banks (FLHB) arising from money market fund and bank liquidity reforms. Regulatory reforms, specifically the liquidity coverage ratio (LCR), incentivize large banks to demand more term funding from the FHLBs. At the same time, money market fund reform has increased demand for short-term FLHB debt. FHLBs have increased their reliance on short-term funding from money market funds to finance longer-term loans to banks. While this funding model helps meet increased demand, the authors caution that it also makes the financial market vulnerable to runs, and further systemic risks should be investigated.

ARE LENDERS USING RISK-BASED PRICING IN THE CONSUMER LOAN MARKET? THE EFFECTS OF THE 2008 CRISIS
(Magri)

This paper presents an analysis of potential mispricing of consumer loans in Italy. In the years following the financial crisis, consumer-specific risks such as net wealth, number of income earners, and educational background have become increasingly significant influences in loan pricing. This explains some degree of credit rationing in the Italian consumer loan market.

MACROPRUDENTIAL POLICY

FRBNY STAFF REPORT: DOES GOING EASY ON DISTRESSED BANKS HELP ECONOMIC GROWTH?
(Hundtofte)

The author estimates the effect of regulators relaxing their standards to prevent closing weaker banks during a crisis. He found that during the U.S. savings and loan crisis, the ensuing regulatory forbearance in 1982 led to immediate expansions in high-risk credit and ultimately large declines in housing prices and aggregate GDP growth for states with higher forbearance.

THE LOAN COVENANT CHANNEL: HOW BANK HEALTH TRANSMITS TO THE REAL ECONOMY
(Chodorow-Reich & Falato)

The authors detail covenant violations in transmitting bank health to non-financial firms. They find that more than one-third of loans in the data set breached a covenant during the 2008–2009 observation period, which allowed lenders to force a renegotiation on the terms of the loan. They found that "quantitatively, the reduction in credit to borrowers with long-term credit but who violate a covenant accounts for an 11% decline in the volume of loans and commitments outstanding during the 2008–09 crisis".

NBER WORKING PAPER: WHY SOME TIMES ARE DIFFERENT: MACROECONOMIC POLICY AND THE AFTERMATH OF FINANCIAL CRISES
(Romer & Romer)

The authors analyzed 24 advanced economies in the aftermath of financial crises and found that whether interest rates were above the zero lower bound and whether the country had a low debt-to-GDP ratio before distress greatly affected how the country rebounded from crisis.

BANK STRUCTURE AND SYSTEMIC RISK

OFR WORKING PAPER: INVESTOR CONCENTRATION, FLOWS, AND CASH HOLDINGS: EVIDENCE FROM HEDGE FUNDS
(Kruttli, Monin & Watugala)

When few investors own a substantive portion of a hedge fund's net asset value, flow volatility increases because there isn't enough diversification to spread out the risk from exogenous liquidity shocks. Hedge funds with a high concentration of investors experienced more volatility, but they also held more liquid assets to counter these outflows. Ultimately, investor concentration does not affect the sensitivity to flow performance.

BIS WORKING PAPER: SEARCHING FOR YIELD ABROAD: RISK-TAKING THROUGH FOREIGN INVESTMENT IN U.S. BONDS
(Ammer et al.)

The authors assess the influence of interest rates on risk-taking in foreign investments, particularly U.S. corporate bonds. They observed that low interest rates in advanced economies are leading investors to shift their bond portfolios towards riskier U.S. corporate bonds. They also find that investment in U.S. corporate bonds accelerates as interest rates in the investor's home country declines.

DECENTRALIZED MULTINATIONAL BANKS & RISK TAKING: THE SPANISH EXPERIENCE IN THE CRISIS
(Argimón)

This paper assesses the effects decentralized multinational banks have on bank risk. Using Spanish supervisory data, the analysis shows that having banking operations in countries whose business and financial cycles are uncorrelated with those in the home country leads to more stability for the banking group itself, though it also requires taking more risk and having less oversight over subsidiaries. The author found that international diversification and similar business trends between the Spanish and host economy reduced risk in a stress test.

BIS WORKING PAPER: STRUCTURAL CHANGES IN BANKING AFTER THE CRISIS
(Buch & Dages)

The Committee on the Global Financial System released a working paper examining trends in bank business models, performance, and market structure and how the banking sector is adapting to the post-crisis regulatory landscape. The paper concludes that banks have enhanced their resilience to adverse shocks overall by building capital and liquidity buffers, shifting to more stable funding sources, and focusing on risk management in addition to changes in interconnectedness and complexity that have led to reduced exposure to systemic risk.

BANK REGULATION, INNOVATION & OTHER

IMF WORKING PAPER: INTERCONNECTEDNESS OF GLOBAL SYSTEMICALLY-IMPORTANT BANKS AND INSURERS
(Malik & Xu)

The authors examine the interconnectedness of GSIBs and global systemically important insurers using a market-based measure. Selected institutions headquartered in Europe and the U.S., but not Asia, appear to be the main sources of global market-based interconnectedness. The entire system tends to become more connected in times of crisis and can be influenced by global economic policies, particularly the U.S. 10-year bond yield.

OFR WORKING PAPER: THE COMPLEXITY OF BANK HOLDING COMPANIES: A NEW MEASUREMENT APPROACH
(Flood, Kennett, et al.)

The paper presents a new way to measure bank holding company complexity. The authors present several measures based on ownership structures.

DO BANK REGULATION AND SUPERVISION DISPLACE BANK AUDITING?
(Ghosh, Jarva & Ryan)

The authors present evidence that bank regulatory and supervisory activities replace bank auditing activities, allowing auditors incentives to shift focus from bank activity to auditing activities of other firms that are not subjected to the same supervision. While some bank activities are of little concern to regulators and supervisors, banks have frequent earnings changes and strings of earnings increases that should concern auditors.

REGULATING INNOVATION: HIGH FREQUENCY TRADING IN DARK POOLS
(Johnson)

This paper details the necessity for a shift in financial market intermediation. Modern market innovations

such as alternative trading systems and "dark pools" that conduct secret automated trades en masse pose a challenge to current regulatory frameworks that are built on encouraging transparency, fairness, and disclosure. The author argues that gaps in governance, conflicts of interest, and the increasing fragmentation in trading markets pose a significant risk to the stability of financial markets, and regulations will need to adapt to mitigate systemic risk.

THE REGULATION OF MORTGAGE SERVICING: LESSONS FROM THE FINANCIAL CRISIS

(McNulty, Garcia-Feijoo & Viale)

This paper discusses the lessons revealed by pivotal litigation against the largest subprime mortgage servicer in the US. The investigation uncovered "egregious" errors in their operations, but provided the servicer broad release of liability, which allowed it to expand and profit without correcting their practices.

DO SATISFIED AUDITORS PERFORM BETTER? THE ASSOCIATION BETWEEN AUDIT FIRM EMPLOYEE JOB SATISFACTION AND AUDIT QUALITY

(Gold, Kuang, Lee & Qin)

In this paper, the authors examine the association between employee job satisfaction in audit firms and audit quality. Using data from auditor self-assessments, they find that job satisfaction is positively correlated with the firm and client's perception of the audit quality. In general, firms for which auditors report higher job satisfaction are less likely to be involved in SEC and other agency oversight actions and clients report lower discretionary accruals and misstatements.

CONTINGENT CONVERTIBLES: CAN THE MARKET HANDLE THEM?

(Kiewiet, van Lelyveld & van Wijnbergen)

The authors demonstrate that concerns about CoCos (contingent convertible instruments) in a single bank can propagate to the entire market. After a profit warning at Deutsche Bank (DB) in January 2016, the authors observed that when DB's CoCo prices crashed, it triggered investors to sell off CoCos with other banks. Looking at a common metric for rating CoCos, the authors found that ratings lagged market developments, making it difficult for investors to distinguish safe bonds from risky ones.

STRESSED BANKS

(Pierret & Steri)

The authors investigated trends in risk-taking incentives of banks subject to U.S. stress tests since 2011. They found that stringent capital requirements give both stressed and non-stressed banks incentives to invest in assets whose expected returns can offset the banks' costs of holding required equity capital. As a result, while stress tests encourage banks to be risk averse, tighter capital requirements produce the opposite incentive.

WORLD BANK POLICY RESEARCH WORKING PAPER: FINANCIAL DEVELOPMENT, GROWTH, AND CRISIS: IS THERE A TRADE-OFF?

(Loayza, Ouazad & Ranciere)

This paper reviews literature exploring financial development, crises, and economic growth over the past 20 years. The literature converges around the finding that financial deepening leads to trade-offs between higher economic growth and higher crisis risk, with greater positive growth effects for middle-income countries. Recognizing the intrinsic trade-offs of financial development can provide a useful framework to design policies targeting financial deepening, diversity, and inclusion. In particular, acknowledging the trade-offs can highlight the need for complementary policies to mitigate the risks, from financial macroprudential policies to monetary policy frameworks that monitor the growth of credit and asset prices.

PHILADELPHIA FED WORKING PAPER: MODEL SECRECY AND STRESS TESTS

(Leitner & Williams)

The authors rebut the idea that supervisory stress testing models should be kept secret to prevent gaming by

showing that an unintended consequence of secrecy is suboptimal underinvestment in risky assets. They design two models in which banks can choose between a safe or risky portfolio and assume that banks intrinsically prefer the risky portfolio but choose to be cautious when they don't know how the regulators determine their risk thresholds. If the regulator is uncertain about a bank's characteristics, disclosing the methodology could influence investments more optimally than secrecy. In addition, disclosing the methodology of stress test may help mitigate the social cost of failure if the bank has a very high or very low private cost of failure.

THE ICO GOLD RUSH: IT'S A SCAM, IT'S A BUBBLE, IT'S A SUPER CHALLENGE FOR REGULATORS
(Zetzsche, Buckley, Arner & Föhr)

The authors assess the challenges of initial coin offerings (ICOs), a type of token that confers rights for cryptocurrency (similar to the function of IPO transactions). Using a selection of ICOs, the authors analyze regulatory challenges and propose first steps for developing an appropriate regulatory response based on the fact that ICOs are offered with inadequate information up front.

IS HEDGING GOOD OR BAD FOR BHCS?
(Aktug)

The author conducts an analysis of the banking system from 2007 to 2013. He finds that though hedging might reduce profitability and firm value, it also minimizes tail risks by reducing asset volatility depending on the type of hedging activity and size of the bank holding company.

FEDS DISCUSSION PAPER: BANK FAILURES, CAPITAL BUFFERS, AND EXPOSURE TO THE HOUSING MARKET BUBBLE (Kara & Vojtech)

The authors test whether banks with greater exposure to areas with higher home price-to-income ratios in 2005 and 2006 managed the risk of delinquencies and charge-offs by building a stronger capital buffer. They found that banks did not increase their capital buffers and regulations could encourage banks to build capital against vulnerable mortgage portfolios.

MISCONDUCT RISK, CULTURE, AND SUPERVISION
(Chaly et al.)

In this paper, the authors lay out the risks that misconduct poses to the effectiveness of bank regulation and bank supervision. In addition to hurting individual firms and harming the reputation of the industry as a whole, misconduct can undermine regulatory objectives by depleting capital (through firms paying fines), decreasing resilience, and hindering efficient intermediation.

BIS WORKING PAPER: SYNDICATED LOANS AND CDS POSITIONING
(Aldasoro & Barth)

This paper analyzes how banks in Europe used credit default swaps, focusing on whether the CDS market was used to hedge against the default of syndicated loans. The findings showed that banks that had more capital, funding, and profitability were more likely to engage in CDS hedging. Banks that were riskier as well as those with lower ROA had a larger share of loans not insured using CDS. All banks were more likely to hedge exposures to risky borrowers and domestic loans more than cross-country loans.

CHOICE ARCHITECTURE TO IMPROVE FINANCIAL DECISION MAKING
(Carpenter et al.)

This paper employs the principles of choice architecture to show how regulatory interventions could help consumers make better decisions in the market for reloadable prepaid cards. They randomized participants into three different markets: the status quo, a market inspired by regulations, and a market designed to minimize attribute overload. After offering the card choices based on assumptions about individual preferences, they saw that consumers chose cards with worse terms under the status quo and chose more suitable cards under the regulation-inspired regime.

BANKING ON DISTRIBUTED LEDGER TECHNOLOGY: CAN IT HELP BANKS ADDRESS FINANCIAL INCLUSION?
(Maniff & Marsh)

The authors discuss how removing the need for a central authority could lead to cheaper, faster, and more accessible financial transactions that could serve unbanked consumers. They argue that while distributed ledger technology (DLT) addresses some of these concerns, banks are unlikely to pass the cost savings of DLT to consumers. Furthermore, previous policy initiatives showed that demand for banking services among the unbanked is unresponsive to changes in the cost of banking services or attractiveness of banks.

REGULATORY REFORM: A SCORECARD
(Cecchetti & Schoenholtz)

This paper presents a review and critique of post-financial crisis reform, assessing how they have addressed the weaknesses exposed during the crisis. For example, the authors point out that though capital requirements are higher, they are not high enough, liquidity requirements are too convoluted, and systemic regulation needs to be redesigned to be effective.

DOES SIZE MATTER? BAILOUTS WITH LARGE AND SMALL BANKS
(Dávila & Walther)

In this paper, the authors look at how large and small banks make funding decisions in a scenario in which the government provides system-wide bailouts. Bank size was found to be the biggest predictor of leverage choices, even when banks are bailed out symmetrically, regardless of size. Large banks will take on more leverage while small banks choose higher borrowing. The presence of large banks increases aggregate leverage and, by extension, the size of the bailouts, thus an optimal policy would tax large banks 40 basis points (40%) per dollar of debt issued.

CRITICAL FUNCTIONS AND PUBLIC INTEREST IN BANKING SERVICES: NEED FOR CLARIFICATION?
(Merler)

Under the EU framework for dealing with banking problems, resolution is seen as an exception to be granted only if liquidation under national insolvency proceedings is not warranted. The authors look at the recent liquidation of two Italian banks to show how resolution and liquidation differ substantially when it comes to the scope of legislation applicable to the use of public funds. They argue that more clarity is needed about the considerations that will factor into member states' decision to grant liquidation aid, and that the two-tier system – in which resolution is done at the EU level but insolvency remains a national prerogative – raises issues in the context of the banking union.

NBER WORKING PAPER: THE DEATH OF A REGULATOR: STRICT SUPERVISION, BANK LENDING, AND BUSINESS ACTIVITY
(Granja & Leuz)

The authors use the closing of the thrift regulator, OTS, to analyze the economic links between strict supervision, bank lending, and business activity. They find that former OTS banks that fell under stricter supervision following the dissolution of OTS increased their lending by 10%.

THE VALUE OF REGULATORS AS MONITORS: EVIDENCE FROM BANKING
(Bisetti)

This paper explores the trade-off between regulation and shareholder costs. Conventional wisdom suggests that regulation is costly for shareholders, while agency theory predicts that regulation helps keep shareholder costs low. The author found that the reduction in Fed monitoring led to a 1% loss in Tobin's q and a 7% loss in equity market-to-book, likely stemming from increased internal monitoring expenditures and monitoring conflicts between shareholders. ■

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Continued from p. 11 **"For the Record"**

The rationale behind this quiet but significant shift is clear. Global regulators are concerned that if banks were permitted to decide how much capital to hold against a given asset, they would understate the risk and hold inappropriately low levels of capital in order to boost returns. While that risk is a genuine one, it must be weighed against the benefits of competition in banking, which are derived only to the extent that competition in risk management is permitted. In the United States, one would think that such a debate should occur at the congressional level, or at least through a genuine administrative process.

BIG EXCEPTIONS TO THE RULE – BUT NOT FOR U.S. BANKS

As noted above, for European and Asian banks, the return to a standardized approach to credit risk comes with an important exception – they may now take into account external ratings issued by credit rating agencies (e.g., Moody's, S&P, and Fitch) in determining the risk weight for each asset. This produces risk weights that are systematically lower than those applicable to assets for which no rating is available (or may not be used per national law); it also provides at least some modicum of risk sensitivity.

Of course, at a theoretical level, one can wonder about the wisdom of outsourcing a crucial component of the banking industry's credit underwriting practices (the decision on how much capital to hold against that credit) to credit rating agencies that have no skin in the game and far fewer resources and expertise to devote to the task than the banking industry. Furthermore, this abdication will almost certainly create a credit divide between businesses large enough to obtain ratings (and thereby better terms from banks able to improve terms given a lower capital requirement) and smaller businesses that cannot. Given that by all accounts the standardized approach imposes considerably higher capital charges where external ratings are not or cannot be used, this divide will likely punish small businesses relative to large.

Theoretical problems here, though, are overwhelmed by a tsunami of practical experience and common sense, as it was the credit rating agencies that overvalued mortgage-related assets throughout the 2000s, were a crucial component of the originate-to-distribute model that fueled massive mortgage lending, and were the crucial component in the system whereby a large collection of bad mortgages were through alchemy combined to become an investment-grade security – with the investment grade by definition being granted by the credit rating agencies. In direct response, the U.S. Congress prohibited U.S. banking agencies from ever again basing a capital standard on the judgment of the credit rating agencies. The Basel Committee, apparently, saw it differently.

This result puts U.S. banks in a bit of a spot. Other banks can preserve a semblance of private sector input and private view of risk in the capital process by outsourcing that task to government-approved companies and obtaining lower, more granular risk weights. Unless U.S. regulators take action, U.S. banks alone will be stuck.

It is also important to note that one of the greatest potential impacts of Basel IV is its incorporation into the Federal Reserve's CCAR stress test, as discussed below. Here, the Basel Committee can be excused from responsibility, as CCAR is a U.S. construct.

SO, WHY AREN'T PEOPLE TAKING TO THE STREETS?

If such a regime were put up for debate in the U.S. Congress, or among the American public, it is difficult to imagine it getting many votes. Why, then, has there been so little objection to Basel IV? A few reasons follow:

First, post-crisis regulations now include dozens of capital regulations for the largest banks, and understanding how they interrelate and which ones are binding at any given moment is an exceptionally difficult task for a bank's chief financial officer – and a hopeless one for a policymaker, journalist, or academic.

Thus, the radical signal being sent by the standardized approach is lost in the noise of the advanced approaches, CCAR and DFAST stress-testing, the leverage ratio, the multiple measures of capital, and all the different risks (credit, operational, market) being measured in a standardized way.

Second, Basel IV has never been proposed for public comment in the United States, and it has not yet been implemented internationally. (Rumor is that it will not be published for comment in the European Union until 2019.) Unfortunately, in the past, U.S. regulators have felt considerable pressure to adhere to any Basel standard; that pressure has now been institutionalized in the Basel Committee's Regulatory Consistency Assessment Programme, which exists to "name and shame" countries that fail to implement its standards as drafted.

Third, one might take comfort from the fact that the United States operated under Basel I for a long time, without credit allocation, economic efficiency, and capitalism suffering major ill effects. (Of course, one could note the role of Basel I in the global financial crisis, but that is a somewhat different point.) At that point, however, minimum capital ratios were set significantly lower than they are currently, so they generally acted as a backstop rather than a driver of capital allocation. That is no longer the case.

Fourth, large banks have been reluctant to criticize the standardized approach publicly because they may end up favoring it – for a reason that should cause even greater concern. Basically, even if banks were permitted to use their own risk models for capital purposes, regulators could still use the examination process, including so-called "horizontal reviews," to impose and enforce a standardized outcome – at considerably higher cost, and with banks having to endure waves of examiner criticisms and ensuing regulatory consequences in order to achieve the same end. (For an analysis of how this process works, one could do no better than the article by Margaret Tahyar in this issue of *Banking Perspectives.* One could also look to the banks' experience with operational risk capital modeling.)

Finally, the Basel Committee has marketed this effort as Basel III, downplaying its importance. And for some non-U.S. banks, that may be fair. They are eligible for an alternative in the standardized approach for credit risk that permits the use of external credit ratings, and many do not have significant market share of capital markets businesses, as U.S. banks dominate much of this business globally. And they do not have a CCAR stress test that begins with standardized risk weights. Thus, absent a thoughtful implementation by U.S. regulators, and in contrast to the conventional wisdom, it may well be that it is U.S. banks that feel the larger brunt of Basel IV. (Other likely candidates for substantial impact are European banks that have significant trading operations or devote a large portion of their balance sheet to particularly low-risk mortgage or other loans.)

> **Global regulators are concerned that if banks were permitted to decide** how much capital to hold against a given asset, they would understate the risk and hold inappropriately **low levels of capital in order to boost returns.**

MEANWHILE, IN THE REAL WORLD

This issue of *Banking Perspectives* includes an article by the founders of Credit Benchmark, which could not be better timed. The goal of that company (with which neither I nor The Clearing House has any affiliation) is to gather from as many banks as possible the probability of default and loss given default ratings for as many

corporate borrowers as possible. In theory, with that information shared among participating banks on an aggregated and anonymized basis, each bank could know where it stands relative to peers, allowing it to reevaluate its internal rating in the event it becomes an outlier – that is, if its internal rating system classifies the borrower higher or lower than average.

The most remarkable fact about Credit Benchmark is that this exercise is occurring in fact, not just in theory. Currently, 21 large global banks are contributing data, and the requisite three or more ratings exist for over 14,500 firms. Of these, approximately 9,000 are unrated – so, Credit Benchmark is providing an outside view for businesses too small to obtain a credit rating. Credit Benchmark has also been able to conduct continuing research on the data reported by the participating banks. For example, that research shows that bank ratings are both more conservative and more dynamic than ratings from the credit rating agencies to which Basel IV has outsourced this function.[7]

> **The supervisory process could be used to prevent what the Basel Committee fears —** a bank understating its risk-weighted assets and thereby holding inappropriately low capital, **while preserving the ability of private sector bank to measure risk for capital purposes.**

This finding, and its regulatory implications, suggests a much broader implication for banking supervision and regulation. Consider what vital tools these data could be in the hands not only of risk managers at a bank but also in the hands of bank examiners. (In effect, it serves as a comprehensive, continual Shared National Credit examination.) The supervisory process could be used to prevent what the Basel Committee so fears – a bank understating its risk-weighted assets and thereby holding inappropriately low capital – while preserving the ability of private sector banks to measure risk for capital purposes, rather than having the government or the credit rating agencies assume that function.

Here, it is ironic that Credit Benchmark reports that while most policymakers briefed on its work are enthused, a few have expressed concerns that the use of the data could homogenize risk views across the industry, as risk departments could force outlier banks to conform to the average credit score. This is a valid concern – but very difficult to understand from regulators who have just voted to have either the government alone (as in the United States) or in tandem with credit rating agencies (as in Europe and Asia) perform that credit function.

THE BEGINNINGS OF A SOLUTION

It is unclear how Basel IV will be implemented in the United States. The U.S. capital framework is already exceedingly and uniquely complex; Basel IV's incorporation into the current web of different numerators, denominators, measurement methodologies, and minimum ratios and buffers raises a long list of open questions. Most important among them is whether and how the new Basel 72.5% floor will coexist with the 100% standardized floor already in place in the United States. (Note that they are not exactly comparable; the Basel floor has a lower calibration but a larger denominator.) Although many view the current U.S. standardized floor as a product of the Collins Amendment (i.e., section 171 of the Dodd-Frank Act), it is in fact a product of regulatory discretion; although the statute only requires a standardized floor for purposes of calculating the 4.5% CET1 risk-based minimum requirement, the banking agencies chose to also apply it to the various capital buffers they have imposed. The forthcoming implementation of the new Basel floor would appear to be an excellent reason to revisit that regulatory decision.

Of course, currently in the United States, one capital measure is clearly first among equals: the Federal Reserve's CCAR stress test. And while even most policymakers do not realize it, the stress of that test is applied to a bank balance sheet where the risk-weighted assets are currently determined using the U.S. standardized approach to credit. It remains to be seen whether the Federal Reserve will continue that approach, or modify it to reflect elements of Basel IV.

With respect to the advanced approach to credit risk, one certainly could imagine a world where U.S. regulators incorporated the Basel IV standard basically as required by Basel but deviated from its key conclusion that banks cannot model corporate or financial institution credit risk. They would be more than justified in doing so given that Basel IV (when combined with U.S. law) clearly discriminates against U.S. banks by depriving them of the primary alternative to punitive standardized risk weights.

U.S. implementation, then, could allow the use of bank models in determining credit risk to the extent that a bank participated in a peer review exercise with regard to its material exposures – either that offered by Credit Benchmark or some competing company or consortium. Examiners could certainly be trusted to verify that such a process was rigorous and ongoing. (Indeed, as noted in Margaret Tahyar's article, and other analysis here, this would be a relatively good focus for today's examination resources, which have tended post-crisis to focus instead on matters of significantly less importance for safety and soundness).

Of course, there remains the risk that examiners would indeed force banks to downgrade any credit where the bank was more optimistic than average, even if the bank's underwriting process appeared sound. Indeed, this result – far from unlikely – would be the worst of all worlds: banks continuing under the advanced approaches to model credit risk, devoting extraordinary resources to doing so, and having the results discarded for any potentially binding capital rule, whether it be the Collins or Basel IV floor, CCAR, or even the leverage ratio.

Also, even if examiners would continue to tolerate diversity in outcomes, a solution for credit is one that is currently workable for only a minority of U.S. bank assets. Of the roughly $20 trillion in total bank assets, only approximately $4 trillion are C&I loans or CRE loans backed by nonresidential collateral – the market targeted by Credit Benchmark. And of course, many of those companies are too small to have three lenders reporting data. That said, Credit Benchmark already produces aggregate indexes based on its wider data set, including single-rated firms as part of large, anonymized pools. And once a bank's internal credit ratings system can be validated as a general matter, one could imagine it being allowed to use that system even for credits that are not shared.

Still, for retail and market assets, similar approaches will need to be found in order to avoid defaulting to government modeling of risk. Fortunately, there is considerable time before Basel IV must take effect, and given the stakes, incentives for innovation should be strong. ■

ENDNOTES

1 While this article carries only one byline, numerous members of TCH staff have contributed ideas and information.

2 With apologies to one of my favorite authors, Julian Barnes.

3 For completeness, we note there were also the so-called "Basel 2.5" changes made in 2009, which represented an interim step by which market risk capital requirements for trading activities were substantially increased.

4 See, e.g., Viral Acharya, Philipp Schnabl, and Gustavo Suarez, "Securitization without Risk Transfer." Journal of Financial Economics 107, no. 3 (2013): 515-536.

5 The Basel IRB approach actually has two variants – so-called A-IRB, which we describe above and in which banks (to a limited extent) may model probability of default (PD), loss given default of credit (LGD), and exposure at default (EAD) for credit assets, and the F-IRB, in which banks may model PD but not LGD or EAD, which are instead prescribed by regulators. Since only the former has been implemented in the U.S. advanced approaches, it is the focus here.

6 As we have discussed in other contexts, Basel IV also presumes that banks cannot model operational risk, but this conclusion is understandable, as no one can model operational risk.

7 See www.creditbenchmark.com/sites/default/files/press_coverage/risk0716creditbenchmark.pdf

Featured Moments

THE 2017 CLEARING HOUSE ANNUAL CONFERENCE

Mary Jo White, litigation partner and senior chair at Debevoise & Plimpton, along with Frank Bramble, chair of the Enterprise Risk Committee at Bank of America, listen to another panelist during the "Evolving Role of Bank Boards of Directors" session.

Attendees of the 2017 TCH Annual Conference mingle during a networking break between panel sessions.

Mary Jane Ajodah, VP, Client Service Delivery Strategy, at BNY Mellon, responds to a question from the moderator during the "Applying Artificial Intelligence in Banking and Payments" panel session.

Dr. Jing Zhang, managing director and global head of Research & Modeling at Moody's Analytics, makes his point during the "Can Market Discipline Help Make Banks and the Financial System Safer?" panel session.

Keith Noreika, then the acting comptroller of the currency, Office of the Comptroller of the Currency, delivers his breakfast keynote presentation to the TCH Annual Conference.

Kenneth C. Gavrity, EVP and group head, Enterprise Commercial Payments, at KeyCorp, makes his point during the session "Banks and FinTech: Competitors, Partners (or Both) in Innovation and Meeting Customer Demands?"

Keynote speaker Rod J. Rosenstein (right), deputy attorney general, U.S. Department of Justice, shares a laugh with David Leitch, global general counsel of Bank of America, during the Q&A session following Rosenstein's presentation.

Retired Navy Adm. James Stavridis, dean of the Fletcher School of Law and Diplomacy at Tufts University, chats with Barney Reynolds of Shearman & Sterling following Stavridis' keynote.

Gagan Singh, EVP and chief investment officer at PNC Bank, answers a question during the "Can Market Discipline Help Make Banks and the Financial System Safer?" panel session.

The members of the "CEO Roundtable on the Business of Banking" panel listen to a question from the audience. From left to right: Moderator Somesh Khanna, McKinsey & Co.; Greg Carmichael, president & CEO, Fifth Third Bancorp; Andy Cecere, president & CEO, U.S. Bancorp; Grayson Hall, chairman, president & CEO, Regions Financial Corp.; and Timothy Sloan, CEO & president, Wells Fargo & Co.

THE 2017 CLEARING HOUSE ANNUAL CONFERENCE

Keynote speaker James Stavridis, dean of the Fletcher School of Law and Diplomacy at Tufts University, delivers his presentation on the first night of the TCH Annual Conference.

Rod J. Rosenstein, deputy attorney general, U.S. Department of Justice, delivers his keynote presentation at the TCH Annual Conference.

Mythili Raman, partner at Covington & Burling, discusses bank litigation challenges during the "Developments and Emerging Challenges in Bank Litigation and Civil and Criminal Law Enforcement" session.

Francisco Covas, SVP and deputy head of Research at The Clearing House Association, discusses resent TCH findings that are relevant to the "Building a Better Stress Test" panel session.

During the session "Applying Artificial Intelligence in Banking and Payments," Michelle Moore, head of Digital Banking at Bank of America, listens to a question from the audience.

Christina Tetreault, staff attorney, Financial Services Program Team, at Consumers Union, makes a point during the "UDAAP: Lessons for Payment Providers and Expectations for the Future" panel session.

During the "Building a Better Stress Test" panel session, Thomas Philippon, professor of finance, New York University Stern School of Business, answers a question from the moderator.

Frank Van Driessche, market manager, Market Infrastructures, at SWIFT, responds to a fellow panelist's point during the "ISO20022 Implementation Opportunities and Risks – When Is a Format More Than a Format?" session.

James Aramanda, president and CEO of The Clearing House, delivers his welcoming remarks on the opening night of the conference.

TCH Annual Conference attendees stop to chat while moving between sessions during the second day of the event.

TCH-COLUMBIA UNIVERSITY OPTIMAL BANK LIQUIDITY REGULATION CONFERENCE

The Clearing House Association and Columbia University's School of International and Public Affairs held the Optimal Bank Liquidity Regulation conference to discuss the latest research on liquidity regulation and its impact on financial markets, financial stability, and monetary policy.

Greg Baer, TCH Association president, speaks to the conference attendees at the Optimal Bank Liquidity Regulation event.

Attendees at the Optimal Bank Liquidity Regulation Conference chat between panel sessions.

Bill Nelson, executive managing director, chief economist, and head of Research at TCH, asks a question of the speakers during the Optimal Bank Liquidity Regulation Conference.

Holger Neuhaus from the European Central Bank enjoys a lighter moment during his presentation at the Optimal Bank Liquidity Regulation Conference.

Patricia Mosser, senior research scholar in the Faculty of International and Public Affairs, speaks to the audience during the conference.

Lou Crandall, chief economist of Wrightson ICAP, listens to a fellow panelist during the conference.

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