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BANKING PERSPECTIVES

REPRINTS OF
THE VALUE OF DIVERSITY IN BANK CREDIT PORTFOLIOS
AND
BASEL IV REQUIRES SERIOUS U.S. REVIEW

The New Supervision: LEVERAGING DATA ANALYTICS

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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

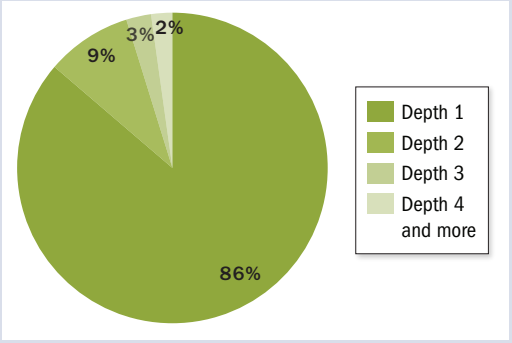
Credit Benchmark collects and publishes heavily anonymized credit estimates based on contributions from 20 banks which use the IRB/advanced approaches to manage and report regulatory capital.

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.

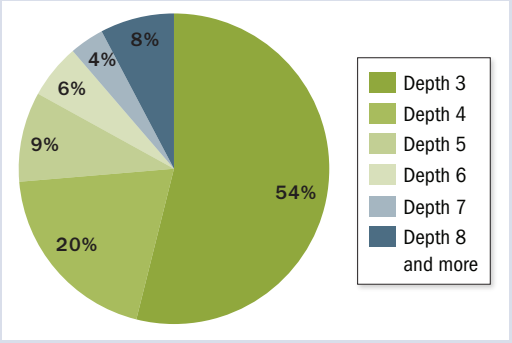
Figure 1 shows the contribution structure of bank-sourced credit data for a sample of U.S. and U.K. corporates.

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)



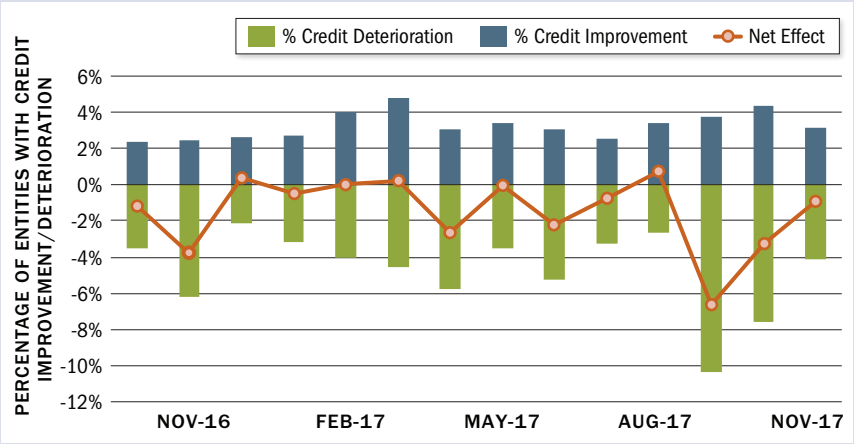
Source: Credit Benchmark

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.

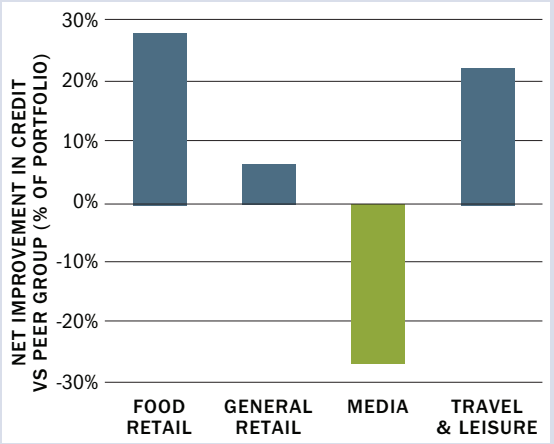
The chart on the bottom shows the "quorate" subset of the mapped data set that can be anonymously published in single name form, because there are three or more contributing banks. Contributing banks use this data to provide like-for-like regional and sector benchmarks as well as for detailed obligor-level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

FIGURE 2: BENCHMARKING EXAMPLES

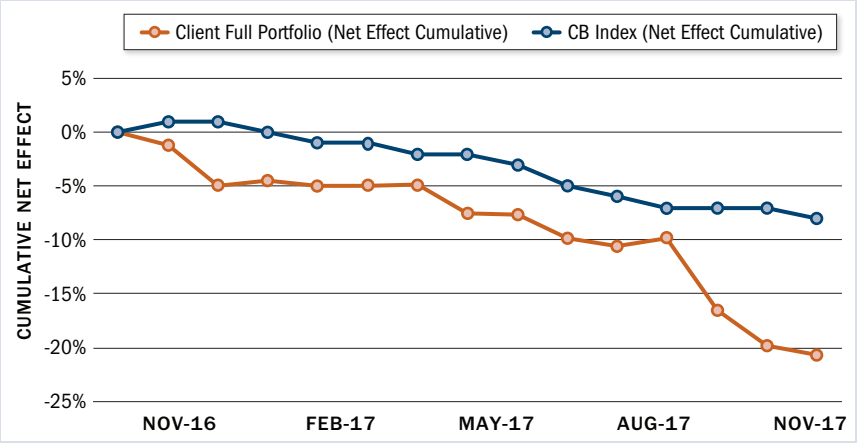
Single Bank Portfolio: Upgrades vs. Downgrades over time



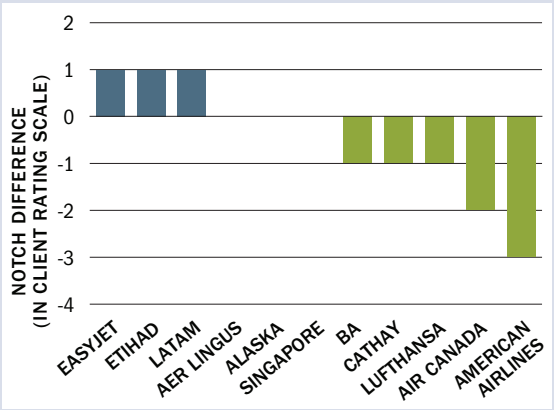
Peer Group Comparison: Net Upgrades by Sector



Single Bank Portfolio: Cumulative Net Effect by Sector



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



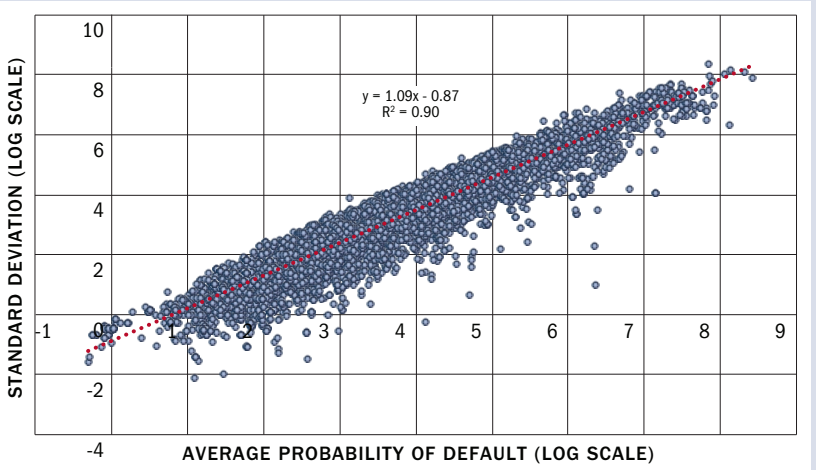
Source: Credit Benchmark

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.

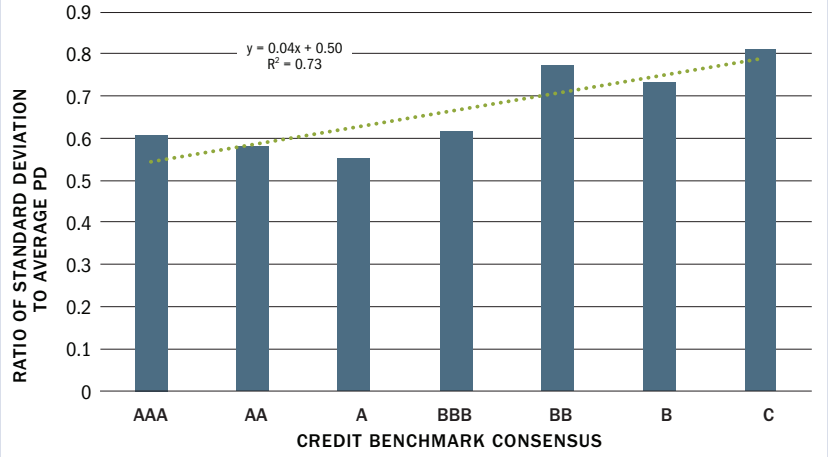
1. **DIVERSITY IN BANK CREDIT ESTIMATES – EVIDENCE FROM THE BANK-SOURCED DATA SET**
   Based on the Credit Benchmark obligor-level data, Figure 3 shows the logarithmic relationship between the (unweighted) average probability of default (X axis) and the standard deviation of bank estimates that make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

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



Source: Credit Benchmark

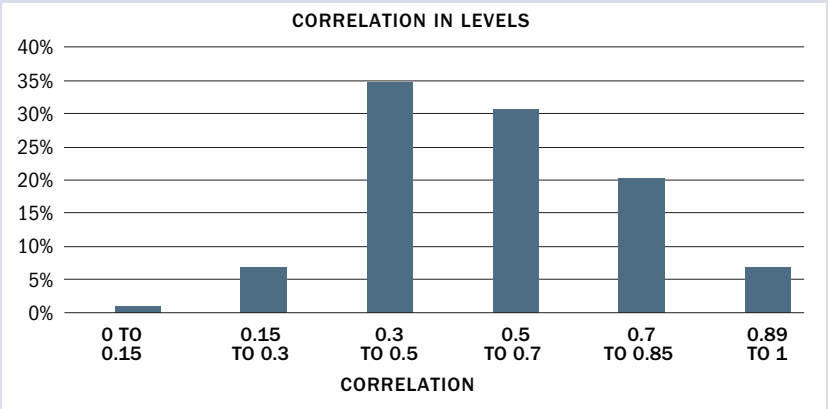
FIGURE 4: RELATIVE STANDARD DEVIATION BY CREDIT CATEGORY (ALL PUBLISHED OBLIGORS)



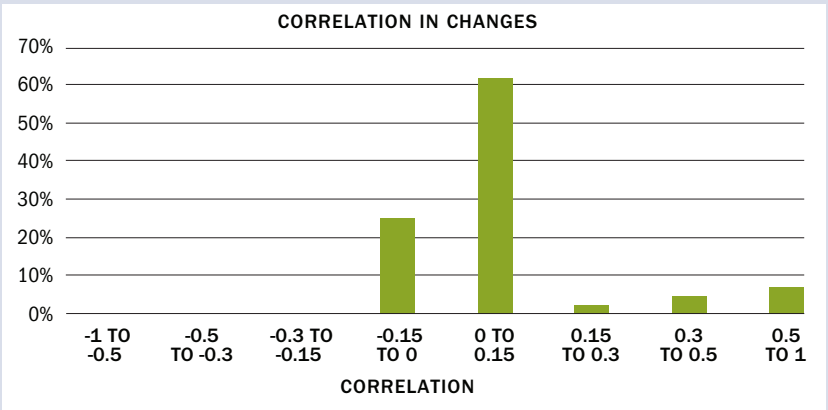
Source: Credit Benchmark

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.

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 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.

> **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.

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.

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.

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.**

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.)

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]

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.

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.**

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