position paper

FICO™

# Safe and Sound:
## How the FICO® Score Helps Lenders Meet Tougher Model Regulations

### » Executive Summary

In the aftermath of the recent credit crisis, regulatory oversight of the financial services industry has greatly expanded. For example, lenders in the US now must show that they are in compliance with new guidelines for "model risk management," which means they must meet specific operational and quality-control requirements to ensure consistent precision and integrity of the score used in lending strategies and decisions.

Along with this regulation comes increased scrutiny of all the analytics lenders use to make customer decisions, including the third-party scores they rely on to manage risk. Chief risk officers and others are called upon with increasing frequency to justify their reliance on external analytics, and to vouchsafe that these analytics meet all guidelines for safety and soundness.

FICO developed most of the credit industry's best practices for model development and management, and applies our rigorous methodologies to the FICO® Score—the standard measure of US consumer credit risk. For the past 25 years, ever since the release of the first broad-based FICO Scores, FICO has worked closely with policy makers, regulators and industry bodies to ensure that FICO Scores meet not just the letter of the law, but its spirit as well. Lenders can rely on FICO Scores with confidence, and can count on FICO to supply supporting documentation and for other assistance whenever it is required by regulators.

**This position paper discusses:**

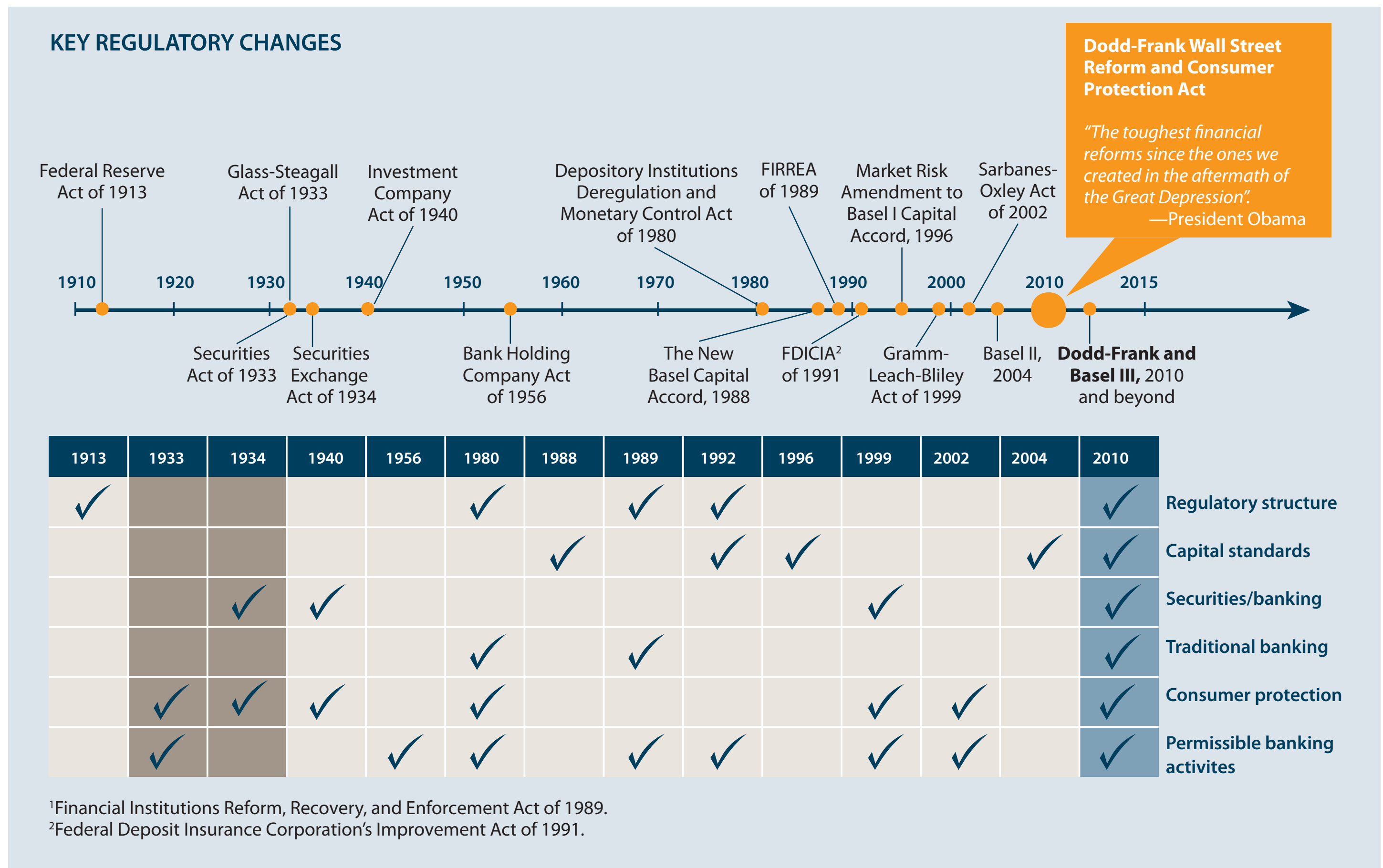
- The historical background surrounding credit model regulatory requirements—how regulations enacted before and after the financial collapse have impacted credit modeling and scoring.
- How the FICO® Score has met and exceeded the compliance proof burden.
- How clients can use FICO's expertise to help manage their own fair credit and model governance compliance burdens.

## » A Brief History of Financial Services Regulatory Expansion

Regulators in the US, Canada, UK, EU and other countries have enacted numerous financial service industry governance laws and regulations in the past century, including Glass-Steagall, FCRA, ECOA and many others (see Figure 1). But after the collapse of several high-profile US banks, the emergency bailout of others, departures of CEOs and CFOs, and hundreds of billions of dollars in write-downs, it was clear something had gone wrong in the years leading up to the financial crisis of 2008. More recently, the Dodd-Frank Act, Consumer Finance Protection Bureau (CFPB), the merging of FSA and Bank of England regulators, Basel III and China Banking Regulatory Commission (CBRC) have all created new requirements and oversights for risk models used in lending decisions and their impacts on portfolios both nationally and internationally.

Not only are there more regulations and more regulatory bodies today, but their jurisdiction and authority have also expanded. This is not a US or North American phenomena; growing international regulatory efforts are coming from the FSA/Bank of England and the EU, aside from the new BASEL III initiatives.

FIGURE 1: HISTORY OF US REGULATORY CHANGES AND RECENT SPIKE, INCLUDING DODD-FRANK AND BASEL III REFORMS[1]




| 1913 | 1933 | 1934 | 1940 | 1956 | 1980 | 1988 | 1989 | 1992 | 1996 | 1999 | 2002 | 2004 | 2010 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✓ | | | | | ✓ | | ✓ | ✓ | | | | | ✓ | Regulatory structure |
| | | | | | | ✓ | | ✓ | ✓ | | | ✓ | ✓ | Capital standards |
| | | ✓ | ✓ | | | | | | | ✓ | | | ✓ | Securities/banking |
| | | | | | ✓ | | ✓ | | | | | | ✓ | Traditional banking |
| | ✓ | ✓ | ✓ | | ✓ | | | | | ✓ | ✓ | | ✓ | Consumer protection |
| | ✓ | | | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | | ✓ | Permissible banking activites |

[1]Financial Institutions Reform, Recovery, and Enforcement Act of 1989.
[2]Federal Deposit Insurance Corporation's Improvement Act of 1991.

[1] McKinsey & Company—Assessing and addressing the implications of new financial regulations for the US banking industry

In the US, expanded risk model development policies and procedures for regulated lending institutions were instituted by the Federal Reserve Bank (Fed) and the Office of the Comptroller of the Currency (OCC), including the need for banks to require third party vendors to provide developmental evidence explaining the model components, design and intended use. Vendors must provide testing results to banks to show their model works as expected.

For non-bank entities (such as payday lenders and micro-loan organizations), Sarbanes-Oxley increased the need for management to sign off on financial statements, so there was a need for management to understand the significance of and how risk models used in financing estimates were being generated and managed.

Today FICO works with a growing number of regulators globally, along with their lending institutions, demonstrating how the FICO® Score risk models are structured and applied for optimal results, how they perform over time and how to interpret their results.

FICO® Scores, whether broad-based and generally available, fully meet Fed SR 11-7 and OCC 2011-12 risk model development guidelines.

Part of the new guidance issued by the OCC in April 2011 is significantly expanded US regulatory expectations on model governance and risk management, illustrated in Figure 3 (page 8). Banks and other lenders now must allocate an increasing amount of time and money to stay in compliance, particularly if they have built their own in-house (proprietary) scoring models.

There is now a global shift away from principle-based risk governance to demonstrable risk governance. For financial institutions, the bar keeps rising. What used to be considered best practices is now the minimum standard. New regulations are forcing financial institutions into a higher level of "proof" of global risk model development standards, used in the alignment and calibration of the portfolio risk results from those models against a single reporting standard supported by sound model lifecycle governance. The result is more complex and comprehensive analysis and reporting than ever before.

A recent example is the requirement from the Fed (FR Y-14Q) for US banks' international portfolios to be assessed, aligned, confirmed and reported against the industry standard FICO® Score, no matter what risk models are used outside the US.

## » Oversight of Third-Party Vendor Models

Where do financial institutions stand on the validation of models from third-party vendors? A survey by the Risk Management Association, published in the RMA Journal, found the following:[2]

> *One-third of respondents do not require vendors to provide documentation of their validation methods and results, while two-thirds either do require it or are considering requiring it. Half of leading practitioners require or plan to require vendors to provide documentation of their validation methods and results. The finding that one-third of all respondents don't require documentation from vendors seems to run contrary to the industry regulatory practice moving in the direction of demonstrable proof vs. reported compliance. Institutions need to have information about the models they're using so they can make correct decisions and feel confident that the models are correctly capturing the risks they are undertaking.*

2 The RMA Journal, November 2009

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> *In some instances, the recent crisis has placed significant stress on relations between institutions that rely on third-party model vendors (typically the smaller institutions) and their tool vendors. Some respondents said many secondary score and custom score vendors are often slow to respond to market dynamics and react defensively when pushed to provide documentation on their model validation methods. The lack of information may not have been an issue prior to the crisis, but that has changed in the past eight to 12 months as institutions have required and requested more information.*

Where credit risk models are concerned, the critical questions are how well models are being strategically applied and how well they're being managed. Proving to examiners that credit risk scores built in-house meet the relevant regulations can be an expensive. Developing, validating and maintaining proprietary scoring models in-house is a costly proposition, requiring more and more highly skilled resources. Ongoing custom model performance reporting and compliance verification simply compound the resource cost issue.

Because new regulatory requirements for the validation of third party vendor models go well beyond current industry practices, few global lending institutions can comply with them at present. FICO employs the latest risk model development and lifecycle management techniques in the market.

FICO proactively works with various regulatory bodies to educate them on its approach to model governance, validations and ongoing model updates or lifecycle management. FICO has also been a leader in teaching clients the latest in model validation techniques.

## » How FICO Can Help Lenders with Regulatory Compliance

FICO understands the monetary expense and other exposures (public and political) that new regulatory requirements impose on lending institutions. One of our guiding principles in the development of the FICO® Score is to ensure that it helps all users meet their regulations around model development, fair lending and score use. FICO also ensures that its Global FICO Score is developed to meet international and in-country risk model development and privacy regulations in more than 25 countries today.

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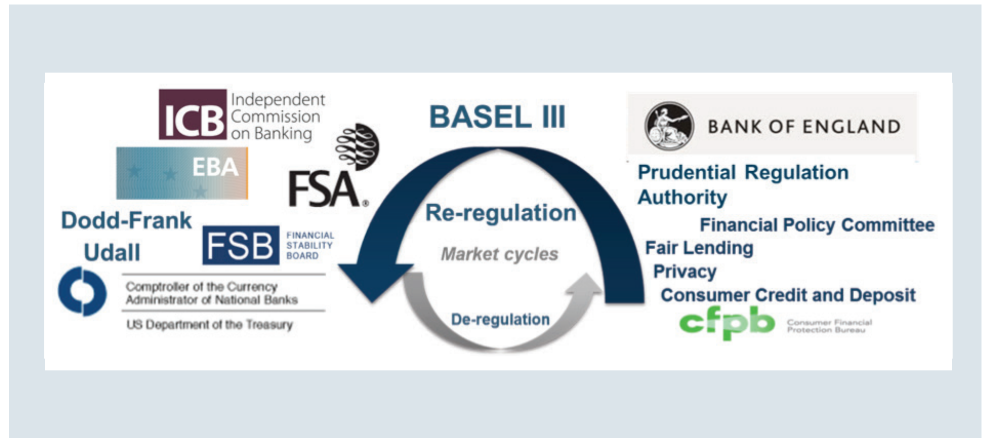
FICO meets with key regional financial service industry regulators to understand their priorities, concerns and challenges—allowing us to gain a consistent understanding of common issues and likely developments that will affect our clients.

## FIGURE 2: THE GLOBAL RE-REGULATION CYCLE




This global re-regulation cycle created new major regulators with national, regional and international compliance, consumer protection and Basel III reform mandates.

FICO's internal regulatory compliance efforts amount to a formal program designed to ease our clients' burden of compliance proof for third-party risk scoring models. The cornerstone of our risk model development program is the focus on model precision, consistency and governance from the perspective of safety and soundness, as well as consumer privacy and credit industry regulations. All FICO® Score models, as delivered to the credit reporting agencies, are:

- Built on depersonalized data and do not consider any "prohibited basis" as defined in Regulation B and the Equal Credit Opportunity Act (ECOA).
- Empirically derived, demonstrably and statistically sound (EDDSS) under ECOA.
- Developed and validated per established Fed and OCC Model Management best practices and guidelines.

As the cycle of re-regulation increases, and as new regulators and regulations are introduced, we believe that it is imperative for our clients to have a partner like FICO that has current, global, unbiased and pragmatic perspectives on risk model regulatory initiatives and their impacts, and also has viable solutions to these challenges.

A key benefit of working with FICO is having a partner that understands regulatory compliance pressures faced by bankers, and designs models that can be effective and verifiable from a regulatory standpoint.

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## » The FICO® Score: Fully Compliant

FICO already represents to the Credit Reporting Agencies (CRAs) who distribute the FICO® Score that its risk scores comply with consumer privacy and credit regulations. For example:

- **Federal Reserve/OCC Guidance on Model Risk Management**

  Generally available FICO® Score credit risk models incorporate FICO's advanced model development methods, and can be used by banks to help comply with the Federal Reserve/OCC Guidance on Model Risk Management and secondarily Risk Model Development. FICO can also provide bankers with model validation materials needed for those compliance purposes. Using FICO's team of development and score usage experts to address score-related questions, bankers can meet their responsibilities in this area while reducing internal efforts and expenses.

- **Equal Credit Opportunity Act (ECOA), as implemented by Regulation B**

  Generally available FICO® Score credit risk models are built with depersonalized data, do not consider any "prohibited basis" information, and can meet the definition of an empirically derived, demonstrably and statistically sound credit-scoring system.

- **Fair Credit Reporting Act (FCRA), as amended by the FACT Act and Dodd-Frank section 1100F**

  Generally available FICO® Score credit risk models supply up to four reason codes in adverse action or risk-based pricing situations, or five reason codes when inquiries are a "key factor" that adversely affected the credit score.

- **Gramm-Leach-Bliley Act (GLB)**

  FICO complies with the Gramm-Leach-Bliley Act along with data privacy and data safeguard rules by protecting data in accordance with the GLB standards. This is achieved through sound and current privacy and security standards employed when FICO handles consumer data.

- **FDIC**

  FICO collaborated with the FDIC, credit bureaus and the banking community to establish a standard methodology for reporting the probability of default for higher risk consumer loans. The result was the final large bank pricing (LBP) rule allowed for banks to use probability of default tables to comply with the rule.

- **Canadian Market**

  The regulations above do not apply to Canadian banks. In Canada, OSFI supervises safety and soundness issues (which pertain to capital and surplus reserves), and FCAC deals with consumer protection, although the Canadian banks have six voluntary codes of conduct rather than regulations, and data privacy is a Federal Government program, all of which FICO supports. The same methods and rigor used to develop and validate the US models is used for the Canadian FICO® Score models.

Lenders, of course, must take full responsibility for the way models and scores are used, as they must use the model only for the purposes for which it was designed, and only in compliance with all applicable federal, state and local laws pertaining to the use of the credit scores. The use includes the creditors' duty (if any) to validate the credit scoring system under ECOA and Regulation B.

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## 25 Years of Adaptation to New Regulations

One of the reasons that the FICO® Score has become the industry standard for credit risk assessment in the world's largest credit market is that FICO has continuously worked with regulators to make changes. For each change, FICO calibrates our scoring models to maximize performance at predicting loan default. FICO has the most experience of any score provider in balancing regulatory requirements with the need for maximum performance.

**1995** Garnered endorsement by Freddie Mac and Fannie Mae for use of FICO® Scores to support mortgage underwriting.

**1995** Split adverse action reason on "serious delinquency, derogatory public record or collection filed" into three, working with OCC.

**1996** Introduced inquiry calculation and dedupe logic to eliminate "penalty" for rate-shopping on auto, mortgage loans.

**2003** Changed adverse action reason logic in line with CA SB 1607, to ensure that even high-scoring customers got reason codes.

Lengthened the inquiry dedupe period and made updates to better consider online rate-shopping.

**2004** Updated for FACTA (5th reason code for mortgage).

Refined the assessment of credit file inquiries (through buffer windows and de-duping) to address rate shopping.

**2008** Includes updates to address new data elements, handling of low dollar collections and public records, etc.

Updated for optimal treatment of Flexible Spending Account (No Pre-Set Spending Limit) cards.

Grew the library of available credit bureau data predictor variables from 200 to 500+ candidates.

Revised and deepened the subpopulation segmentation scheme (from 10 scorecards to 12), adding extra focus on thin & young files, as well as records with prior serious delinquency (e.g., "derog" files).

Revised treatment of Authorized User (AU) account references—to counteract score gaming via authorized user account abuse.

**2009** Updated to account for student loan rate-shopping.

**2010** Provide distributions for Risk-Based Pricing notices.

Updated for correct treatment of partial payment agreement (PPA) loan modifications.

**2011** Updated to comply with the Udall Amendment to the Dodd-Frank Act (5th reason code all other scores).

**2013** Support lender compliance with the FDIC Large Bank Pricing Rule (with distribution of Probability of Default Mapping Tables).

FICO has also conducted hundreds of research projects during this period to explore potential score improvements—some of which were adopted, some of which verified that the current methods were superior.

This history of adaptation is one of the principal reasons why the FICO® Score is the established risk analytic standard used in over 90% of credit lending decisions in the US, and is used by major banks, small lenders, rating agencies, regulators and even consumers.

Note: dates of implementation vary by credit bureau in some cases.

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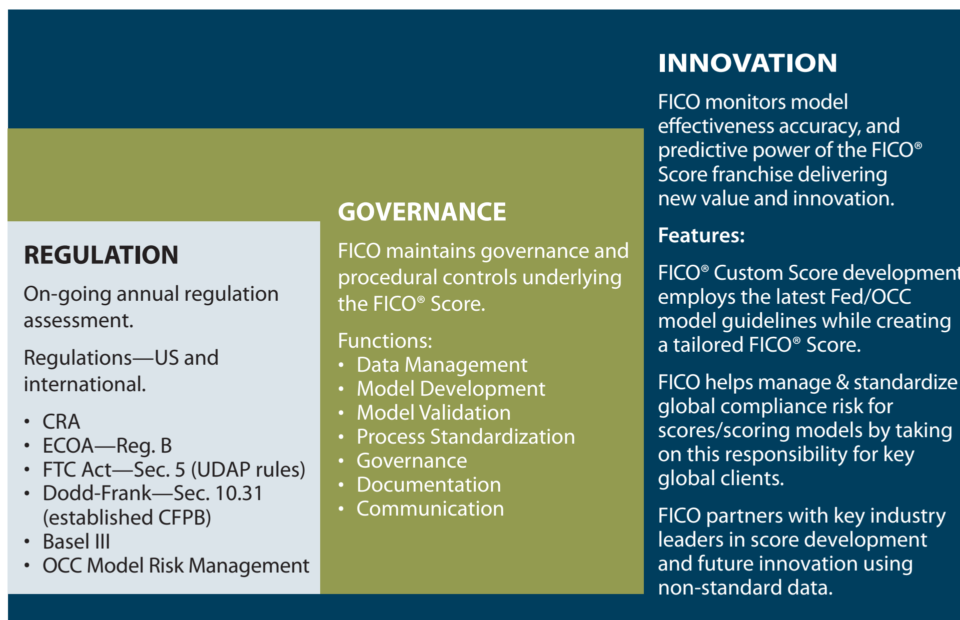
FIGURE 3: FICO'S MODEL COMPLIANCE PROGRAM FOCUSES ON REGULATION, GOVERNANCE, INNOVATION




## » Model Governance

Although the Fed SR 11-7 and OCC 2011-12 model governance requirements are relatively new, formal model management processes have been in place for decades at FICO and are reviewed annually. Given the importance of the FICO® Score to the industry, FICO has always considered it imperative to have an internal model risk management process that is best in class. FICO developed the industry's model management principles to continuously monitor, improve and innovate on the FICO Score franchise and over the last 40 years has shared its model development best practices with both financial institutions and regulators.

FICO's internal regulatory compliance program is designed to support FICO clients by:

- Assisting lenders in proving that they comply with industry regulations during internal and external audit or regulatory reviews.
- Reducing the time and costs associated with answering questions and producing score-related documentation for exams and audits.
- Increasing awareness of the FICO® Score's regulatory compliance throughout the consumer lending value chain, within all lending institution and regulatory stakeholder groups.

In addition, FICO has supplemental programs that can help lenders reduce operational risk, improve model governance performance and ease the regulatory reporting burden through unique services and products: Custom and FICO® Score Model Calibration and Alignment Services, FICO® Score Consulting Services for new and complex issues like CCAR assessment and reporting or International model governance and management; FICO® Score Adoption Services like implementation best practices and project plans for new FICO model deployment; and FICO® Model Central™ Solution, a hosted solution where lenders will be able to run their own validations or engage FICO for the end-to-end validation process.

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These solutions are intended to:

- Improve the process for assessing capital requirements associated with portfolio risk.
- Ensure compliance with international risk model regulatory standards.
- Implement and validate new risk models as quickly and cost effectively as possible.
- Drive modeling control and accuracy with repositories, release management and versioning.
- Increase visibility of use and impact of changes with scheduled validations and alerts.
- Improve business decisions with simulation, testing and optimization capabilities.
- Shorten time to market and reduce product development, deployment and lost opportunity costs.

## » Further Support for Lenders' Programs

FICO's standard operational arrangements with the CRAs ensure that those financial institutions which use the FICO® Score also receive:

- Updates to the FICO® Score as required from time to time to assist creditors when changes to existing or new regulations are introduced or when new bills are enacted by Congress—for example, changes in the types of data that may be used in the scoring algorithm.
- Immediate answers to questions through the FICO® Score Support website containing release notes, validation charts, a compliance audit package and other support materials.
- Ongoing update to major regulatory bodies to ensure understanding and trust of the FICO® Score or FICO® Custom Score.
- A "Compliance Audit Package" with annual updates for use during audits.
- Includes regulatory compliance statement from FICO.
- Includes information on scores, such as development methodology, exclusions, etc.

FICO will continue to strengthen its involvement and support of the regulatory process. FICO's government affairs and data privacy experts actively work with regulators internationally to understand and assist in supporting new regulations, including providing semi-annual training and quarterly updates on its scores to accelerate compliance efforts for any new regulations.

## » A Foundation for Risk Measurement

Lender portfolio composition has become increasingly complex, with different products and different markets constantly arising. Thus, the need for a common risk measurement tool has become all the more urgent. Today, financial institutions, investors and regulators all seek a common language to assess:

- Markdowns and impairments consistent with FAS 157, FAS 159 and other accounting guidelines, comparing the valuations generated by internal systems to those by counterparties.
- Economic and regulatory capital requirements, by segmenting portfolios based on credit quality, understanding portfolio quality distributions, and analyzing each segment's performance under different economic conditions or during random and unpredictable "Black Swan" events.
- Alignment and calibration of various consumer credit portfolios within and between countries for comparative assessment and reporting purposes.
- Internal risk models that vary across markets, products and portfolios.
- Capital requirements for loan loss reserves.

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Institutions also want to understand their portfolio performance across products, geographies and demographics in order to:

- Assess the risk-adjusted return on investment at the segment level.
- Conduct stress-testing to understand the behavior of different segments under specific economic conditions, so they can manage potential risks and improve head-count planning.
- Develop insight into cash flows by segment, including break-even, duration and first-dollar loss analysis.

Whether an institution needs to estimate market value and perform attribution analysis between market value and carrying value (intrinsic value), explore capital requirements, or assess risk-adjusted returns by segment, PDs, LGDs and EADs must be calculated for each product and market.

Many lenders already use the FICO® Score as a risk-measurement tool. In the future, the FICO Score likely will also become the cornerstone for portfolio management, national and international portfolio calibration and portfolio valuation, as more and more institutions expand their reach into new international markets and seek a proven, standardized and trusted global risk-assessment tool. When used across multiple markets, for both custom and broad-based risk models, the FICO Score and its regulatory compliance backbone becomes the lowest-cost, most broadly available, logical common denominator across products, markets and institutions. This unique position makes the FICO Score the ideal candidate as the common risk-assessment language indicator that market participants are seeking.

## » Conclusion

Everyone involved in the credit lifecycle, from borrowers to originators to investors, benefits from effective, reliable and regulatory compliant credit scoring models. As the established and increasingly global standard in credit risk scoring, FICO is committed to upholding the integrity of its models and helping lending institutions derive the maximum value from them. The FICO® Score's internal regulatory compliance program ensures that lenders can use our scores with confidence, and document and explain their reliance on FICO Scores with ease.

FICO will continue to work with global banks and regulators to ensure the best risk model development practices, safety and soundness principles and score integrity and performance principles are established, tailored for each country and maintained to ensure constant compliance. FICO will continue with its decades-long commitment to create and share its industry-leading best practices, methods and approaches to credit risk model development, maintenance and governance. As it has done for over the past 50 years, FICO will also continue to conduct independent research into new data from numerous reliable sources, utilizing innovative modeling techniques to confidently solve our clients most challenging and complex risk analysis issues in a trusted, responsible and regulatory compliant fashion.

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**Appendix I: The Evolution of Model-Related Regulation in the US**

## Safety and Soundness Regulations

**OCC Credit Model Validation—1997**

As with any models, bank management must ensure that credit scoring models are used appropriately and managed more effectively. Bank management must:

- Understand the credit scoring models thoroughly.
- Use credit scoring models only for their intended purpose.
- Validate or revalidate the credit scoring model's performance regularly.
- Review tracking reports, including the performance of overrides.
- Take appropriate action when the credit scoring model's performance deteriorates, which could include: reviewing lending strategies to determine their effect on the credit scoring model; actively managing the credit scoring model cutoff strategies; or developing a new credit scoring model.
- Ensure the credit scoring model's compliance with fair lending regulations.

**Reg. B Model and Scoring System Guidance—ECOA effective date 1974**

Regulation B describes the validation process as an analysis of the "credit scoring system," and not just a review of the credit scoring model. The validation required by Regulation B is not merely a verification of the rank ordering capabilities of the credit model itself. It is a field test to validate that the model actually performs as predicted.

**Expanded Model Validation Guidance: Vendor Models—released by the OCC in April 2011**

OCC 2011-12 provides very detailed requirements for the validation of vendor models that go well beyond current industry practices:

- Banks should require the vendor to provide sufficient developmental evidence explaining the model components, design and intended use, to determine whether the model is appropriate for the bank's products, exposures and risks.
- Vendors should provide appropriate testing results to banks that show that their product "works as expected."
- Banks should expect vendors to conduct ongoing performance monitoring and outcomes analysis, with disclosure to the bank, and to make appropriate model modifications and updates over time. The bank should also conduct its own model performance monitoring using its own outcomes.
- A bank's customization choices for the vendor model (e.g., settings, parameters and assumptions, model "tuning" or "dialing") should be documented and justified as part of the validation.

## Consumer Credit and Privacy Regulations Examples

**Equal Credit Opportunity Act—Reg. B—ECOA effective date 2004**

A regulation intended to prevent discrimination against applicants for consumer credit, Regulation B outlines the rules that lenders must adhere to when obtaining and processing credit information. Lenders are prohibited from discrimination on the basis of age, gender, ethnicity, nationality, marital status or the receipt of public assistance.

**Basel Credit Risk Directives for Canadian banks—Basel II published 2004**

This regulation strengthens the capital requirements and risk management requirements for counterparty risk exposures. More internal monitoring of trade activity will be needed, stress scenario testing and increased OSFI reporting. (Source: IDC)

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## appendix I

**FACT Act (FACTA) and Udall Amendment (Title X, Subtitle H, Section 1100F)—passed 2003**
This act allows consumers to request and obtain a free credit report once every twelve months from each of the three nationwide consumer credit reporting companies (Equifax, Experian and TransUnion). In cooperation with the Federal Trade Commission, the three major credit reporting agencies have set up a website, AnnualCreditReport.com, to provide free access to annual credit reports.

**Fair Credit Reporting Act (FCRA)—passed 1970**
This is a US federal law that regulates the collection, dissemination and use of consumer information, including credit information. Along with the Fair Debt Collection Practices Act (FDCPA), it forms the basis of consumer credit rights in the United States. It is enforced by the US Federal Trade Commission and private litigants.

**Gramm Leach Bliley (GLB)—passed 1999**
The Financial Privacy Rule requires financial institutions to provide each consumer with a privacy notice at the time the consumer relationship is established and annually thereafter. The privacy notice must explain the information collected about the consumer, where that information is shared, how that information is used, and how that information is protected. The notice must also identify the consumer's right to opt out of the information being shared with unaffiliated parties pursuant to the provisions of the Fair Credit Reporting Act.

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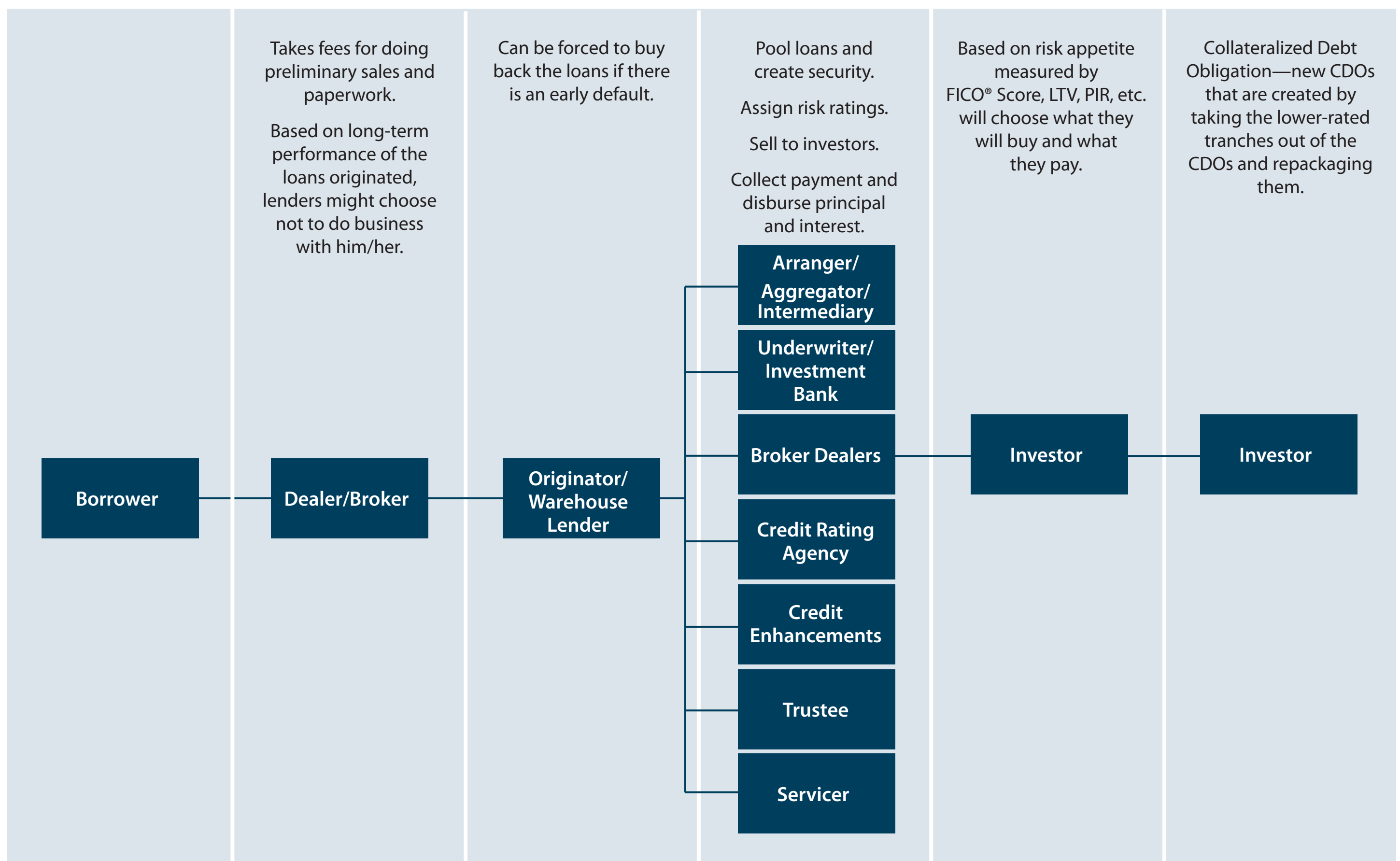
appendix II

### Appendix II: The FICO® Score: A Safe and Trusted Standard

The FICO® Score has long been the North American financial services industry standard for measuring and communicating consumer credit quality in primary lending and secondary credit markets. As the recognized standard for rating agency models and the automated underwriting systems of government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac, it is the common language for loan underwriting to facilitating loan and mortgage pricing and supporting securitization. As the key input into lending decision models that streamline and automate today's lending processes, both between banks and banks and agencies, the FICO Score provides the common link across the lending value chain.

FIGURE 4




Key stakeholders throughout the "Consumer Lending Value Chain" use FICO® Scores to communicate and assess pricing and risk.

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## about FICO

**FICO** (NYSE: FICO) is a leading analytics software company, helping businesses in 80+ countries make better decisions that drive higher levels of growth, profitability and customer satisfaction. The company's groundbreaking use of Big Data and mathematical algorithms to predict consumer behavior has transformed entire industries. FICO provides analytics software and tools used across multiple industries to manage risk, fight fraud, build more profitable customer relationships, optimize operations and meet strict government regulations. Many of our products reach industry-wide adoption—such as the FICO® Score, the standard measure of consumer credit risk in the United States. FICO solutions leverage open-source standards and cloud computing to maximize flexibility, speed deployment and reduce costs. The company also helps millions of individuals manage their personal credit health through ***www.myFICO.com***. Learn more at ***www.fico.com***.

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