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Seeking to have Banks Sing to the Same Tune: the Basel Committee Addresses Credit Risk–Weighted Assets

O. Jean Strickland*

The objective of this Comment is to provide a critical assessment of the recent debate about the Basel Committee for Banking Standards' ("BCBS") reforms to risk-weighted assets ("RWA") calculations used to measure credit risk and to establish international standards for bank capital requirements. After introducing the interests and objectives of both the regulators and the banking industry relative to this issue, the second part of this Comment will cover the origins of the approaches to the calculation of RWAs for regulatory capital requirement purposes. Using loans as the focus of the analysis, the third part of this Comment will examine the types of issues involved in standardized versus internal bank model based approaches to RWA calculations. It will include a description of the variability presently occurring in the RWA calculations for loans and will offer explanations as to whether the variations are justified. Following this, the Comment will examine alternatives to the BCBS' proposed calculations of RWAs for loans. The conclusion will appraise possible approaches to RWA calculations for loans in light of technology's continued evolution.

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Keywords: bank capital adequacy, credit risk management, Basel regulation, Risk-Weighted Assets (RWA), reducing variation in credit risk-weighted assets

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I. INTRODUCTION

“At the aggregate level, credit risk accounts for on average three quarters of a bank’s minimum capital requirements.”¹

Heads of state, bankers, and regulators worldwide continue to debate reforms to the international standards for determining bank capital requirements. These reforms will significantly change risk-weighted assets’ (“RWA”) calculation, which is used to measure credit risk.² Working on the reforms,³ the Basel Committee members are particularly

¹ William Coen, Sec’y Gen., Basel Comm. on Banking Supervision, Bank for Int’l Settlements, Remarks at the Panel Discussion at the 2016 Annual Membership Meeting of the Institute of International Finance (Oct. 7, 2016), <http://www.bis.org/speeches/sp161007.htm> (explaining reforms planned by the end of 2016 for banks’ regulatory capital standards); see generally *Briefing: Upgrading the Basel Standards: From Basel III to Basel IV?*, at 4 n.1, PE 587.361 (Jan. 18, 2017) [hereinafter *Briefing 2017*] (explaining that credit risk is the “probability that the bank does not recover the entirety of interests and principal”).

² See *supra* Coen, note 1; see also Boris Groendahl, *Global Bank Regulator Holds Line Against Europe on Capital Rules*, BLOOMBERG (Oct. 6, 2016, 4:00 PM), <http://www.bloomberg.com/news/articles/2016-10-07/global-bank-regulator-holds-line-against-europe-on-capital-rules>.

³ See Basel Comm. on Banking Supervision, *Basel Committee membership*, BANK FOR INTERNATIONAL SETTLEMENTS, <http://www.bis.org/press/p160324.htm> (last updated Mar. 24, 2016) (listing members of the committee in the About the Basel Committee section of the website); see Basel Comm. for Bank Supervision, Bank for Int’l Settlements, *Implementation of Basel Standards: A Report to G20 Leaders on Implementation of The*

concerned with the current variability in banks' calculations and the deleterious effect this variability has on the credibility of international bank capital adequacy standards.⁴ Bankers generally, on the other hand, want maximum flexibility for creating their own models to measure credit risk and they want to ensure that reformed RWA calculations do not increase their capital requirements beyond present levels.⁵

The Basel Committee on Banking Supervision's ("BCBS") primary purpose is to promote financial stability.⁶ Secondly, it sought to create a level playing field" for internationally-active banks.⁷ However, following the financial crisis at the end of 2007,⁸ "U.S. financial regulators in July 2013 attempted to impose capital standards slightly more stringent than

Basel III Regulatory Reforms 5 (Aug. 2016), <http://www.bis.org/bcbs/publ/d377.pdf> (noting broad impact because of non-Basel Committee member jurisdictions' increasing adoption—about 70 such jurisdictions intend to have final rules on key elements of Basel III by 2018).

⁴ See Boris Groendahl & Alessandra Migliaccio, *Europe Said to Threaten Revolt over Bank Capital-Rule Revamp*, BLOOMBERG (Sept. 16, 2016), <https://www.bloomberg.com/professional/blog/europe-said-threaten-revolt-bank-capital-rule-revamp/> ("William Coen, secretary general of the Basel Committee, told reporters, . . . 'We're doing this work to reduce risk-weighted asset variability. And why are we doing that? To restore confidence in the risk-weighted capital ratios and to fully restore credibility to the capital adequacy framework.'").

⁵ See *id.*; see, e.g., Letter from Darren Hannah, Vice-President, Finance, Risk & Prudential Policy, Canadian Bankers Ass'n, to Secretariat, Basel Comm. on Banking Supervision, BANK FOR INT'L SETTLEMENTS, at 1 (June 23, 2016) [hereinafter Letter from Canadian Bankers Ass'n], <https://www.bis.org/bcbs/publ/comments/d362/canadianbankers.pdf> ("We highlight the importance of evaluating all of the many proposed regulatory changes holistically to ensure that the Committee's objective of not significantly increasing overall capital requirements is met.").

⁶ Basel Comm. on Banking Supervision Charter art. I ¶ 1, <http://www.bis.org/bcbs/charter.htm>; see also Maziar Peihani, *Basel Committee on Banking Supervision: A Post-Crisis Analysis of Governance and Legitimacy 7* (December 2014) (unpublished Ph.D. dissertation, The University of British Columbia), <https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0077783> ("[T]he BCBS, which has been central to the global governance regime of banking[,] . . . is the oldest and best-known global regulatory forum, and the primary global prudential standard setter.").

⁷ Secretariat of the Basel Comm. on Banking Supervision, Bank for Int'l Settlements, *The New Basel Capital Accord: An Explanatory Note* (Jan. 2001), <http://www.bis.org/publ/bcbsca01.pdf> ("The two principal purposes of the [Basel] Accord were to ensure an adequate level of capital in the international banking system and to create a 'more level playing field' in competitive terms so that banks could no longer build business volume without adequate capital backing."); see also Linda Allen, *The Basel Capital Accords and International Mortgage Markets: A Survey of the Literature*, 13 FIN. MKT., INSTS. AND INSTRUMENTS 41, 48 (2004) ("One of the goals of Basel I was to 'level the playing field' and lift Japanese banks' capital levels from their comparatively low levels in the pre-Basel period").

⁸ Jeffrey Frieden, *The Governance of International Finance*, 19 ANN. REV. OF POL. SCI. 33, 34 (2016), <http://www.annualreviews.org.access.library.miami.edu/doi/pdf/10.1146/annurev-polisci-053014-031647>.

those of Basel III, thus improving regulatory safeguards but undermining the Basel premise of a level playing field for banks based in different countries.”⁹ Other countries saw the U.S. as leading the charge for higher capital standards for global banks through “a one-size-fits-all” standardized approach versus allowing banks to determine their own capital levels using internal models.¹⁰ Then Federal Reserve governor, Daniel Tarullo, even expressly stated a desire for all Basel Committee countries to implement standardized risk-weighted measurements for all internationally active banks.¹¹ The current Trump administration, however, has moved to ease the regulatory burden on financial institutions operating in the U.S.,¹² while some financial regulators and academics are

⁹ Robert Kuttner, Demos, *Global Governance of Capital: A Challenge for Democracy*, DEMOS 40 (Aug. 2014), [http://www.demos.org/sites/default/files/publications/Global Governance-Kuttner_0.pdf](http://www.demos.org/sites/default/files/publications/Global%20Governance-Kuttner_0.pdf); *see also* Takako Taniguchi et al., *Bank-Capital Battle Makes Japan, EU Allies Against U.S. Push*, BLOOMBERG (July 26, 2016, 4:05 PM), <http://www.bloomberg.com/news/articles/2016-07-26/bank-capital-fight-makes-japan-eu-allies-against-u-s-clampdown> (“The U.S. moved faster than the rest of the world after the 2008 crisis to revamp banking oversight, often seeking stricter standards than global minimums set by the Basel Committee.”).

¹⁰ Taniguchi, *supra* note 9; *but see* Patrick Henry, *U.S. Regulators Hang Tough at Basel as Trump Rollback Looms*, BLOOMBERG (Jan. 26, 2017, 4:05 PM), <https://www.bloomberg.com/news/articles/2017-01-27/u-s-bank-regulators-hang-tough-at-basel-as-trump-rollback-looms> (“Trump has vowed to roll back financial regulation, and . . . there is concern that U.S. commitment to global banking standards may dwindle on his watch.”).

¹¹ Daniel Tarullo, Member, Bd. of Governors of the Fed. Reserve Sys., *Rethinking the Aims of Prudential Regulation*, Remarks at the Federal Reserve Bank of Chicago Bank Structure Conference 15 (May 8, 2014), <https://www.federalreserve.gov/newsevents/speech/tarullo20140508a.pdf> (“It would be best if all the Basel Committee countries moved together to adopt standardized risk-weighted and supervisory stress testing requirements for all internationally active banks.”); *but see* Ryan Tracy, *Meet Randal Quarles, Trump’s Pick to Shake Up the Fed*, WALL ST. J., <https://www.wsj.com/articles/meet-randal-quarles-trumps-pick-to-shake-up-the-fed-1501234201> (last updated July 28, 2017, 8:36 PM) (reporting that, as an expected replacement to Mr. Tarullo, who left in April 2017, “Mr. Quarles . . . said he would review rules about banks’ capital levels”).

¹² *See* Exec. Order No. 13772, 82 Fed. Reg. 9965 (Feb. 3, 2017) (identifying as core principles, *inter alia*, “foster[ing] economic growth and vibrant financial markets through more rigorous regulatory impact analysis that addresses systemic risk and market failures, such as moral hazard and information asymmetry,” “advanc[ing] American interests in international financial regulatory negotiations and meetings,” and ordering the Dep’t of the Treas. to report on how laws and policies promote the Core Principles); *see also* DEP’T OF THE TREAS., *A FINANCIAL SYSTEM THAT CREATES ECONOMIC OPPORTUNITIES: BANKS AND CREDIT UNIONS* 6–7, 13 (June 2017) (responding to Exec. Order No. 13772 and arguing for changes to ease financial institution regulatory burdens and increase lending so as to promote economic growth while ensuring financial stability, in part, by “recalibrating capital requirements that place an undue burden on individual loan asset classes, particularly for mid-sized and community financial institutions”).

sounding an alarm,¹³ leaving uncertain where U.S. capital calculations and requirements will ultimately fall relative to Basel III.¹⁴ On the other hand, European Union (“EU”) banks, representing nearly half of the world’s biggest banks, strongly oppose restrictions on the use of models to measure risk because they fear a more standardized approach will disproportionately increase their capital requirements.¹⁵ The current protests to the Basel Committee’s recommendations signals the potential for “a fracturing of the hard-won coordination of regulation in the wake of the financial crisis.”¹⁶

This Comment will examine relevant arguments for and against internal model-based approaches to calculating credit RWAs using loans as a proxy for examples of the challenges inherent in their use. Part II will explain the evolution of approaches to the calculation of RWAs for loan categories, which are used to establish regulatory capital requirements. Part III will describe examples of the variability occurring in the RWA

¹³ Geoffrey Smith, *Rolling Back Banking Regulations “Very Dangerous,” Says Fed Vice Chairman*, FORTUNE (Aug. 16, 2017), <http://fortune.com/2017/08/16/dodd-frank-rollback-dangerous-short-sighted-fed/> (“Federal Reserve Vice Chair Stanley Fischer has sounded the alarm at Republican plans to roll back regulations for the country’s largest banks . . . [stating] ‘I am worried that the U.S. political system may be taking us in a direction that is very dangerous.’”); see also Stephen Cecchetti & Kim Schoenholtz, *The US Treasury’s Missed Opportunity*, VOX: CEPR’S POLICY PORTAL (July 14, 2017), <http://voxeu.org/article/us-treasury-s-missed-opportunity> (“[A]t least when considering the largest banks, our conclusion is that adopting the Treasury’s recommendations would make the financial system less safe. And, it would do so with little prospect for boosting economic growth. At times, the proposals read more like a financial industry wish-list than a desirable and impartial balancing of the country’s needs for both a vibrant and resilient financial system.”).

¹⁴ See e.g., DEP’T OF THE TREAS., *supra* note 12, at 12, 16 (“[F]urther emphasis should be given to the use of standardized approaches over advanced approaches for risk-weighting assets to simplify the capital regime[,] . . . [and] banking agencies [should] carefully consider the implications for U.S. credit intermediation and systemic risk from the implementation in the United States of a revised standardized approach for credit risk under the Basel III capital framework[, and] U.S. regulators should provide clarity on how the U.S.-specific adoption of any new Basel standards will affect capital requirements and risk-weighted asset calculations for U.S. firms.”).

¹⁵ Boris Groendahl, *EU Escalates Standoff with U.S. on Global Bank Capital Rules*, BLOOMBERG (Updated Sept. 23, 2016, 10:56 AM), <http://www.bloomberg.com/news/articles/2016-09-23/eu-opposes-key-plank-of-basel-s-global-bank-capital-rule-revamp> (observing also that the EU is home to nearly half of the world’s biggest banks); see also Clive Briault, *Basel Delay*, KPMG: INSIGHTS (Jan. 23, 2017), <https://home.kpmg.com/xx/en/home/insights/2017/01/basel-delay-fs.html> (“[T]he concern among EU banking supervisors [has been] that constraints on banks’ use of internal models to calculate capital requirements would have a disproportionately negative impact on European banks. European banks hold proportionately more assets – such as mortgage lending – on their balance sheets, for which the use of internal models produces a marked benefit compared with the application of standardised risk weightings.”).

¹⁶ Groendahl, *supra* note 15.

calculations for loans presently and will review whether the variability is justified. Part IV will examine alternative proposals for improving banks' financial stability, including the feasibility of including other factors, and additional granularity, in the calculation of RWAs for loans. Part V will offer concluding thoughts considering advancements in technology.

II. EVOLUTION OF CREDIT RWA CALCULATIONS

“[C]oordinated international action was needed to prevent future crises from spilling over borders.”¹⁷

As interconnectedness between national economies increased, financial regulators in developed countries recognized that an individual bank failure could have significant “systemic and financial stability implications” across nations.¹⁸ Thus, the BCBS emerged as a global standard-setting body for banking supervision and prudential regulation.¹⁹ The BCBS created the Basel Accords, which provide for home country banking supervisors of internationally-active banks in their jurisdiction to oversee implementation of the capital standards framework for these banking groups on a consolidated basis.²⁰ Host country supervisors also have a role and “are responsible for supervision of those entities operating in their countries.”²¹ For efficiency and avoidance of regulatory arbitrage, host country supervisors may accept the group level capital standards work

¹⁷ Ranjit Lall, *Why Basel II Failed and Why Any Basel III is Doomed* 3 (Univ. of Oxford Glob. Econ. Governance Programme, Working Paper No. 2009/52, 2009), http://www.globaleconomicgovernance.org/sites/geg/files/Lall_GEG%20WP%202009_52.pdf; see also Peihani, *supra* note 6 (arguing that BCBS' evolution has been driven by “the serious risks posed by profit-seeking practices” necessitating collaboration among those who regulate banks and financial institutions. The banks do not collaborate directly to create their regulatory framework.).

¹⁸ Caroline Bradley, *Financial Stability, Regulation and Politics: Risks, Uncertainties and the International Financial System* 6–7 (Aug. 24, 2016) (unpublished manuscript) (on file with author); Lall, *supra* note 17, at 4–6.

¹⁹ Melissa Boey, *Regulating “Bankerspace”: Challenging the Legitimacy of the Basel Accords as Soft Law*, 87 S. CAL. L. REV. POSTSCRIPT 74, 75–76, 87–88 (2014) (“The committee consists of ‘[s]enior officials responsible for banking supervision or financial stability issues in central banks,’ or equivalent authorities with the formal responsibility of supervising banking in various nations worldwide By design, the BCBS is a ‘small, homogeneous, and insular’ club, meant to be able to reach agreement quickly and flexibly, and shielded against political, executive, and legislative forces.”).

²⁰ Basel Comm. on Banking Supervision, Bank for Int’l Settlements, *International Convergence of Capital Measurement and Capital Standards: A Revised Framework Comprehensive Version* 219 (June 2006) [hereinafter *International Convergence*], <http://www.bis.org/publ/bcbs128.pdf>.

²¹ *Id.*

of an internationally-active bank operating at the local level.²² Home country supervisors lead the coordination of the respective roles of the home country and host country supervisors.²³

While Basel I, which targeted internationally-active banks, was an initial effort by central bankers in the most developed countries to establish comparable and equivalent bank capital standards, jurisdictions of all sizes and standing across the globe, adopted the standards.²⁴ Thus, with far-reaching impact, Basel I set minimum capital requirements at only 8% of risk-weighted assets,²⁵ without empirical studies or other support for the adequacy of the 8% level.²⁶

Nonetheless, employing the 8% standard, Basel I's standardized approach for calculating risk-weighted assets assigned loans to one of four broad categories of risk such as: (1) Cash, loans to governments in specified countries-0%, (2) Loans to banks in specified countries-20%, (3) Residential mortgages-50%, (4) Corporate and consumer loans-100%.²⁷ Under this approach, banks totaled the weighted assets and multiplied the total by the 8% floor to determine their minimum capital requirement.²⁸ With only four broad categories for assets, critics argued

²² *Id.*

²³ *Id.*; see also Boey, *supra* note 19, at 78 (“[T]he focus on accountability and democratic legitimacy ought to be shifted from the international level back to the domestic, before each nation state adopts the Basel Accord into binding law. In this manner, soft law will permit the necessary coordination and cooperation in a rapidly developing and politically contentious realm by experts best placed to resolve such issues, while ensuring that no binding legal strength or ‘bite’ is granted until it has gone through the necessary constitutional and democratic review processes, as per each jurisdiction’s lawmaking processes.”).

²⁴ CHARLES GOODHART, *THE BASEL COMMITTEE ON BANKING SUPERVISION: A HISTORY OF THE EARLY YEARS 1974-1997*, at 556 (2011).

²⁵ Lall, *supra* note 17, at 5; see also *Risk Weighted Assets: DIY Capital*, *THE ECONOMIST* (Dec. 8, 2012), <http://www.economist.com/news/finance-and-economics/21567958-edifice-modern-bank-regulation-comes-under-scrutiny-diy-capital> (reporting that Basel II adopted the idea of risk-weighted assets so that banks with the most creditworthy borrowers could set aside less capital than peers taking greater risks and illustrating with the example that a residential mortgage considered ten times safer than a person loan would only require 10% as much capital).

²⁶ Heidi Mandanis Schooner, *Top-Down Bank Capital Regulation*, 55 *WASHBURN L.J.* 327, 350 (2016) (noting that the BCBS “never demonstrated support for setting the original risk based capital ratio at 8%” and stating that “[e]conomists Admati and Hellwig argue for levels in the 20 to 30% range,” with others favoring 20% or more as well); cf. GOODHART, *supra* note 24, at 178 (reporting that the G10 members of the BCBS established the 8% standard after calculations of existing ratios indicated most countries were at a 7-10% range).

²⁷ RICHARD APOSTOLIK ET AL., *FOUNDATIONS OF BANKING RISK: AN OVERVIEW OF BANKING, BANKING RISKS, AND RISK-BASED BANKING REGULATION* 68-69 (2009).

²⁸ See *id.* at 69.

that Basel I's floor made it profitable for banks to take more risk.²⁹ Under this framework, banks had to hold the same amount of capital for the highest credit-quality companies as for lower credit-quality companies.³⁰ Therefore, Basel I encouraged banks to make riskier loans because they could charge more for loans to the lowest credit-quality companies without incurring a proportionately higher cost for capital.³¹

In response to the criticism that Basel I encouraged banks to take too much risk and other concerns, the BCBS introduced Basel II in 2004.³² Basel II connected capital requirements to the actual risks inherent in banks' activities and assets, making capital standards more risk-sensitive. Banks used the ability to calculate actual risks to justify capital levels below the 8% floor of Basel I.³³ Large and typically internationally-active banks invested in sophisticated risk models to determine credit risk and primary inputs to the capital calculation—the internal ratings-based (“IRB”) approach.³⁴ Under this approach, banks were able to use their own history to determine borrowers' probabilities of default (“PD”).³⁵ Those using the advanced IRB approach were also able to rely on their own inputs for maturity of the exposure, their own estimates for loss given default (“LGD”), and their own estimates for exposure at default (“EAD”) on an exposure-by-exposure basis.³⁶

While the actual calculations of RWAs using PD, LGD, and EAD are complex,³⁷ the basic purpose of capital may be simply stated—to cover unexpected losses.³⁸ The BCBS stated that “an institution is expected to suffer losses that exceed its level of . . . capital on average once in a

²⁹ See *id.* at 68–71.

³⁰ *Id.* at 70.

³¹ *Id.*

³² See *id.* at 71; see also DANIEL K. TARULLO, BANKING ON BASEL: THE FUTURE OF INTERNATIONAL FINANCIAL REGULATION 123 & n.60 (2008).

³³ See Peihani, *supra* note 6 (unpublished dissertation at 123–24) (explaining from a regulatory capture perspective that banks obtained concessions during the Basel II process allowing them to reduce capital below the 8% floor).

³⁴ See Basel Comm. on Bank Supervision, Bank for Int'l Settlements, *An Explanatory Note on the Basel II IRB Risk Weight Functions*, at 1 (July 2005) [hereinafter *Basel II IRB*], <http://www.bis.org/bcbs/irbriskweight.pdf>; see also 3 Andrew Yeh, James Twaddle & Mike Frith, *Basel II: A New Capital Framework*, 68 BULL. OF THE RES. BANK OF N.Z. 6 (Sept. 2005), <https://www.rbnz.govt.nz/-/media/ReserveBank/Files/Publications/Bulletins/2005/2005sep68-3yehwaddllefriith.pdf>.

³⁵ See *id.* at 3–4; see also TARULLO, *supra* note 32 at 124, fig. 4.7.

³⁶ *Basel II IRB*, *supra* note 34, at 1–4, 9–11; see also TARULLO, *supra* note 32, at 124 fig.4.7.

³⁷ Vanessa Le Lesle & Sofiya Avramova, *Revisiting Risk-Weighted Assets* 21 (Int'l Monetary Fund Working Paper No. 12/90, 2012), <https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Revisiting-Risk-Weighted-Assets-25807>.

³⁸ *Basel II IRB*, *supra* note 34, at 7.

thousand years.”³⁹ Accordingly, the BCBS advised banking supervisors to analyze whether banks are incorporating considerations of unexpected events in calculating their required level of capital.⁴⁰ Further, the BCBS explained that “[t]his analysis should cover a wide range of external conditions and scenarios, and the sophistication of techniques and stress tests used should be commensurate with the bank’s activities.”⁴¹

Still, Basel II only provided guidance regarding banks’ capital adequacy; regulators required no standard method for calculating a loan portfolio’s capital reserve.⁴² Also, the revised framework allowed national supervisors discretion for implementation into national law of “dozens of rules or standards,” which created further opportunity for variation in practice.⁴³ As Federal Reserve governor Daniel Tarullo asserted:

The revised [Basel II] framework was controversial even before it was issued. Even as some large banks were reassured by trial runs of the Basel II IRB formulas showing that bank capital would decline, many academics and policy commentators—and even a few legislators—had concluded that the whole enterprise was significantly deficient, if not wholly misguided. Some US regulators had second thoughts as well, leading to a semi-public interagency struggle over the degree to which US implementing regulations would require more safeguards against capital declines than are present in the revised framework. The subprime crisis of 2007 reinforced the case made by at least some of the skeptics and induced the Basel Committee to propose significant modifications to Basel II before it had even been fully implemented. These post-2004 developments suggest the possibility that the revised framework will be subject, if not to continuous revision, then at least to continuous debate over whether changes are needed.⁴⁴

Thus, the BCBS began work on Basel III because some viewed Basel II as having lowered the capital requirements under Basel I, and as being

³⁹ *Id.* at 11.

⁴⁰ *International Convergence*, *supra* note 20, at 210.

⁴¹ *Id.*

⁴² Jonathan B. Dressler & Loren W. Tauer, *Estimating Expected and Unexpected Losses for Agricultural Mortgage Portfolios*, 98 AM. J. AGRIC. ECON. 1470, 1471 (2016) (referencing *International Convergence*, *supra* note 20, at 219).

⁴³ TARULLO, *supra* note 32, at 123.

⁴⁴ *Id.* at 10.

inadequate in light of the financial crisis that began in 2007.⁴⁵ In December 2010, the BCBS issued Basel III rules with the following objectives: 1) to improve the quality of banks' capital, 2) to ensure the amount of capital covered banks' risk-taking activities, 3) to require banks to build-up a capital cushion for use in periods of stress, and 4) to establish global liquidity standards for banks.⁴⁶ In particular, Basel III set forth a leverage ratio requirement, which acted as a capital floor and limited banks' ability to lower their capital requirements through the use of internal models.⁴⁷

Following the newer revisions of Basel III, however, the BCBS observed undesirable practice-based variations in banks' calculations of RWAs, including differences in supervisory practices and differences between banks in estimates of PD and LGD assigned to the same borrowers.⁴⁸ After its first study of the variability in RWAs in 2013, the BCBS announced policy options it could use to address excessive practice-based variations.⁴⁹ Additionally, in its July 2013 report, the BCBS specifically said:

Over the medium term, the Committee will examine the potential to further harmonise national implementation requirements and to put constraints on IRB parameter estimates. This policy work would also benefit from additional top-down analyses based on better data, such as more granular information on the types of exposures

⁴⁵ *See id.*

⁴⁶ Press Release, Basel Comm. for Bank Supervision, Bank for Int'l Settlements, Basel III Rules Text and Results of the Quantitative Impact Study Issued by the Basel Comm. (Dec. 16, 2010), <http://www.bis.org/press/p101216.htm>.

⁴⁷ Basel Comm. on Banking Supervision, Bank for Int'l Settlements, *Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems*, at 2 (rev. June 2011), <http://www.bis.org/publ/bcbs189.pdf>.

⁴⁸ *See* Press Release, Basel Comm. on Banking Supervision, Bank for Int'l Settlements, Regulatory Consistency of Risk-Weighted Assets in the Banking Book – Report Issued by the Basel Committee (July 5, 2013), <http://www.bis.org/press/p130705.htm> (“[T]here was a high correlation in how banks rank a portfolio of individual borrowers. Differences exist, however, in the levels of estimated risk, as expressed in probability of default (PD) and loss-given-default (LGD), that banks assign. These differences drive the variation in risk weights attributable to individual bank practices, and could result in the reported capital ratios for some outlier banks varying by as much as 2 percentage points from a 10% risk-based capital ratio benchmark (or 20% in relative terms) in either direction, although the capital ratios for most banks fall within a narrower range.”).

⁴⁹ *Id.*

within bank portfolios and information on credit risk mitigation.⁵⁰

After the BCBS published four consultative documents from late 2015 to mid-2016, Secretary General William Coen reported in October 2016 that the committee had reviewed comments on its proposals and would be issuing by year-end “a final package that reduces variability in risk-weighted assets and helps restore credibility to banks’ risk-based capital ratios.”⁵¹ Specific comments Secretary General Coen made about the “package” included (1) noting that a move back toward a standardized approach for calculating RWAs would negate the need for floors, (2) suggesting that the BCBS could improve risk sensitivity within the standardized approach, (3) providing notice of intent to curtail the use of internal modeling approaches, and (4) warning that the BCBS is not committing to no changes in capital requirements—by clarifying, consistent with its position on no aggregate increase in capital, that capital requirements should increase for riskier exposures and decrease for lower risk exposures.⁵²

Some in the banking industry objected to limitations on the use of internal models, arguing that variations in RWA calculations are desirable to reflect real differences in risk among jurisdictions and loan portfolios.⁵³ Further, these proponents of maintaining the status quo point to regulatory

⁵⁰ Basel Comm. on Banking Supervision, Bank for Int’l Settlements, *Regulatory Consistency Assessment Programme (RCAP): Analysis of Risk-Weighted Assets for Credit Risk in the Banking Book*, at 9 (2013) [hereinafter *Regulatory Consistency*], <http://www.bis.org/publ/bcbs256.pdf>.

⁵¹ Coen, *supra* note 1; see also Press Release, Basel Comm. on Banking Supervision, Bank for Int’l Settlements, The Chairman of the Basel Committee Reaffirms Commitment to Finalise Post-Crisis Basel III Reforms (Mar. 2, 2017), <https://www.bis.org/press/p170302.htm> (reporting that “finalization of Basel III will take longer than originally expected”).

⁵² Coen, *supra* note 1; see also *Briefing 2017*, *supra* note 1, at 7 (explaining, for example, that revisions in the risk-sensitivity of a standardized approach to replace IRB modeling for mortgages would have the consequence of increasing capital requirements “on [commercial and residential] mortgages with loan-to-value (LTV) ratios of more than 0.8 or when the repayment relies on cash flows generated by the property, while decreasing requirements for those with low LTV ratio[s] (below 0.4)”).

⁵³ Comment from the European Banking Fed’n to Basel Comm. on Banking Supervision, Bank for Int’l Settlements, at 4 (June 24, 2016) [hereinafter *European Banking Fed’n Comment*], <https://www.bis.org/bcbs/publ/comments/d362/europeanbanking.pdf> (responding with (1) objection to “the use of parameter floors and the proposed restrictions on the use of internal model for certain portfolios”; (2) argument that variability in RWAs is desirable and reflective of differences in market and portfolio characteristics among other factors; and (3) observation that most unwarranted variation is due to differences in interpretation of the requirements of the IRB approach or due to choices allowed within the approach).

efforts, which will soon address any unjustified variation in RWAs, i.e., variations in defining default and, consequently, differences as to when the maintenance of more capital in recognition of such a loan's higher risk is appropriate.⁵⁴

Examining the regulatory analyses of variations in the RWA calculations comparatively with banks' explanations and justifications for the variations illuminates issues as to (1) how much harmonization is needed, (2) whether it is feasible to achieve accuracy in risk measurement, and (3) whether concerns for oversight and comparability of banks' RWA calculations outweigh a presumably valid, but extremely complex, pursuit of accurate risk measurement.

III. EXPLANATIONS FOR VARIABILITY IN CALCULATIONS

*"[I]f the challenges that accompany[y] complex regulation are too high, simpler rules may increase the efficacy of financial regulation."*⁵⁵

Critics of model-based regulation assert that its complexity provides competitive advantage to the largest banks because these banks use the costly and sophisticated modeling techniques to lower their capital requirements, providing them with capacity to increase their business volume.⁵⁶ Smaller banks without the resources to invest in sophisticated models are relegated to the standardized and simpler approach for calculating RWAs and capital requirements.⁵⁷ Thus, the largest banks, using the IRB approach, may gain a greater volume of business at the expense of smaller banks unable to invest in modeling.⁵⁸

Additionally, proponents of simplicity say that the complexity of the IRB approach imposes unintended societal costs. These costs include the cost of the people banks must employ to support complex models, and the cost of more people within government to oversee banks' use of complex

⁵⁴ *Id.* at 4–5 (reporting that in 2015 the European Banking Authority (“EBA”) began addressing the high level of variability among banks' outcomes using the IRB approach with a new framework to be implemented by 2020 at the latest).

⁵⁵ Markus Behn, Rainer Haselmann & Vikrant Vig, *The Limits of Model-Based Regulation* 1, 10, 13 (European Cent. Bank, Working Paper No. 1928, 2016), <http://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1928.en.pdf?17ae15d416e9a8ff8b16bbd3c746c471> (explaining their study is based upon the German credit register data of 1,603 German banks, 45 of which opted for IRB, and claiming to be the first paper to demonstrate how banks used model-based regulation to economize their capital requirements).

⁵⁶ *Id.* at 8–9.

⁵⁷ *Id.*

⁵⁸ *See id.*

models.⁵⁹ Some experts claim that increases in financial supervisors have significantly out-paced the number of people working in the financial industry.⁶⁰ Others suggest that banks' hiring of skilled talent to run the complex models may be an inefficient allocation of society's resources.⁶¹

Of even greater concern is that history demonstrates that the IRB approach has produced meaningfully lower capital requirements than the standardized approach, which some experts thought already too low.⁶² Critics argue that allowing banks to create their own inputs into elaborate risk-weighted asset calculations results, unsurprisingly, in "gaming the system" or a race to zero.⁶³ Also, the variation presently occurring in banks' intricate RWA calculations aligns with the explanation that those who employ the best talent will find the loopholes around compliance thus making the models inequitable and their results incomparable.⁶⁴ Accordingly, those opposed to the IRB approach contend that regulators may be unable to detect the inappropriate exploitation of the models to lower capital requirements.⁶⁵

On the other hand, proponents of model-based regulation support linking bank capital to bank asset risk by explaining that "risk-sensitivity" in capital regulation allocates capital in an effective manner and facilitates "sustainable and stable growth in the economy."⁶⁶ Supporters also note that models for risk management provide banks with better knowledge about risks, and de-linking them from capital calculations discourages

⁵⁹ Andrew G. Haldane, Exec. Dir., Fin. Stability, Bank of Eng., Address at the Federal Reserve Bank of Atlanta: Financial Markets Conference, Constraining Discretion in Bank Regulation 7 (Apr. 9, 2013), <http://www.bis.org/review/r130606e.pdf>.

⁶⁰ Andrew G. Haldane, Exec. Dir., Fin. Stability, Bank of Eng., Remarks at the Int'l Fin. Law Review Dinner, Turning the Red Tape Tide (Apr. 10, 2013), <http://www.bis.org/review/r130411d.pdf>.

⁶¹ See generally ANAT ADMATI & MARTIN HELLWIG, *THE BANKERS' NEW CLOTHES: WHAT'S WRONG WITH BANKING AND WHAT TO DO ABOUT IT* 196 (2013).

⁶² Haldane, *supra* note 60; see also ADMATI & HELLWIG, *supra* note 61, at 178 (discussing historical support for much higher equity levels—at least 20 to 30 percent).

⁶³ Haldane, *supra* note 60; see Behn, *supra* note 55, at 4.

⁶⁴ Haldane, *supra* note 60; see Behn, *supra* note 55, at 4; see Lesle & Avramova, *supra* note 37, at 27–28 (noting regulatory awareness that banks "cherry pick" methodologies in modeling to optimize capital requirements).

⁶⁵ Behn, *supra* note 55, at 5 n.2, 9 n.12 (citing one study that asserts once complex rules are in place, the rules drive banks to accumulate assets which score favorably under the models thus creating systemic risk such as that which occurred with residential loans and their massive securitization during the recent crisis period).

⁶⁶ EUR. ECON., *THE USES (AND ABUSES) OF MODELLING ADJUSTMENTS*, at 8–9 (2016), http://www.europe-economics.com/publications/europe_economics_final_report_march_2016.pdf; but see ADMATI & HELLWIG, *supra* note 61, at 108, 179, 219–22 (arguing that substantially higher requirements for capital would be more efficient by reducing the cost of equity, which should not be viewed as fixed but, rather, in relationship to risk; higher capital requirements would also avoid the costs associated with financial instability).

banks' further investment in these tools.⁶⁷ Modeling proponents also argue that linking banks' own risk assessment of borrowers to capital allows banks to differentiate their pricing and prevents lower risk borrowers from seeking better pricing in the unregulated "shadow-banking" space.⁶⁸

However, by linking bank capital with individual bank asset risk, the current regulations validate the inherent complexity in assessing bank capital in part because they are ever-evolving and require continuous re-calibration.⁶⁹ Even critics acknowledge that these complicated, risk-based calculations need to be performed by the banks themselves, and regulators must oversee each bank's individualized calculations.⁷⁰ In summary, a model-based approach to RWA calculations may be doomed to continually frustrate regulators' capital adequacy oversight and investors' capital adequacy assessments.⁷¹

A. *The Regulatory View of Risk Sensitivity and Variation in RWAs*

The BCBS declared in July 2013 that reducing the complexity of RWA calculations was necessary because the non-uniform and complex models confused stakeholders—such as banking supervisors and investors—when they tried to assess banks' capital adequacy.⁷² It explained that, although linkage of regulatory models with bank risk management techniques reduces the opportunity for regulatory arbitrage, it drives excessive complexity in the capital framework as bank risk management techniques increase in sophistication.⁷³ In other words, the need for simplicity to facilitate regulatory oversight outweighs the benefits of linking capital requirements with banks' individual risk management practices.⁷⁴ Supporting this position, the BCBS pointed out that there are

⁶⁷ EUR. ECON., *supra* note 66, at 9–10.

⁶⁸ *See id.*; but see ADMATI & HELLWIG, *supra* note 61, at 224–26 (arguing that it is possible to regulate the shadow-banking sector).

⁶⁹ Behn, *supra* note 55, at 4.

⁷⁰ *See id.* at 33; see, e.g., FED. RES. SYS., CAPITAL PLANNING AT LARGE BANK HOLDING COMPANIES: SUPERVISORY EXPECTATIONS AND RANGE OF CURRENT PRACTICE 1–2 (2013), <http://www.federalreserve.gov/bankinfo/bcreg20130819a1.pdf> (explaining capital assessment expectations for large, complex institutions generally and including the requirement for firm specific assessments of risk).

⁷¹ *See* Basel Comm. on Banking Supervision, Bank for Int'l Settlement, *The Regulatory Framework: Balancing Risk Sensitivity, Simplicity and Comparability*, at 1 (2013) [hereinafter *Regulatory Framework*], <http://www.bis.org/publ/bcbs258.pdf> (commenting that pursuit of risk sensitivity has increased the complexity of RWA calculations to the point where there may not be an appropriate balance between the goals of risk sensitivity, simplicity, and comparability).

⁷² *Id.* at 12–13.

⁷³ *Id.* at 9–10.

⁷⁴ *Id.*

possibly hundreds of models involved in determining consolidated capital requirements using advanced mathematics for calculations, and regulators are challenged to keep pace with banks' risk management techniques.⁷⁵

Contributing to complexity and comparability challenges, some banks acquired exceptional treatment for RWA calculations even under the standardized approach.⁷⁶ Further, the BCBS noted that the Basel standards allow significant national discretion beyond the typical supervisory judgments that an internal model-based approach should entail, exacerbating RWA variations and providing yet another challenge with comparing banks' RWAs.⁷⁷

The BCBS' July 2013 Discussion Paper, which announced the need for simplicity in the capital framework,⁷⁸ was published the same month that it published its analysis of twenty-eight studies by twenty-one organizations addressing the variability in banks' calculations of RWAs.⁷⁹ This analysis incorporated results from a hypothetical benchmarking exercise the BCBS conducted where banks provided their actual risk parameters for various sovereign, financial, and corporate borrowers.⁸⁰ While the benchmarking study concluded there was a high level of consistency in banks' assessment of *relative* riskiness of obligors, it determined that there were undesirable differences in banks' PD and LGD estimates used to calculate *levels* of risk.⁸¹ Noting the low-default nature of the sovereign and bank asset classes in particular, the BCBS said a lack of appropriate data may be a factor causing the estimate differences and RWA variability between banks.⁸²

Overall, the BCBS analysis found that around 75% of RWA variations were attributable to the corporate and retail asset classes.⁸³ It concluded that while most of the RWA variation in the corporate and retail portfolios related to actual differences in risk versus modeling practices, the RWA variations remained excessive.⁸⁴

⁷⁵ *Id.*

⁷⁶ *Id.* (explaining that these exceptions often exhibited differentiated jurisdictional attributes).

⁷⁷ *Regulatory Framework*, *supra* note 71, at 1, 18 (explaining that national discretion "should improve comparability and the evenness of the playing field, as the treatment of dissimilar risks is not forced into a 'one size fits all' template"; but, in practice, this can also impair the comparability of RWAs).

⁷⁸ *Id.* at 1–2.

⁷⁹ *Regulatory Consistency*, *supra* note 50, at 13 & n.23.

⁸⁰ *Id.* at 26.

⁸¹ *Id.* at 6.

⁸² *Id.*

⁸³ *Id.* at 18.

⁸⁴ *See id.* at 26, 46.

Noting that internal models, even when linked to individual risk management practices, should have similar conceptual foundations and data sources, the BCBS was critical of materially significant practiced-based modeling variations needing resolution.⁸⁵ Summarizing on-site discussions with banks, the BCBS commented that bank data and modeling choices were significant drivers of RWA variation.⁸⁶ Specifically, the BCBS identified “themes” involving a general lack of data for low default portfolios covered by the hypothetical exercise, variations in the quality of reference data used in bank estimates, and short timeframes associated with data reference sets indicating that these data sets might not be capturing downturn scenarios to be sufficiently conservative estimates of risk.⁸⁷

The BCBS commented that it would pursue various short-term and medium-term policy initiatives to reduce the practice-based variations.⁸⁸ These initiatives included: (1) enhancing bank disclosure requirements to improve transparency and better inform stakeholders about underlying risk differentiators, (2) providing more guidance to banks, e.g., relative to the use of external data for low-default portfolios, (3) harmonizing national requirements to eliminate unwarranted differences between jurisdictions, and (4) constraining IRB parameter estimates, including creating floors.⁸⁹

The BCBS published a second report on RWA variation in April 2016 focused on retail and small and medium-sized enterprise (SME) loan portfolios, and the variability in estimates of exposure at the time of default (EAD) across the entire banking book.⁹⁰ The qualified findings were based on two BCBS data collections conducted in September and October of 2014.⁹¹ The study determined that average PD estimates for all banks and portfolios aligned closely with actual default experience, and it reported that banks experienced fewer defaults than estimated *for the*

⁸⁵ See *Regulatory Consistency*, *supra* note 50, at 46 (commenting that the introduction of judgment resulted in greater variation); see also *Regulatory Framework*, *supra* note 71, at 18 (observing that regulatory and risk management models should have “similar conceptual foundations and data sources”).

⁸⁶ *Regulatory Consistency*, *supra* note 50, at 8 & n.19.

⁸⁷ *Id.* at 46.

⁸⁸ *Id.* at 9.

⁸⁹ *Id.* at 9–10.

⁹⁰ Basel Comm. on Banking Supervision, Bank for Int’l Settlement, *Regulatory Consistency Assessment Programme (RCAP) Analysis of Risk-Weighted Assets for Credit Risk in the Banking Book*, at 2 (2016) [hereinafter *Regulatory Consistency 2016*], http://www.bis.org/bcbs/publ/d363.pdf?_sm_au_=iVVk10t8St57pnZT.

⁹¹ *Id.* (“Data on Retail/SME exposures were received from 35 major internationally active banks across 13 jurisdictions. Data on EAD were received from 37 banks across 17 jurisdictions. Information was also gathered during meetings with representatives from a subgroup of banks that submitted data and via a survey of supervisors.”).

sample period.⁹² However, for the same period, the study did not find similar alignment between average LGD estimates and actual loss rates.⁹³ It also said the results were mixed relative to average EAD estimates and loss outcomes.⁹⁴ Again, the BCBS concluded there were material practice-based variations, relative to PD, LGD, and EAD, which would benefit from potential policy initiatives.⁹⁵

Highlighting the extreme complexity of RWA calculations,⁹⁶ the BCBS listed several policy initiatives, targeting technical aspects of the calculations, to harmonize banks' modeling with best-practice risk measurement standards.⁹⁷ For example, the BCBS suggested it could develop a "[b]etter definition around what is meant by 'long-run average' with respect to PD estimation and acceptable methodologies and data with which to calibrate to these long-run averages."⁹⁸ It also said that RWA outcome consistency could benefit from more guidance on rating systems that banks should use in PD estimates, e.g. the use of systems oriented to point-in-time ("PIT") or through the cycle ("TTC") estimates.⁹⁹ Additionally, the BCBS determined that better informing banks about what is considered a "downturn" and providing guidance as to what to do when reference data sets do not include stress period observations could improve banks' calculations.¹⁰⁰ Further, it identified opportunity to harmonize differences in banks' treatments of recovery estimates for loans in the process of collection within the LGD estimation process, which could reduce unwarranted variation.¹⁰¹ The BCBS also determined that practice-based RWA variability could benefit from harmonizing discount rates banks apply to recovery cash flows.¹⁰² Relative to estimation of EADs, the BCBS stated that clarifying data censoring techniques—

⁹² *Id.* at 2–3 (expressing criticism that few banks provided data going back more than five years).

⁹³ *Id.* at 3.

⁹⁴ *Id.*

⁹⁵ *Id.* at 2–3, 21–23 (noting severe data limitations in the study and highlighting discussions with bank participants as informing the more significant sources of practice-based RWA variation in these portfolios).

⁹⁶ Lesle & Avramova, *supra* note 37, at 21.

⁹⁷ *Regulatory Consistency 2016*, *supra* note 90, at 22–23.

⁹⁸ *Id.*

⁹⁹ *Id.*; see also Jesus Alan Elizondo Flores, et al., Financial Stability Institute 2010 Award Winning Paper, *Regulatory Use of System-Wide Estimations of PD, LGD and EAD*, BANK FOR INT'L SETTLEMENTS: FINANCIAL STABILITY INSTITUTE 5 (Sept. 2010), <http://www.bis.org/fsi/awp2010.pdf> (commenting that "system-wide PIT estimations of PD consistently underestimate and overestimate the observed default rates . . . in respectively lower and higher risk segments of the economic cycle").

¹⁰⁰ *Regulatory Consistency 2016*, *supra* note 90, at 22.

¹⁰¹ *Id.* at 22–23.

¹⁰² *Id.* at 22.

removing data at the extremes or applying floors and caps to data—would reduce practice-based calculation differences.¹⁰³

Focusing on overall reliability, the BCBS suggested it could provide more guidance about model validation techniques, such as directing that models be recalibrated if they produce “large and persistent gaps between actual defaults, actual loss experience, and IRB estimates.”¹⁰⁴ In the absence of the BCBS being able to assess the adequacy of banks’ calculations because of shortcomings in the data it received, it suggested that model validation could assist in confirming the appropriateness of model calculations when supervisory oversight affirms their effectiveness.¹⁰⁵ Model validation should prompt banks to recalibrate when necessary even if their modeling practices fail to identify the need.

In March 2016, because of its continued findings of excessive variation in RWA calculations, the BCBS proposed changes to reduce complexity and improve comparability by imposing various floors and limiting the range of practices relative to model input parameters for loan portfolios where IRB would remain an option.¹⁰⁶ As discussed *supra* in part I, responses to the consultative document, predominately from European banks, were critical.¹⁰⁷

¹⁰³ *Id.*

¹⁰⁴ *Id.* at 22–23.

¹⁰⁵ *See id.* at 22–23, 36–39 (“Harmonisation in the area of model validation could ultimately lead to reductions in practice-based RWA variation.”).

¹⁰⁶ Basel Comm. on Banking Supervision, Bank for Int’l Settlements, *Consultative Document: Reducing Variation in Credit Risk-Weighted Assets—Constraints on the Use of Internal Model Approaches*, at 1, 7 (2016) [hereinafter *Reducing Variation*], <http://www.bis.org/bcbs/publ/d362.pdf> (“One of the lessons from the financial crisis is that not all credit risk exposures are capable of being modelled sufficiently reliably or consistently for use in determining regulatory capital requirements.”).

¹⁰⁷ Basel Comm. on Banking Supervision, *Comments received on the “Reducing variation in credit risk-weighted assets – constraints on the use of internal model approaches – consultative document”*, BANK FOR INT’L SETTLEMENTS [hereinafter *Comments on Reducing Variation*], <https://www.bis.org/bcbs/publ/comments/d362/overview.htm> (last visited Jan. 14, 2017) (listing comments from 73 individual responders—one comment is duplicative—following the BCBS’ release of the consultative document on March 24, 2016, inviting comments by June 24, 2016); *see e.g.*, Position Paper of European Association of Public Banks, at 1 (June 24, 2016), <http://www.bis.org/bcbs/publ/comments/d362/eaopb.pdf> (“reject[ing] the suggested removal of IRBA for certain portfolios as this would lead to a dramatic reduction in risk sensitivity of regulatory capital requirements and could cause faulty signalling in banks as well as a destabilisation of the financial system”).

B. The Banking Industry View of Risk Sensitivity and Variation in RWAs

European banks are at a disadvantage relative to the changes the BCBS has proposed for RWA calculations because EU banks engage more than U.S. banks in direct lending with less opportunity to provide services requiring less capital, such as U.S. banks enjoy.¹⁰⁸ Because the BCBS' proposed changes in the RWA calculations affect direct lending, and banks believe they increase capital requirements for direct lending, the changes disproportionately affect EU banks.¹⁰⁹ Nearly all banks responding to the BCBS' March 2016 proposal, however, objected strongly to the BCBS's proposed move toward standardization of RWA calculations and to the limitations it proposed on the use of internal models for calculating RWAs.¹¹⁰ Industry representatives also responded to the BCBS consultative document,¹¹¹ raising concerns about the proposed changes' adverse impact on availability of credit at reasonable costs to industry.¹¹²

¹⁰⁸ *Briefing 2017*, *supra* note 1, at 10–11 (commenting that “in the United States large corporates rely less on bank credit [because of other market alternatives] and residential mortgages exposures are offloaded to federal agencies”).

¹⁰⁹ *Id.* at 10–11 (explaining that EU banks hold more exposures on their books than U.S. banks where alternatives exist such as selling loans to government agencies).

¹¹⁰ *See generally Comments on Reducing Variation*, *supra* note 107; *see, e.g.*, European Banking Federation Comment, *supra* note 53, at 4 (stating “we disagree on the use of parameter floors and the proposed restrictions on the use of internal model for certain portfolios,” arguing that variability in RWAs is desirable and reflective of differences in market and portfolio characteristics among other factors and noting that regulatory and industry sources have established that most unwarranted variation is due to differences in interpretation of the requirements of the IRB approach or due to choices allowed within the approach).

¹¹¹ *See, e.g.*, Comment from the GdW Bundesverband deutscher Wohnungs- und Immobilienunternehmen e.V. to Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 1 (June 2016) [hereinafter GdW Comment], <https://www.bis.org/bcbs/publ/comments/d362/gbdwui.pdf> (representing the German real estate industry).

¹¹² *See generally id.* (disagreeing with proposed restrictions on the IRB approach, and commenting that the BCBS' proposed changes will lead to a deterioration in financing terms for loans secured by real estate); *see also* Letter from Aviation Working Group to Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 3 (June 21, 2016), <http://www.bis.org/bcbs/publ/comments/d362/aviationworking.pdf> (citing harm to . . . the air transport sector, on account of specialised lending becoming economically less attractive”).

While some responses were very brief in summarizing objections,¹¹³ others referenced empirical evidence,¹¹⁴ and some provided detailed explanations for their positions—including one that attached a full-blown consulting study supporting the accuracy and credibility of bank calculations under the existing model-based approach for specialized lending.¹¹⁵ The leasing company submitting the consulting study argued that specialized lending such as leasing should not be subjected to the BCBS's proposed floors for calculating RWAs because their study affirmed the asset class's lower risk, and the proposed changes would unjustifiably increase capital levels for this asset class.¹¹⁶

In fact, similar to the leasing company's expressed concern, many of the comment letters equated the BCBS's proposal with significant increases in bank capital requirements resulting from an undesirable loss of risk-sensitivity.¹¹⁷ Consequently, banks argued that the proposed changes would adversely affect the cost and availability of credit and hinder economic growth.¹¹⁸ In addition, some bank commenters argued

¹¹³ See, e.g., Letter from the Czech Banking Association to Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 1–2 (June 24, 2016) (providing a two-page response suggesting that output floors be applied at the institution level rather than at more granular levels and requesting clarification on certain aspects of the proposal), <https://www.bis.org/bcbs/publ/comments/d362/czechbankingass.pdf>; see also Letter from Wirawat Panthawangkun, Chairman, Basel Club, to Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 1–2 (June 24, 2016), <https://www.bis.org/bcbs/publ/comments/d362/baselclubthaila.pdf> (providing a two-page response asserting the importance of maintaining risk sensitivity).

¹¹⁴ See Letter from Lars Rohde, Bd. of Governors, Danmarks Nationalbank, to Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 1–4 (June 24, 2016), <https://www.bis.org/bcbs/publ/comments/d362/danmarksnationa.pdf> (providing empirical data for Danish banks' low risk and losses relative to retail mortgages, and asserting that Danish banks' LGDs are low relative to other countries because of structural factors allowing for easy and fast foreclosure rather than longer foreclosure processes that produce higher losses).

¹¹⁵ Letter from Leon Dhaene, Dir. Gen., Leaseurope, to Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 1–4 (June 24, 2016), <https://www.bis.org/bcbs/publ/comments/d362/leaseurope.pdf> (commenting that their experience is that credit risk models have been reliable, citing the supervisory authorities' years of investment in controlling and validating the models and referencing the Deloitte research they attached demonstrating that leasing LGDs are significantly lower than the proposed floors).

¹¹⁶ *Id.*

¹¹⁷ See generally *Comments on Reducing Variation*, *supra* note 107; see, e.g., Letter from Hans Lindberg & Maria Nilsson, Swedish Bankers' Ass'n, to Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 2–3 (June 23, 2016), <https://www.bis.org/bcbs/publ/comments/d362/swedishbankersa.pdf> (noting that large corporates “are generally regarded as lower risk than portfolios with high default frequencies,” and asserting these loans should not be subjected to a less risk-sensitive treatment that is likely to result in much higher capital requirements).

¹¹⁸ See, e.g., Letter from Simon Hills, British Bankers Ass'n, to Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 3 (June, 2016) [hereinafter *British Bankers*].

that the proposed changes' imposition of higher capital requirements would increase overall systemic risk by driving low risk borrowers to seek better pricing in the unregulated shadow-banking sector.¹¹⁹

Banks also complained in their responses that the proposal's move toward a less risk-sensitive framework disjoins banks' risk management processes from regulatory capital requirements.¹²⁰ In addition to the significant existing investment in systems, some banks argued that disconnecting internal risk management from the regulatory capital framework discourages further investment in risk management techniques and will lower the quality of risk management practices.¹²¹ Hoping to mitigate this outcome, a few banks proposed alternatives, which would preserve use of existing risk management systems tied to capital requirements and protect the significant investments at the same time.¹²²

Letter], <https://www.bis.org/bcbs/publ/comments/d362/britishbankersa.pdf> (stating that many of its members consider that the new requirements are "likely to result in increased capital requirements" and noting the possible adverse consequences of such to economic growth); *see also* Letter from David Wagner, Exec. Managing Dir., The Clearing House Ass'n L.L.C., to the Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 10–11 (June 24, 2016) [hereinafter Letter from The Clearing House], <https://www.bis.org/bcbs/publ/comments/d362/theclearinghous.pdf> (citing authority for the proposition that "imposing overly high capital requirements on banks harms the global economy by limiting access to financing and liquidity").

¹¹⁹ *See generally* *Comments on Reducing Variation*, *supra* note 107; British Bankers Ass'n Letter, *supra* note 118, at 3 (commenting that "these proposals may drive some businesses to other areas of financial services, such as insurance and 'shadow banking,' some of which may be outside the current scope of prudential supervision and oversight").

¹²⁰ *See generally* *Comments on Reducing Variation*, *supra* note 107; *see, e.g.*, Letter from Mark E. White, Senior Vice President & Head Enterprise Risk, Bank of Montreal, to William Coen, Secretary, Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 2 (June 26, 2016) [hereinafter Letter from Bank of Montreal], <https://www.bis.org/bcbs/publ/comments/d362/bmofinancialgro.pdf> (stating that "[e]ven where this will not increase capital, . . . the industry generally prefers model restrictions that do not interfere with risk management practices – e.g. if LGDs for an asset class are considered too variable and some banks appear to have unreasonably low LGDs, rather than flooring LGDs, the better intervention is to require a minimum RWA as it will better support the continuation of existing risk management and parameter discovery practices").

¹²¹ *See generally* *Comments on Reducing Variation*, *supra* note 107; *see, e.g.*, Letter from Japanese Bankers Ass'n to Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 5 (June 26, 2016), <https://www.bis.org/bcbs/publ/comments/d362/japanesebankers.pdf> (stating that the BCBS proposal will "disincentivise banks from enhancing their risk management practices and could lead ultimately to deterioration in the level of risk management at banks" and further commenting that "the BCBS appears to excessively focus on comparability and simplicity and does not sufficiently consider risk sensitivity").

¹²² *See* Letter from Hedwige Nuyens, Managing Director, & Debbie Crossman, Chair of the Prudential Supervision Working Grp., Int'l Banking Fed'n, to the Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 3 (June 26, 2016), <https://www.bis.org/bcbs/publ/comments/d362/ibfed.pdf> ("More guidance on definitions such as

Additionally, commenters frequently argued that the loss of risk-sensitivity could cause banks to take more risk to increase expected returns.¹²³ Some observed that this change could result in herd effects leading to greater systemic risks.¹²⁴

While the controversy surrounding the benefits of model-based regulation's risk sensitivity versus the downside of complexity are not new, commenters seemed genuinely surprised by the BCBS's proposal to restrict the use of internal models and by the magnitude of the proposed changes.¹²⁵ Due to their surprise, some commenters included strong

recognition of default, length of LGD recovery periods, LGD discount rates, and required conservatism for sources of uncertainty in combination with well-informed floors would reduce RWA variability, thereby supporting the retention of the A-IRB approach for most risk classes . . . permitting banks to continue leveraging their A-IRB infrastructure where important investments have been made including those related to risk management capabilities."); *see also* Letter from Bank of Montreal, *supra* note 121, at 2 ("better intervention is to require a minimum RWA as it will better support the continuation of existing risk management and parameter discovery practices").

¹²³ *See, e.g.*, Letter from Italian Banking Ass'n to Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 4-5 (June 24, 2016), <https://www.bis.org/bcbs/publ/comments/d362/italianbankinga.pdf> (noting increased standardization at the expense of risk sensitivity causes banks to prefer to finance riskier and more profitable counterparties given a flat cost of capital and "encourage[s] so-called herd behavior amongst banks . . . to invest in the same types of assets characterized by relatively low capital absorption, therefore potentially amplifying systemic risk in the event of crisis").

¹²⁴ *Id.*; Joint Letter from David Strongin, Exec. Dir., Glob. Fin. Mkt. Ass'n, et al., to Stefan Ingves, Chairman, Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 7 (June 21, 2016), <https://www.bis.org/bcbs/publ/comments/d362/gij.pdf> ("The less risk sensitive the framework is, the more opportunities for regulatory arbitrage are created, incentivising firms to seek higher risk assets as a means of boosting returns . . . [causing] herd effects, leading to less diversity in banks' portfolios . . . [with] a corresponding increase in risk in the financial system as a whole.").

¹²⁵ Letter from Roselyne Renel, Glob. Head, Standard Chartered, to Secretariat, Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 3 (June 20, 2016), <https://www.bis.org/bcbs/publ/comments/d362/standardcharter.pdf> ("The proposals represent the most fundamental set of changes to the calculation of risk-weighted assets since Basel II, therefore should be subject to the same level of consultation and analysis; by way of comparison Basel II took 7 years and involved many consultations and 5 quantitative impact studies."); Letter from The Clearing House, *supra* note 118, at 5 ("[I]n advance of finalizing and evaluating the cumulative impact of [the many] revisions to the Basel III capital framework, the Basel Committee is now attempting to layer the proposed Standardized Approach-based constraints onto the calculation of risk-weighted assets under the A-IRB Approach as set forth in the Consultation . . . [without providing] banking organizations, market participants or other interested parties with any meaningful opportunity to holistically review and comment on the entirety of the Basel Committee's revisions in the same manner afforded during the Basel II and Basel III processes . . . [and] without the benefit of considering the potential cumulative effects of the various proposals in the aggregate.").

language in their responses.¹²⁶ For example, the French Banking Federation said, “[w]e warn that the Committee should not hastily validate a change of this magnitude without proper time for consensus building, iterations between jurisdictions and with the industry, and proper impact studies.”¹²⁷

Arguing for retaining the existing model-based approaches, several commenters argued that the BCBS should pursue better supervision of models and allow time for harmonization of IRB estimation practices to achieve a reduction in RWA variability.¹²⁸ Some banks specifically identified the current efforts of the European Banking Authority to harmonize calculations and reduce unwarranted variability.¹²⁹

A couple of commenters requested that the BCBS recognize, when addressing RWA variability, that there are different business models and supervisory environments with legitimately different risk characteristics.¹³⁰ Thus, they argue that it is desirable to retain RWA variability because it reflects actual differences in the riskiness of bank assets stemming from variations in operating environments.¹³¹

¹²⁶ See e.g., Letter from Doris Ma, Sec’y, The Hong Kong Association of Banks to Basel Comm. on Banking Supervision, Bank for Int’l Settlements, at 4 (June 24, 2016), [hereinafter Letter from The Hong Kong Ass’n of Banks], <http://www.bis.org/bcbs/publ/comments/d362/hkaob.pdf> (“[I]n terms of the timeline, we understand the Basel Committee’s ambition to finalise requirements by the end of 2016; but would caution that the suite of regulatory change underway . . . is far-reaching in nature and represent a fundamental change to the entire regulatory capital framework.”).

¹²⁷ Comment from French Banking Fed’n to Basel Comm. on Banking Supervision, Bank for Int’l Settlements, at 1, 5–6 (June 24, 2016) [hereinafter Letter from French Banking Fed’n], <https://www.bis.org/bcbs/publ/comments/d362/frenchbankingfe.pdf>.

¹²⁸ See *Comments on Reducing Variation*, *supra* note 107; see, e.g., Letter from The Hong Kong Ass’n of Banks, *supra* note 126, at 2–3 (“[T]he objective of reducing variability of risk weights should be fundamentally addressed via harmonising key modelling input definitions such as default, down-turn, data sufficiency criteria, etc.[.] . . . and providing more specific guidance and clarifications issued by supervisors instead of introducing output floors.”).

¹²⁹ See generally *Comments on Reducing Variation*, *supra* note 107; see, e.g., Letter from French Banking Fed’n, *supra* note 127, at 3 (“[T]remendous efforts have been made and are underway by the European Banking Authority (EBA) through its benchmarking exercises and multiple consultations . . . leading models and parameters calculations to converge, hence to more comparability and less undue variability.”).

¹³⁰ See generally *Comments on Reducing Variation*, *supra* note 107; see, e.g., Letter from Canadian Bankers Ass’n, *supra* note 5, at 2–3 (“[T]here are several fundamental reasons for variation in RWA – differences in modelling choices and data inputs, supervisory guidance across jurisdictions, and differences in business strategy, systemic risk, products, transaction/customer risk and risk management practices.” “[S]ome divergence in practices in measuring RWA should be reasonably expected as homogeneous risk weights result in even greater and undesirable systemic risk.”).

¹³¹ Letter from Canadian Bankers Ass’n, *supra* note 5, at 2–3.

There were also technical observations in the comment letters expressing concern about categories of loans that would unjustifiably receive less favorable treatment under the proposed changes, which could be useful for the BCBS to consider in finalizing standards.¹³² For example, American Express, while expressing full support for the BCBS proposal, requested a broader definition for “transactors”—those considered lower risk because they essentially pay their debt off monthly—in order to preclude an overly conservative RWA calculation resulting in higher capital requirements.¹³³

The table below summarizes commenters’ main observations and criticisms:

Comment	Number of Commenters	Percentage of Commenters
1) Criticism that becoming less risk sensitive by mandating floors for losses rather than using actual loss history has one or more of the following adverse consequences: a) creates opportunity for regulatory arbitrage whereby banks take more risk to increase expected returns, b) increases costs for relatively lower risk borrowers by driving them to the unregulated shadow-banking market, which increases systemic risk, and/or c) disjoins banks’ risk management processes from regulatory capital requirements creating inefficiencies and disincentives to invest further in advanced risk management techniques.	61	84%

¹³² See generally *Comments on Reducing Variation*, *supra* note 107; see e.g., Letter from The Hong Kong Ass’n of Banks, *supra* note 126, at 3 (“For instance, the provision of trade finance, which is especially important to SMEs and in emerging markets, will suffer from the introduction of Exposure at Default (EAD) floors and limitations on the determination of the Maturity (M) parameter, as well as the reversal of Bank exposures to the Standardised Approach as some of the common trade finance products such as letters of credit are treated as exposures to banks / FIs.”).

¹³³ Letter from Jeffrey Campbell, Exec. Vice President & Chief Fin. Officer, American Express Co., to Secretariat, Basel Comm. on Banking Supervision, Bank for Int’l Settlements, at 4–5 (June 24, 2016), <https://www.bis.org/bcbs/publ/comments/d362/americanexpress.pdf>.

2) Assertion that change is unnecessary because shortcomings in existing modeling techniques may be addressed by the BCBS through a) harmonizing supervisory and modelling practices, including the provision of more parameter definitions to ensure modeling consistency, and/or b) taking account of benchmarking and stress testing exercises, which produce valuable data for capital adequacy assessment.	43	59%
3) Concern expressed as to treatment of large corporates including a) treating subsidiaries equivalent to its parent, b) providing thresholds for differentiating treatment of corporates based on their size without justification for the threshold, and c) eliminating the use of internal rankings for non-public obligors does not recognize operating differences between jurisdictions, and an alternative solution whereby data is pooled among creditors would be preferable.	37	51%
4) Criticism that considerably more lead time is necessary for implementation of changes*.	22	30%
5) Observation that model changes need to be coordinated with accounting standards to reduce reporting complexity and dual bookkeeping.	15	21%
6) Generally, expressed support for the BCBS proposal.	5	7%

*Many more may be inferred to hold this belief.¹³⁴

¹³⁴ See Appendix for bank comment listing; see generally *Comments on Reducing Variation*, *supra* note 107.

In contrast to the banks' emphasis on risk sensitivity, Finance Watch, an independent non-profit public interest association, submitted a comment letter arguing for the BCBS to continue to move toward greater standardization and simplicity stating:

At present, banks enjoy a significant degree of freedom in the design of regulatory risk models, which allows them to arbitrage capital weights to reduce capital and expand leverage. Therefore, we welcome also the BCBS's aim to review the structure of the regulatory framework including considerations of the costs and benefits of basing regulatory capital on banks' internal models and alternative approaches to determining regulatory capital. Bearing in mind the shortcomings of internal models, arising mostly from model uncertainty, complexity and regulatory arbitrage, Finance Watch is convinced that the regulatory framework should not rely on them as a major . . . indicator of capital.¹³⁵

IV. ALTERNATIVES FOR RWA CALCULATIONS

*"It may be that the ultimate aim of a framework that is both simple and risk sensitive is unachievable."*¹³⁶

The BCBS noted its intention in July 2013 to retain risk-sensitivity while simplifying the capital framework by constraining the use of internal models.¹³⁷ Despite this long-standing declaration, there are responses to

¹³⁵ Letter from Fin. Watch to Basel Comm. on Banking Supervision, Bank for Int'l Settlements, at 2 (June 24, 2016), <https://www.bis.org/bcbs/publ/comments/d362/financewatch.pdf>.

¹³⁶ David Strachan, *Bank Capital Regulation | Where Next for the Good Ship Basel?*, Deloitte Fin. Servs.: UK Blog (Nov. 30, 2015), <http://blogs.deloitte.co.uk/financial-services/2015/11/bank-capital-regulation-where-next-for-the-good-ship-basel.html> (arguing for regulators to pull back from pushing the proposed model changes on banks at a time when political branches are focused on the economy, and to "persist with the current standardised approach to credit risk"); Kevin Clarke & Roozbeh Alavi, *First Take: Five Key Points from Basel's Proposed Restrictions on Internal Models for Credit Risk*, PwC (Apr. 1, 2016), <http://www.pwc.com/us/en/financial-services/regulatory-services/publications/assets/basel-models-credit-risk-march-2016.pdf> (stating that banks should improve their standardized approach to calculating regulatory capital noting that "[t]he Basel proposal does not completely prohibit the use of IRB approaches, but nevertheless foreshadows the eventual phase-out of internal models for regulatory capital calculations").

¹³⁷ See *Regulatory Framework*, *supra* note 71, at 18 ("While the introduction of capital floors may blunt the incentive to develop internal models, banks will still need to develop

the March 2016 consultative document,¹³⁸ which demonstrate that banks around the world were not prepared for the changes the BCBS proposed.¹³⁹ Banks and regulators frame the issue as one of risk–sensitivity versus complexity, and alternatives seem limited to whether or not regulations will allow internal estimates to drive the risk weights that determine capital requirements. Given that choice, the regulatory arguments regarding the benefits of simplicity seem to outweigh the banks’ arguments for risk–sensitivity, which are heavily connected to opposition to higher capital requirements. The evidence from various regulatory and expert studies suggests, *inter alia*, that model complexity—in its pursuit of risk measurement accuracy—imposes excessive costs on society, creates undue challenges to regulatory oversight, and prevents transparency with respect to the investing public seeking to understand relative differences in risk among the banks.

However, some experts argue that the issue of risk–based modeling needs to be viewed from a broader perspective—that of financial stability. They favor much higher standardized capital levels,¹⁴⁰ which might actually ensure that banks only exceed their “capital on average once in a thousand years.”¹⁴¹ As one example, the Federal Reserve Bank of Minneapolis proposes raising the largest banks’ common equity capital levels to a 23.5 percent ratio arguing that the benefits outweigh the costs.¹⁴²

Eliminating a risk–based framework in favor of a simple and large capital level requirement would nullify RWA calculations and resolve the variability issues and debate.¹⁴³ However, it is unlikely that regulators will

models for their own risk management and pricing purposes: regulation should not be the sole justification for the development of models by banks.”).

¹³⁸ See generally *Reducing Variation*, *supra* note 106.

¹³⁹ See generally *Comments on Reducing Variation*, *supra* note 107; see, e.g., Letter from French Banking Fed’n, *supra* note 127, at 1 (“We are doubtful that such a major change be warranted, nor that it could realistically be decided in the short timeframe left for the finalization of the proposed framework due for end 2016.”).

¹⁴⁰ See, e.g., Schooner, *supra* note 26, at 342–44, 350.

¹⁴¹ See *Basel II IRB*, *supra* note 34, at 7.

¹⁴² FED. RESERVE BANK OF MINNEAPOLIS 9TH DIST., THE MINNEAPOLIS PLAN TO END TOO BIG TO FAIL, SUMMARY FOR POLICYMAKERS 4 (2016), <https://www.minneapolisfed.org/~media/files/publications/studies/endingtbf/the-minneapolis-plan/the-minneapolis-plan-to-end-too-big-to-fail-2016.pdf?la=en> (commenting that requiring “[the largest] banks to issue common equity equal to 23.5 percent of risk–weighted assets, with a corresponding leverage ratio of 15 percent . . . maximizes the net benefits to society from higher capital levels . . . [by] substantially [reducing] the chance of public bailouts relative to current regulations from 67 percent to 39 percent . . . at a relatively low cost of gross domestic product (GDP).”).

¹⁴³ Letter from The Clearing House, *supra* note 118, at 11 (asserting that “standardized measures require standardized categories, [and] they inevitably involve the collapse of assets with widely varying risk profiles into a single category assigned a single risk measure”).

move to such a simple, high level of capital mandate in the near term, even if it is the best public policy and could be implemented over a significant period of time to avoid any possibility of disruptive economic effects. It is unlikely for several reasons. First, the BCBS provided assurances about not raising aggregate capital levels.¹⁴⁴ Second, U.S. politics has shifted toward banks' perspectives on regulation as evidenced by the Chairman of the House Financial Services Committee proposing to undo provisions of the Dodd–Frank Act.¹⁴⁵ Third, the EU Commission recently commented that action is needed to reduce undue regulatory burden as it pertains to financing the economy.¹⁴⁶

Perhaps an alternative to the IRB approach, in the shorter term, is to further improve granularity under the existing standardized approach for calculating RWAs.¹⁴⁷ While leaving for another day the very important issue of adequate minimum levels of bank capital, this approach would retain some risk–sensitivity in the capital framework while simplifying calculations.¹⁴⁸ Some banks suggest that internal risk models could inform decisions regarding an asset's assignment to a risk category within the standardized approach.¹⁴⁹ The benefit of preserving use of the internal

¹⁴⁴ See generally *Reducing Variation*, *supra* note 106.

¹⁴⁵ Caroline Bradley, *An Unsafe Financial System*, JOTWELL (Dec. 6, 2016) (reviewing Anat R. Admati, *It Takes a Village to Maintain a Dangerous Financial System*, in *Just Financial Markets? Finance in a Just Society* (Lisa Herzog ed., forthcoming 2017)), <http://corp.jotwell.com/an-unsafe-financial-system> (“These developments imply something of a slide back to pre–crisis thinking.”); accord Geoffrey Smith, *Read the Full Cease and Desist Letter a Senior Congressman Just Sent to Janet Yellen*, *Fortune Finance*, Feb. 3, 2017, <http://fortune.com/2017/02/03/read-the-full-cease-and-desist-letter-a-senior-congressman-just-sent-to-janet-yellen/> (attaching a letter from a vice–chairman on the House Financial Services Committee to Janet Yellen stating that “[i]t is incumbent upon all regulators to support the U.S. economy, and scrutinize international agreements that are killing American jobs”).

¹⁴⁶ Bradley, *supra* note 145; see also Huw Jones, *Regulators to delay meeting in bid to reach bank capital deal*, THOMSON REUTERS (Aug. 2, 2017, 6:53 AM), <http://www.nydailynews.com/news/wires/news/business/regulators-delay-meeting-bid-reach-bank-capital-deal-article-1.3377932> (indicating that European banks' opposition is having an impact because “[b]anking regulators will postpone their next meeting in another bid to agree on global capital rules, taking more time to try to overcome objections from European banks to minimum capital levels”); but see Mohamed A. El–Erian, *There's Still Too Much Risk in the Financial System*, BLOOMBERG VIEW (Aug. 10, 2017 1:00 AM EDT), <https://www.bloomberg.com/view/articles/2017-08-10/there-s-still-too-much-risk-in-the-financial-system> (warning against complacency).

¹⁴⁷ Letter from Canadian Bankers Ass'n, *supra* note 5, at 4 (“In the event . . . the Committee proceeds with its proposal to require the standardized approach . . . we recommend more granularity in the risk weight buckets than is proposed in the Revised Standardised approach . . . [and] [r]isk weights could also be mapped to the Bank's internal ratings.”).

¹⁴⁸ *Id.*

¹⁴⁹ *E.g., id.*

models for this purpose is that it maintains incentive to continue enhancing these models, including the quality of the data that serves as input to them. And, banks may have a point about the benefits of continued investments in analytics.¹⁵⁰ A February 2016 IFC Working Paper suggested that central banks should engage in defining a framework for the potential use of big data to inform policy decisions, and an important source of data for central banks would be from individual banks.¹⁵¹

V. CONCLUSION

*“Would you tell me, please, which way I ought to go from here?”*¹⁵²

While the minimum level of capital required to ensure financial stability is desperately in need of greater attention, politics do not presently favor increasing bank capital. With nearly a decade having passed, memory of the last financial crisis appears to be fading. Further, financial stability, the ultimate purpose for capital, is not well served by arguments that debate whether models can accurately predict the current capital requirements at a six, seven, eight, nine, or even ten percent level of risk-weighted assets. The levels of capital being discussed appear much too low on their face to provide an adequate cushion when confronted with periods of economic stress. However, one of the failings of the current system is that internal models had not proved their veracity prior to use. Also, in coming to the decision to simplify, the BCBS noted several times that the data banks used in modeling did not incorporate data for periods of significant downturn.

Perhaps a more objective approach for reconciling modeling, RWA calculations, and capital risk management is for the BCBS to undertake an overall study of capital adequacy that would achieve the objective of

¹⁵⁰ *Retail Banks and Big Data: Big Data as the Key to Better Risk Management*, THE ECON. INTELLIGENCE UNIT 4–5 (2014), <http://www.eiuperspectives.economist.com/sites/default/files/RetailBanksandBigData%20%281%29.pdf> (noting that bankers surveyed believe credit risk is an area of great potential for big data and its tools to impact improvement in risk management).

¹⁵¹ Per Nymand–Andersen, *Big Data: The Hunt for Timely Insights and Decision Certainty* 6, 15 (IFC, Working Papers No. 14, 2016), <http://www.bis.org/ifc/publ/ifcwork14.pdf> (“As the mandates of many central banks have been extended to cover, in particular, financial stability and banking supervision in addition to monetary policy, . . . the scope for using ‘big data’ as a source of relevant information [may have] increased . . . to [help] detect trends and turning points within the economy, thereby providing supplementary and more timely information compared to the “traditional” toolkit of central banks.”).

¹⁵² LEWIS CAROLL, *ALICE’S ADVENTURES IN WONDERLAND* 53 (150th Anniversary ed., Princeton University Press 2015) (1897).

minimizing tail risk—the risk of inadequate capital during a crisis—to no more than once every thousand years. A more risk-sensitive standardized approach for calculating RWAs could align with such a benchmark study to achieve the financial stability objective. As suggested by some of the bank comment letters, banks could use their models for calculating where assets would fall within the standardized approach, calculate their RWAs based upon more finely gradated risk categories, and thus determine their capital requirements while maintaining a link to their risk management processes. Such an approach would also provide simplicity for easing oversight and comparability concerns of regulators and investors. Additionally, considering the continued evolution of technology and advanced analytics using big data, there appears to be merit in maintaining a role for banks' internal models. As noted, banks and banking supervisors have significant investment in credit risk modeling techniques, which are also linked to banks' risk management practices. These investments include validation of the models' outputs as well as validation of the data inputs. While perhaps in need of further enhancement to fully incorporate tail risk, refined models, and the data input to them, could provide useful information to central banks for managing risk beyond the institutional level.

APPENDIX

#	Entity Name	Keys	1	2	3	4	5	6
1	ABN-AMRO	1,2,3,4,5	✓			✓	✓	
2	American Express	2,3,4,6		✓	✓	✓		✓
3	Asian Bankers Association	1,2,5	✓	✓			✓	
4	Association Francaise des Sociétés Financières	1,2,3,4	✓	✓	✓	✓		
5	Australian Bankers' Association	1,2,3,4	✓	✓	✓	✓		
6	Austrian Economic Chamber, Division Bank and Insurance	1,2,3,4,5	✓	✓	✓	✓	✓	
7	Aviation Working Group	1,2,4	✓	✓		✓		
8	Bangkok Bank	1,3,5	✓		✓		✓	
9	The Banking Association of South Africa	1,2,4	✓	✓		✓		
10	Barclays	1,2,3,4	✓	✓	✓	✓		
11	Basel Club Thailand	1	✓					
12	Berneunion	n/a						
13	BMO Financial Group	1,2	✓	✓				
14	British Bankers Association	1,2,3,4	✓	✓	✓	✓		
15	British Property Federation	1,2	✓	✓				
16	Building Societies Association (UK)	1,2,4	✓	✓		✓		
17	Bundesverband deutscher Banken	1,2,3,4,5	✓	✓	✓	✓	✓	
18	Canadian Bankers Association	1,2,3,4	✓	✓	✓	✓		
19	China Banking Association	3			✓			
20	Commercial Real Estate Finance Council	1	✓					
21	Credit Benchmark	2,3		✓	✓			

22	Credit Suisse	1,3	✓		✓			
23	Customer Owned Banking Association	6						✓
24	Czech Banking Association	n/a						
25	Danish Bankers Association et al	1,2,3	✓	✓	✓			
26	Danish Ministry of Business and Growth	1,3	✓		✓			
27	Danmarks Nationalbank	1	✓					
28	DBS Bank	1,3	✓		✓			
29	Deutsche Bank	1,2,3	✓	✓	✓			
30	Deutsches Aktieninstitut	1,3	✓		✓			
31	Dutch Banking Association	1,2,3,4,5	✓	✓	✓	✓	✓	
32	EU Federation for the Factoring and Commercial Finance Industry	1,3	✓		✓			
33	Eurofinas	1,2	✓	✓				
34	European Association of Cooperative Banks	1,2,4,5	✓	✓		✓	✓	
35	European Association of Public Banks	1,2,3	✓	✓	✓			
36	European Banking Federation	1,2,3,4,5	✓	✓	✓	✓	✓	
37	European Community Shipowners Association	1	✓					
38	European Federation of Building Societies	1,2,3	✓	✓	✓			
39	European Mortgage Federation– European Covered Bond Council	1,2	✓	✓				

40	Federation of German Industries	1	✓					
41	Finance Watch	2,3,6		✓	✓			✓
42	Finanstilsynet and Norges Bank	6						✓
43	French Banking Federation	1,2,3,4,5	✓	✓	✓	✓	✓	
44	GdW Bundesverband dt. Wohnungs- und Immobilienunternehmen	1	✓					
45	Genworth Financial	n/a						
46	GFMA – ISDA – IACPM – JFMC	1,2,3,4	✓	✓	✓	✓		
47	Hong Kong Association of Banks	1,2,3,4	✓	✓	✓	✓		
48	IBFed	1,2,3,4,5	✓	✓	✓	✓	✓	
49	ICC – BAFT	1,3	✓		✓			
50	IIF	1,2,3,4,5	✓	✓	✓	✓	✓	
51	International Trade and Forfaiting Association	n/a						
52	iRuiz Consulting	1	✓					
53	Italian Banking Association	1,2,3	✓	✓	✓			
54	Japanese Bankers Association	1,2,3,4	✓	✓	✓	✓		
55	Leaseurope	1,2,3	✓	✓	✓			
56	Lloyds Banking Group	1,2	✓	✓				
57	Malayan Banking Berhad	1,2,5	✓	✓			✓	
58	Nicholas CL Beale and Michael B. Thiessen	n/a						
59	Rabo AgriFinance	1	✓					
60	Rabobank	1,2	✓	✓				
61	Radley and Associates	1	✓					

62	Rail Working Group	1,5	✓				✓	
63	Standard Chartered Bank	1	✓					
64	State Street	1	✓					
65	Swedish Bankers Association	1,2,3	✓	✓	✓			
66	The Clearing House	1,2,5	✓	✓			✓	
67	Tomasz Wersocki	1	✓					
68	U.S. Chamber of Commerce	1,2,3	✓	✓	✓			
69	UBS	1,2	✓	✓				
70	United Overseas Bank Limited	1,2,3,4	✓	✓	✓	✓		
71	World Council of Credit Unions	6						✓
72	WSBI-ESBG	1,2,3,5	✓	✓	✓		✓	
73	ZIA German Property Federation	1	✓					
		Totals:	61	43	37	22	15	5