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Supervisory Insights

Supervisory Insights is published by the Division of Risk Management Supervision of the Federal Deposit Insurance Corporation to promote sound principles and best practices for bank supervision.

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Effective real estate collateral valuation policies and practices are a critical component of a real estate lending program and help minimize losses when collateral becomes the primary repayment source. To clarify supervisory expectations for prudent real estate appraisals and evaluations, the federal financial institution regulatory agencies issued the Interagency Appraisal and Evaluation Guidelines (Guidelines) in December 2010. This article highlights certain aspects of the Guidelines and provides information for bankers regarding sound practices for banks' real estate valuation processes in the areas of valuation review, independence, content standards, preparer selection, and monitoring.

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Mobile banking is a relatively new banking service that is rapidly gaining popularity with consumers and businesses. However, as is the case with any new service, mobile banking presents unique risks. This article discusses the technologies used to deliver mobile banking services, identifies the risks to financial institutions and consumers, and describes strategies for mitigating these risks.

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This feature provides an overview of recently released regulations and supervisory guidance.

Letter from the Director

This issue of *Supervisory Insights* looks at a critical component of banks' real estate lending programs – real estate collateral valuations. Effective collateral valuation policies and practices help minimize losses when collateral becomes the primary repayment source. To clarify supervisory expectations for prudent real estate appraisals and evaluations, the FDIC, along with the other federal financial institution regulatory agencies, issued the *Interagency Appraisal and Evaluation Guidelines* (Guidelines) on December 2, 2010. "Navigating the Real Estate Valuation Process" highlights certain aspects of the Guidelines and provides information for bankers regarding real estate valuation processes in the areas of valuation review, independence, content standards, preparer selection, and monitoring. The use of evaluations and third-party arrangements also are discussed, as well as recent independence and fee standards resulting from enactment of the *Dodd-Frank Wall Street Reform and Consumer Protection Act*.

This issue of *Supervisory Insights* also looks at mobile banking. Using a mobile device to conduct banking transactions is increasingly attractive to consumers and businesses, but

along with the added convenience comes potential risks. "Mobile Banking: Rewards and Risks" describes how mobile banking services are delivered, identifies the unique risks to financial institutions and consumers, and describes strategies for mitigating these risks.

We hope you take the time to read the articles in this issue and find them to be interesting and informative. As always, we encourage our readers to provide feedback and suggest topics for future issues. Please e-mail your comments and suggestions to SupervisoryJournal@fdic.gov.

Sandra L. Thompson
Director
Division of Risk Management
Supervision

Navigating the Real Estate Valuation Process

Effective collateral valuation policies and practices are critical to the success of any real estate lending program. A prudent valuation process can help an institution fully understand its real estate collateral position and minimize losses when the collateral becomes the primary repayment source. To clarify supervisory expectations for prudent real estate appraisals and evaluations, the federal financial institution regulatory agencies¹ issued the *Interagency Appraisal and Evaluation Guidelines* (Guidelines)² on December 2, 2010. Banks have implemented the various provisions of the Guidelines to strengthen their overall real estate valuation program, but continue to seek feedback from their regulators about several issues discussed in this article.

The purpose of this article is to highlight certain aspects of the Guidelines and discuss sound practices for banks' real estate valuation processes. The tenets described herein are based on existing regulatory guidance and the authors' collective

observations from field examinations and dialogue with financial institutions. The article describes appraisal-related regulatory expectations dealing specifically with valuation review, reviewer independence, content standards, preparer selection, and monitoring. The use of evaluations and third party arrangements are also discussed, as well as recent independence and fee standards resulting from the *Dodd-Frank Wall Street Reform and Consumer Protection Act* (Dodd-Frank Act).³

Reviewing Appraisals/ Evaluations

A review of valuation information is an essential component of sound credit administration and is mandated by the Dodd-Frank Act.⁴ Reviewing appraisals and evaluations before engaging in a loan transaction ensures the value conclusion is reliable and enables financial institutions to make informed credit decisions, manage credit risk, and meet supervisory requirements.

¹ The Office of the Comptroller of the Currency (OCC), the Board of Governors of the Federal Reserve System (FRB), the Federal Deposit Insurance Corporation (FDIC), the Office of Thrift Supervision (OTS), and the National Credit Union Administration (NCUA). Note that OTS functions transferred to other federal financial institution regulatory agencies on July 21, 2011, and the agency was abolished 90 days later.

² See FIL-82-2010, *Interagency Appraisal and Evaluation Guidelines*, December 2, 2010, at <http://www.fdic.gov/news/news/financial/2010/fil10082a.pdf>.

³ See Section 1472 of the Dodd-Frank Act, Pub. L. No. 111-203 (July 21, 2010) available at <http://www.gpo.gov/fdsys/pkg/PLAW-111publ203/pdf/PLAW-111publ203.pdf>.

⁴ The Uniform Standards of Professional Appraisal Practice (USPAP) 2010-2011 edition defines an appraisal review as the act or process of developing and communicating an opinion about the quality of another appraiser's work that was performed as part of an appraisal, appraisal review, or appraisal consulting assignment. In addition, Section 1473(e) of the Dodd-Frank Act amended Section 1110 of the *Financial Institutions Reform, Recovery, and Enforcement Act of 1989* to require the federal financial regulatory agencies, Federal Housing Finance Agency (FHFA), and Consumer Financial Protection Bureau (CFPB) to issue appraisal review standards.

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The following practices can help banks employ a more effective valuation review process:

■ *Valuation reviewer experience.*

Establishing reviewer qualification criteria helps ensure internal and external (if outsourced) reviewers have the requisite education, experience, and competence to perform the level of review appropriate for the type, risk, and complexity of the transaction. It also ensures that the appraisal/evaluation contains sufficient information and analysis to support the decision to engage in the transaction. In addition, having a qualified reviewer conduct a risk-based, secondary review of a sample of each reviewer's work products can help achieve consistency in the review process, monitor the effectiveness of the reviewers, and address any weaknesses in a timely manner.

■ *Reviewer independence.* To ensure independence in the valuation review process, banks should assess whether the reviewer is independent of loan production staff by:

- Analyzing the institution's organization reporting lines. Chart 1 depicts a credit organization that is not sufficiently independent, as the valuation review staff reports directly to an individual who approves real estate loans. Chart 2 shows how reviewer independence could be optimized at the organization.
- Observing the reporting lines, document flows, and decision points between the valuation reviewer and his or her supervisor.

Chart 1

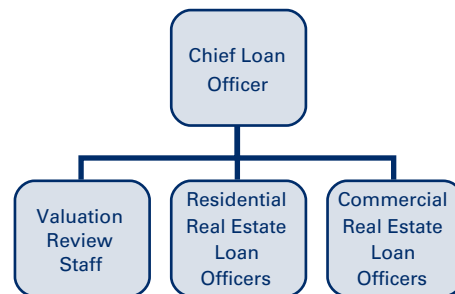
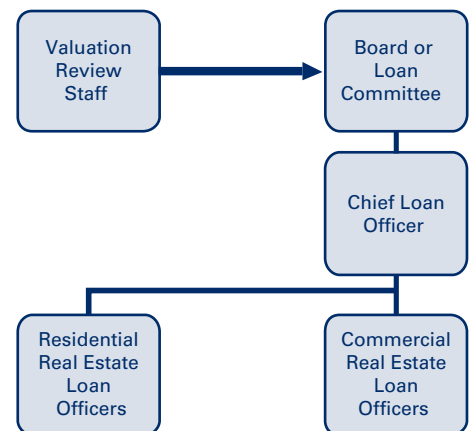


Chart 2



- Examining the institution's loan approval or voting process.
- Discussing the issue of independence internally with executive management and the credit review staff, and possibly with regulators that are familiar with the institution's real estate lending program.
- Ensuring the valuation reviewer is independent when the institution outsources the review function. In such situations, the selected reviewer should not be in the competitive pool of appraisers who bid for the valuation assignment under review.

■ *Depth of review.* The scope of a review is usually a function of the property's complexity and the institution's perceived risk threshold.⁵ Therefore, the review's depth should be sufficient to ensure that methods, assumptions, data sources, and conclusions are reasonable and appropriate. A risk-focused review approach can assist in:

- Identifying valuations that are not adequately supported. Institutions should establish policies and procedures for resolving any appraisal or evaluation

weaknesses identified through the review process before engaging in a credit transaction, as outlined in the Guidelines.⁶

- Ensuring the review provides meaningful results. A review's depth and technical nature should be commensurate with the size, type, risk, and complexity of the underlying credit transaction. Factual or checklist-type reviews may be sufficient for low-risk transactions to verify report content, policy compliance, and conformance with the USPAP. However, reviews of complex or higher-risk properties may need to be supplemented with an explanatory narrative or other data to ensure critical assumptions and conclusions are supported. Generally, complex or higher-risk transactions should receive a more comprehensive review that assesses the technical quality of the appraiser's analysis.

⁵ *The Appraisal of Real Estate*, Thirteenth Edition, 2008. Chicago, IL: The Appraisal Institute, page 593.

⁶ Guidelines, page 18 (XV. Reviewing Appraisals and Evaluations – Resolution of Deficiencies).

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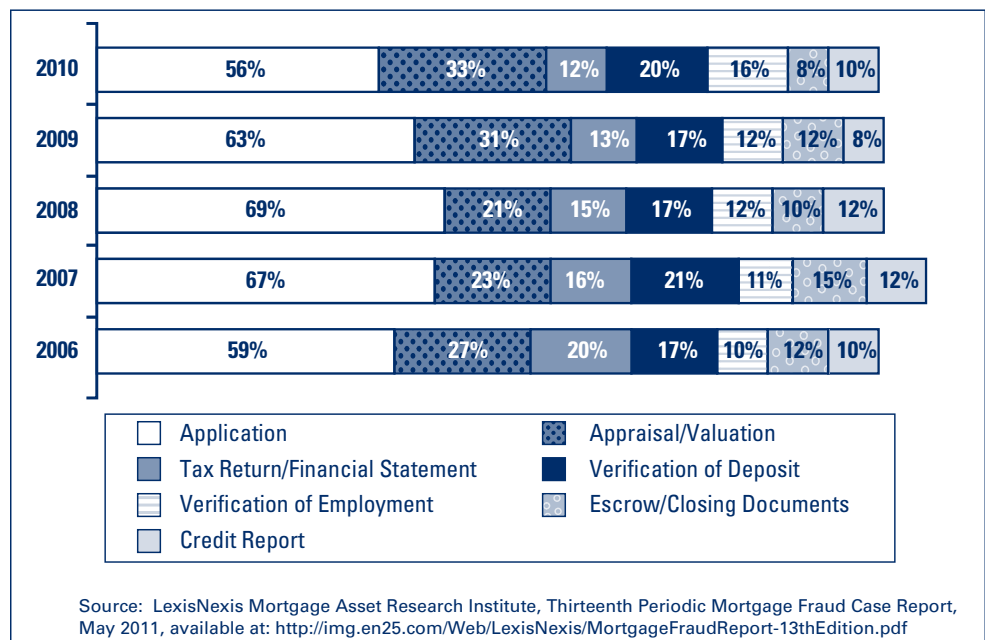
- Detecting potential fraud and following-up as appropriate. As Chart 3 illustrates, a recent study found that approximately one-third of all mortgage fraud cases in 2010 involved appraisal/valuation fraud. According to the Guidelines, institutions should file a Suspicious Activity Report (SAR) with the Financial Crimes Enforcement Network when fraud is suspected or other transactions are identified as meeting the SAR filing criteria.⁷ Moreover, a proactive review program should include procedures for submitting referrals or complaints to the appropriate state authorities when warranted. The Guidelines state an institution should consider filing a complaint with

the appropriate state appraisal regulatory body when the institution suspects that a state-certified or state-licensed appraiser failed to comply with the USPAP, state laws, or engaged in unethical or unprofessional conduct.⁸

Valuation Standards

The USPAP requires appraisers to use appropriate valuation methods and techniques in the development and reporting of appraisals.⁹ Accordingly, appraisals should include information required by USPAP relative to the research, methodology, and analysis in the valuation. Banks should ensure that appraisal reports meet USPAP requirements and include an analysis

Chart 3: Mortgage Fraud and Misrepresentations: Post-Funding Investigations (all states)



⁷ Guidelines, page 23 (XVIII. Referrals).

⁸ *Ibid.*

⁹ USPAP Standards Rule 1-1.

of the project's market, marketability and its highest and best use.¹⁰ Lenders' valuation policies and engagement letters should instruct appraisers to conduct appropriate research and analysis on market supply and demand characteristics. Fees for such services should provide for an appraisal's development commensurate with the risk associated with the type of real estate and the loan transaction.

A property with a highest and best use conclusion such as "hold for future development" or "hold as investment" may indicate potentially higher risk for a development project, as these are prospective investment strategies versus a highest and best use analysis based on actual current market conditions as of the effective date of the appraisal. In cases of a prospective highest and best use analysis, lenders should require appraisers to perform an appropriate depth of analysis, including a discussion of their conclusions about a potential purchaser's profile (e.g., investor, merchant builder, or end user) and a reasonable, market-supported absorption period.

Selection and Monitoring of Appraisers

Selecting competent appraisers is critical to obtaining reliable collateral valuation information. Best practices for selecting and monitoring appraisers include:

- *Verifying an appraiser's credentials and standing through the National Registry at <https://www.asc.gov/National-Registry/NationalRegistry.aspx>. The Appraisal Subcommittee (ASC) of the Federal Financial Institutions Examination Council maintains the National Registry of state-licensed and -certified appraisers. The National Registry lists the state(s) in which an appraiser is licensed, the license number and type (e.g., Certified Residential or Certified General), whether the license status is active or inactive, whether the license holder meets the qualification criteria (education, experience, and examination) of the Appraiser Qualifications Board, and whether the licensee is subject to active disciplinary actions. The ASC Web site includes a link to all state appraisal regulatory agencies, which can provide more information regarding appraiser disciplinary actions and other matters.¹¹*

¹⁰ USPAP Standards Rule 1-3.

¹¹ <https://www.asc.gov/State-Appraiser-Regulatory-Programs/StateContactInformation.aspx>.

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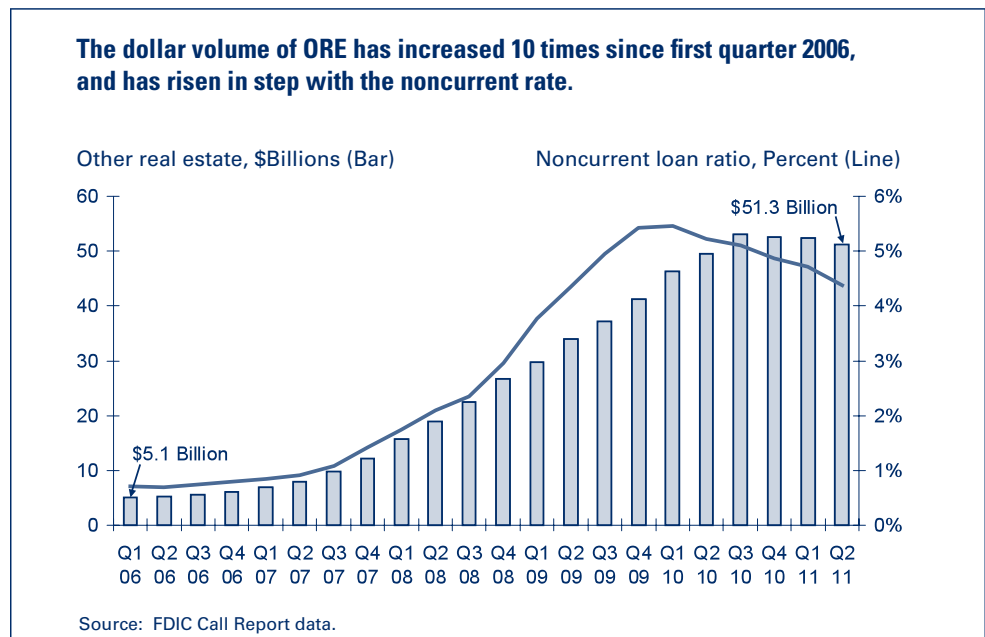
- *Using the findings from the appraisal review process to evaluate an appraiser's performance.* The appraisal review process can assist in the evaluation of individual appraisers' performance and report accuracy. Some banks have found that tracking deficiencies in each reviewer's valuation reports can be a useful way to strengthen the performance of the bank's real estate valuation function.
- *Conducting random quality reviews of appraisals obtained through appraisal management companies.* Such reviews can help ensure third-party valuation services meet regulatory requirements and the institution's internal standards. Banks should also establish a process for addressing deficiencies found in third-party appraisals.

Ongoing Collateral and Other Real Estate Portfolio Monitoring

A sound valuation function should include procedures for monitoring collateral on a portfolio and individual asset basis over the life of the asset.

- *Loans.* Monitoring collateral values for a real estate loan portfolio and individual loans enables institutions to better identify changing market conditions which affect credit risk exposure. Establishing criteria for obtaining collateral valuations over the life of a performing credit supports the effective management of credit risk, particularly in declining markets. Valuation policies should establish parameters for the frequency and type of collateral valuation information to be obtained

Chart 4



to ensure banks have useful market data to monitor changes in the risk profile of individual loans or portfolio segments.

- *Other Real Estate (ORE)*. The recent financial crisis resulted in a significant increase in non-performing loans and a surge in the volume of distressed sales and foreclosures (see Chart 4 on previous page). When valuing a foreclosed property to determine its initial carrying value as ORE, institutions should consider selecting appraisers/evaluators not involved in the previous valuation(s) of that property. Institutions also should consider establishing policies and procedures for obtaining ORE valuation information to monitor its carrying value on an ongoing basis.

Evaluations

Part 323 of the FDIC's Rules and Regulations requires institutions to obtain an evaluation when an appraisal is not required.¹² The Guidelines establish supervisory expectations for real estate evaluations.¹³ The Guidelines also identify real estate-related transactions that allow evaluations, outline standards for developing an evaluation, and detail the minimum content

of evaluations.¹⁴ Further, Appendix B of the Guidelines discusses the use of analytical methods or technological tools (such as automated valuation models) as a basis for evaluations.¹⁵

Institutions are encouraged to consider the following points as they enhance their real estate evaluation processes:

- *Evaluation content*. Developing minimum evaluation content standards helps ensure that evaluations contain sufficient information to support the market value conclusion. Specifying criteria for determining the level and extent of research or inspection necessary to ascertain the property's physical condition also helps support the value conclusion and minimize the potential for fraud.
- *Valuation techniques and tools*. The tools and techniques used for the evaluation should support the property's market value. Broker price opinions or automated valuation models should not be solely relied upon to develop an evaluation of value.
- *Determining when an evaluation is appropriate*. The Guidelines identify the types of real estate-related transactions for which an

¹² See Part 323 at <http://www.fdic.gov/regulations/laws/rules/2000-4300.html>.

¹³ Guidelines, pages 5-6 (VI. Selection of Appraisers or Persons Who Perform Evaluations).

¹⁴ Guidelines, pages 12-14 (XII. Evaluation Development and XIII. Evaluation Content).

¹⁵ Guidelines, pages 31-35, (Appendix B – Evaluations Based on Analytical Methods or Technological Tools).

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evaluation is permissible.¹⁶ The Guidelines also recommend that institutions establish policies and procedures for determining when to obtain an appraisal even though an evaluation may be permissible.¹⁷ Most institutions understand these

provisions; however, there has been some confusion regarding what type of valuation is needed for new and existing real estate-related transactions. Some of the regulatory requirements for obtaining an evaluation or appraisal are detailed below.

A Real Estate Evaluation is Required When:

- A new real estate-related transaction is \$250,000 or less,
- A new real estate-related transaction is a business loan of \$1 million or less and the sale of or rental income derived from real estate is not the primary source of repayment, or
- A real estate-related transaction involves an existing extension of credit at the lending institution, provided that:
 - There has been no obvious and material change in market conditions or the physical aspects of property that threatens the adequacy of the institution's real estate collateral protection after the transaction, even with the advancement of new monies; or
 - There is no advancement of new monies, other than funds necessary to cover reasonable closing costs.

A Real Estate Appraisal is Required When:

- A new real estate-related transaction exceeds \$250,000, unless another exemption applies,
- A lease is the economic equivalent of a purchase or sale of leased real estate, or
- The banking supervisor requires an appraisal be obtained.

A Real Estate Appraisal is *Not* Required When:

- A lien on real estate is taken as an "abundance of caution,"
- A loan is not secured by real estate,
- A lien has a purpose other than the real estate's value,
- A new business loan is \$1 million or less and the sale of or rental income derived from real estate is not the primary source of repayment, or
- A renewal, refinancing, or other subsequent transaction of an existing extension of credit where an evaluation is permitted.

NOTE: This list highlights selected supervisory valuation requirements, and readers should refer to Part 323 of the FDIC's Rules and Regulations for complete details.

¹⁶ Guidelines, pages 11-12 (XI. Transactions That Require Evaluations).

¹⁷ *Ibid.*, page 12. Depending on the extent of collateral exposure and overall credit risk involved, the institution may obtain an appraisal in lieu of an evaluation out of prudential concerns. Such appraisals must comply with USPAP.

Overseeing Third-Party Arrangements

A financial institution may engage a third party, such as an appraisal management company (AMC), to perform certain collateral valuation functions on its behalf. Outsourcing this function may be motivated by concerns about appraiser independence or the lack of internal technical expertise or resources to properly review appraisals of complex or non-local properties. Importantly, the Guidelines state that the lender is responsible for ensuring that third-party servicers comply with applicable laws and regulations and their work products are consistent with supervisory guidance.¹⁸ To facilitate effective oversight of third-party arrangements, financial institutions should:

- *Perform appropriate due diligence when selecting and overseeing an AMC.* Performing due diligence before engaging a third party, as well as ongoing oversight of the arrangement, increases the likelihood the third-party provider will perform the services consistent with the financial institution's standards and regulatory requirements.

- *Conduct a review of the AMC's selection process for appraisers/reviewers.* To ensure the institution's qualification requirements are met (e.g., education, experience, type and status of state license, and technical competency for particular property types and markets), it is critical the AMC be provided the institution's criteria for reviewing and selecting appraisers and appraisal report reviewers.

Dodd-Frank Act Appraisal Independence Requirements

The Dodd-Frank Act required the FRB to prescribe interim final regulations defining specific acts or practices that violate appraisal independence in the context of the Truth in Lending Act.¹⁹ The FRB issued such interim final rules, effective April 1, 2011, by adding Section 226.42 to Regulation Z. While the new rules address several issues, three key appraisal-related matters for real estate credit transactions include:

- *Appraiser independence.* Section 226.42(c) encourages appraiser independence by prohibiting certain acts that directly or indirectly cause the value assigned to a consumer's principal dwelling to be based on any factor other than the independent judgment of the person who prepares the valuation.

¹⁸ Guidelines, pages 18-20 (XVI. Third Party Arrangements).

¹⁹ See Section 1472 of the Dodd-Frank Act, Pub. L. No. 111-203 (July 21, 2010) available at <http://www.gpo.gov/fdsys/pkg/PLAW-111publ203/pdf/PLAW-111publ203.pdf>. Section 1472 also provides that the FRB, OCC, FDIC, NCUA, FHFA and CFPB may jointly issue rules, interpretive guidelines, and general statements of policy with respect to acts or practices that violate appraisal independence in the provision of mortgage lending services for a consumer credit transaction secured by the principal dwelling of the consumer and mortgage brokerage services for such a transaction.

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Examples of such prohibited acts include, but are not limited to, seeking to influence the appraiser/evaluator to report a minimum or maximum value, withholding timely payment to the preparer because the property is not valued at or above a certain amount, and conditioning the preparer's compensation on consummation of the covered transaction. These and other acts that would compromise the collateral valuation function also are noted in the Guidelines.²⁰

- *Conflicts of interest.* Section 226.42(d) seeks to limit potential conflicts of interest by prohibiting persons preparing a valuation or performing valuation management functions from having a direct or indirect interest in the property or transaction for which the valuation is being performed. Notably, a person employed by or affiliated with the creditor does not have a conflict of interest based solely on that employment or affiliate relationship so long as certain conditions establishing a safe harbor are met.

The safe harbor for financial institutions with more than \$250 million in assets as of year-end for the past two calendar years essentially requires total independence between the valuation function and the loan production process. This degree of separation may be problematic for many community banks with assets over \$250 million, especially

those with limited staff or a relatively low volume of residential mortgage loan originations. Institutions should document the prudent safeguards that have been implemented to isolate the valuation function from influence by the loan production process. Such safeguards could include having trained administrative staff control the appraisal ordering process based on a list of approved appraisers and requiring qualified officers and directors not involved in the origination of the pending real estate-related transaction to review the appraisal. Institutions may contact their local FDIC office to discuss possible safeguards. Examiners should continue to exercise judgment in determining whether a bank's valuation function complies with these requirements.

- *Customary and reasonable fees.* Section 226.42(f) requires the creditor and its agents to compensate a fee appraiser for performing appraisal services at a rate customary and reasonable for comparable appraisal services performed in the geographic market of the property being appraised. Two safe harbors are provided. The first is based on the creditor or its agents reviewing certain factors and not engaging in anticompetitive acts. The second is based on the creditor or its agents relying on certain external information for determining the amount of compensation. Some financial institutions may have

²⁰ Guidelines, pages 3-5 (V. Independence of the Appraisal and Evaluation Program).

difficulty obtaining sufficient and appropriate data to comply with these requirements. An institution may demonstrate compliance by documenting the information it considered and used in determining what is a customary and reasonable fee for a given appraisal service.

Conclusion

A borrower's ability to repay a real estate loan according to reasonable terms remains the primary consideration in the lending decision and in examiner review of the loan portfolio. However, when collateral becomes the primary repayment source for a loan, the valuation and assessment of that collateral will help determine whether a loss could be sustained. Institutions should review valuation policies and procedures to ensure the valuation function is appropriate for the size, nature, and complexity of an institution's real estate lending program. Efforts to provide accurate valuations can enable the institution to make more prudent and informed credit decisions.

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Mobile Banking: Rewards and Risks

Mobile banking is a relatively new banking service that is rapidly gaining popularity with consumers and businesses. More than half of the 100 largest banks in the United States offer mobile banking¹ and approximately 19 million U.S. households use this service.² Analysts estimate use of mobile banking will continue to grow, potentially expanding to 38 million households by 2015.³ However, with more widespread use comes the potential for increased fraud that could harm financial institutions and customers.

Mobile banking is the use of a mobile device, commonly a cell phone or tablet computer, to conduct banking activities, such as balance inquiry, account alerts, and bill payment. It is not the same as mobile *payments*, which uses the same mobile devices to initiate payments from a person to other people or businesses. Mobile banking is offered by insured depository institutions while mobile payments systems can be offered by many types of companies.

This article discusses the technologies used to deliver mobile banking services, identifies the potential risks to financial institutions and customers, and describes strategies for mitigating these risks. The information provided in this article represents the informed perspective of the author and is offered as a resource for financial institutions offering mobile banking services to their customers. This article should not be considered supervisory guidance.

Mobile Banking Delivery Channels

Mobile banking is offered through three delivery channels:

- Text messaging/short message service (SMS)
- Mobile-enabled Internet browser
- Mobile applications (apps).

To appeal to a greater number of customers, some financial institutions are finding it advantageous to offer mobile banking through multiple delivery channels. In fact, nineteen of the fifty-four largest banks that offer mobile banking use all three channels and seventeen offer two of the three channels.⁴

SMS-based mobile banking was the first channel that enabled customers to interact with their bank using a mobile device. SMS messages are short, typically limited to 160 characters per message, and can be sent and received by most mobile phones. The financial institution and customer use text messages to exchange financial information and instructions within the parameters set by the bank.

With the advent of smart phones, mobile banking has become more attractive and user friendly. During the past two years, smart phone ownership increased 127 percent.⁵ As of July 2011, 34 percent of all consumers owned smart phones.⁶ Using a

¹ First Annapolis Consulting, 2010 Mobile Banking and Payments Study (2010) (private study available for a fee) (on file with author).

² *Online Banking Report*, no. 188, Jan. 18, 2011, at 5 (private study available for a fee) (on file with author).

³ *See id.*

⁴ *See* First Annapolis Consulting, *supra* note 1, at 17.

⁵ Javelin Strategy and Research, *Smartphone Banking Security: Mobile Banking Stalls on Consumer Fears* (2011) (private study available for a fee) (on file with author).

⁶ *See id.*

smart phone or tablet computer with an embedded browser, customers can visit the institution's online banking Web site from virtually anywhere. This provides customers with an online banking experience similar to what is available on desktop computers.

As smart phones are now capable of running many applications, and portable tablet computers are increasing in popularity, more financial institutions have introduced mobile application-based banking. This form of mobile banking uses a custom-designed software application installed on the customer's mobile device. The application is unique to each device, providing the most user-friendly experience of the three delivery channels. In fact, app-based mobile banking is now the fastest growing delivery channel.⁷

Although use of mobile banking services continues to grow, the rate of increase slowed during the past two years due in part to consumer concerns about security. The results of a study conducted by Javelin Strategy and Research, a California-based firm focused on global financial services, show that the number of consumers rating online banking unsafe rose from 26 percent to 40 percent during this time.⁸ Security concerns present significant challenges for financial institutions providing mobile banking services, and each delivery channel poses unique risks for institutions and customers.

Channel-Specific Mobile Banking Risks

SMS is considered an unsecure channel because text messages cannot be encrypted, increasing the likelihood that SMS-based mobile banking users may be susceptible to scams. Using a tactic known as "social engineering," fraudsters send text messages that may mislead customers into believing they are communicating with their financial institution and then revealing sensitive bank account information, for example, account number, logon ID, or password.

More secure than SMS, Web-based mobile banking takes advantage of established Internet security protocols, and the service can be used on mobile devices with wireless Internet access. However, mobile browsers displayed on small screens, particularly smart phones, generally do not display the visual security clues more easily seen on the full-scale browsers of large screens. Thus, customers may miss a visual warning that their online banking session has been compromised.

Mobile application-based banking also is considered more secure than SMS. However, security professionals debate whether this delivery channel is more or less secure than Web-based mobile banking. The development of mobile applications using secure coding techniques may limit the ability of fraudsters to intercept and control a mobile

⁷ W.B. King, "Getting Smart – Mobile Banking Continuing to Gain Momentum," Credit Union Business, <http://www.creditunionbusiness.com/2011/09/15/getting-smart-mobile-banking-continuing-to-gain-momentum>, (last visited October 20, 2011).

⁸ See Javelin Strategy and Research, *supra* note 5, at 12.

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banking session or capture sensitive customer information. However, in the rush to get mobile applications to market, secure code review and testing may not be sufficiently robust. Also, mobile banking can be compromised by the installation of rogue, corrupt, or malicious applications on a customer's mobile device.

A recent study looked at the security of four types of mobile applications – financial services, social networking, productivity,⁹ and retail.¹⁰ The study focused on the types of sensitive data that mobile applications store on the device and whether these data were stored securely. Each application was rated “Pass,” “Warn,” or “Fail.” A “Pass” rating means sensitive data are not stored on the device or are encrypted. A “Warning” rating means certain data are stored on the device, but this does not put the user at significant risk of fraud. A “Fail” rating indicates sensitive data, such as account numbers and passwords, are stored on the device in clear text, placing the

user at an increased risk of identity theft or other financial fraud.

Although the results show a significant share of all four types of applications failed the test, the financial services industry had the largest percentage of apps that passed the test (see table below). These results suggest that even though the financial services industry has more work to do to ensure mobile applications do not store sensitive information unnecessarily or unencrypted, at least for purposes of this study, this sector outperformed the others.¹¹

Given the unsecure nature of SMS-based mobile banking, this channel would seem to be much more appropriate for communicating non-sensitive information, which may include confirming transactions initiated through another channel, rather than initiating transactions such as bill payments, funds transfers, or adding new payees. Institutions should make reasonable efforts to migrate customers

Mobile Application Security by Type of Application

Industry	Pass	Warn	Fail
Financial Services	44%	31%	25%
Social Networking	0%	26%	74%
Productivity	9%	49%	43%
Retail	0%	86%	14%

Source: ViaForensics.

⁹ Productivity applications are intended to help a user be more productive, for example, allowing the user to access a variety of e-mail accounts from one central application or update a blog while away from his computer.

¹⁰ *Mobile App Security Study: appWatchdog Findings*, viaForensics, <http://viaforensics.com/education/white-papers/appwatchdog-findings-mobile-app-security-iphone-android/> (last visited October 18, 2011).

¹¹ See id.

from SMS to more secure Web- or app-based mobile banking platforms. As mobile devices and browsers become more sophisticated, financial institutions should use the advances to improve the security of Web-based mobile banking. The goal should be to make Web-based mobile banking as secure as online banking from a customer's personal computer.

As is the case with any banking product or service involving a third-party provider, financial institutions that offer app-based mobile banking are expected to work with reliable, knowledgeable, and reputable vendors to develop applications using secure coding techniques. Appropriate steps should be taken in coding and testing to ensure the application does not contain exploitable weaknesses. Perhaps most importantly, institutions should distribute applications and updates securely and make reasonable efforts to educate customers that banking applications should be downloaded from reputable sources, such as the institution's Web site or other designated download sites. When vulnerabilities are discovered, the financial institution has an obligation to promptly develop and deploy security patches.

Other Mobile Banking Risks

In addition to the risks specific to delivery channels, financial institutions should consider the following risks and vulnerabilities when offering mobile banking services to their customers:

Secure authentication of mobile customers

The portability of mobile devices enhances their usefulness; however, it also means these devices are susceptible to being lost or stolen. To mitigate this risk, financial institutions should implement controls to verify the person accessing the mobile banking service is the customer. The Federal Financial Institutions Examination Council (FFIEC) recently issued supervisory guidance on strong customer authentication that applies to mobile banking.¹² Possession of the mobile device alone should not be enough to permit access to the mobile banking application. At the very least, access to the device should be password protected and users seeking access to the mobile banking service should be subject to strong authentication as described in the FFIEC guidance.

¹² FIL-50-2011, "FFIEC Supplement to Authentication in an Internet Banking Environment" (June 29, 2011) at <http://www.fdic.gov/news/news/financial/2011/fil11050.html>; see also FIL-103-2005, "FFIEC Guidance on Authentication in an Internet Banking Environment" (October 12, 2005) at <http://www.fdic.gov/news/news/financial/2005/fil10305.html>.

Mobile malware and viruses

To date, problems involving viruses and malware targeted at mobile devices have been limited; however, the ubiquity of mobile devices, common operating systems, and downloadable applications make them a prime target. The market for mobile antivirus and malware detection security software is continuing to evolve. Financial institutions should monitor these developments and consider when to recommend mobile banking customers run security software on their devices, including whether the institution should make the software available directly to customers.

Data transmission security

Mobile devices generally are designed to accept instructions from cell towers and search for the strongest cell tower signal. Mobile devices must authenticate themselves to the cell tower using the unique information on the device's subscriber identity module (SIM) card to show it is a legitimate device. However, cell towers are not required to provide similar authentication to mobile devices. Telecommunications standards and mobile devices are designed to be backward compatible; if the cell tower operates on an older standard (e.g., 2G instead of 3G or 4G), the mobile device will adopt the less secure standard to complete the wireless connection. Therefore, it is possible to build and operate a rogue cell phone tower, trick mobile devices into connecting to the rogue tower, and hijack the mobile session, potentially compromising mobile banking sessions.

In addition, most mobile devices can connect to wireless local area networks (WLANs) used by many customers to minimize telecommunications expenses and optimize connection speeds. However, financial institutions should caution customers against using public WLANs for mobile banking.

Neither the customer nor the financial institution can ensure a public WLAN is secure, and incidents have occurred where banking credentials were stolen from an unsecure WLAN.

Compliance risk

Compliance risk often arises from violations of laws or regulations, financial institutions operating inconsistently with supervisory guidance, or institutions' noncompliance with internal policies, procedures, or business standards. Generally, the consumer laws, regulations, and supervisory guidance that apply to traditional financial services delivery channels also apply to services provided to consumers through mobile banking.

However, the relevant laws, regulations, and guidance will apply differently, depending on how a financial institution is involved in mobile banking. Financial institutions that enable consumers to access deposit and loan services through their mobile device should ensure that any applicable disclosure requirements, including format, content, timing, and manner of delivery, are fully accessible to the customer. In addition, institutions using the mobile banking channel to provide information about products and services to consumers should verify compliance with applicable advertising rules and regulations. For example, banks advertising credit products subject to the Fair Housing Act are required to display the Equal Housing Lender logo and legend. Institutions advertising deposit products and services are required to comply with Regulation DD advertising disclosures and, if relevant, display the official advertising statement found in the FDIC's regulations.

The rapid pace of development in mobile financial services will require that compliance officers, manage-

ment, and system designers work closely together to effectively use the new technology while assessing, identifying and controlling for compliance risks.¹³ Therefore, a financial institution should broadly consider the impact of its mobile banking strategy on operations and take steps to ensure the compliance management system addresses the types and level of mobile banking technology used by the institution.

Regulatory Considerations

Although mobile banking is a relatively new service, many associated risks are present in other banking technologies and services. Financial institutions should review other regulations and supervisory guidance issued by the federal banking agencies, such as the *FFIEC IT Examination Handbooks on Development and Acquisition, Outsourcing Technology Service Providers, E-Banking, and Information Security*.¹⁴

Institutions should also review the following regulations and supervisory guidance:

- *Interagency Information Security Standards*¹⁵
- *Interagency Regulations and Guidelines on Identity Theft Red Flags*¹⁶
- *FFIEC Guidance on Risk Management of Remote Deposit Capture*¹⁷
- *Guidance on Electronic Financial Services and Consumer Compliance*¹⁸
- *Guidance for Managing Third-Party Risk*¹⁹

This body of supervisory guidance addresses steps financial institutions are expected to take to protect sensitive customer information, prevent identity theft, enable secure online transactions, communicate appropriate consumer disclosures, and manage the risks associated with the use of third-party service providers.

¹³ The examples in this section are provided for illustration and do not constitute a complete list of mobile banking capabilities or consumer compliance matters associated with this delivery channel.

¹⁴ FFIEC IT Examination Handbook InfoBase, <http://ithandbook.ffiec.gov/it-booklets.aspx>.

¹⁵ 12 CFR § 364, Appendix B.

¹⁶ FIL-100-2007, "Interagency Regulations and Guidelines on Identity Theft" (November 15, 2007) at <http://www.fdic.gov/news/news/financial/2007/fil07100.html>.

¹⁷ FIL-4-2009, "FFIEC Guidance on Risk Management of Remote Deposit Capture" (January 14, 2009) at <http://www.fdic.gov/news/news/financial/2009/fil09004.html>.

¹⁸ FIL-79-98, "Guidance on Electronic Financial Services and Consumer Compliance" (July 16, 1998) at <http://www.fdic.gov/news/news/financial/1998/fil9879.html>.

¹⁹ FIL-44-2008, "Guidance for Managing Third-Party Risk" (June 6, 2008) at <http://www.fdic.gov/news/news/financial/2008/fil08044.html>.

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As the demand for mobile banking services continues to grow, financial institutions should conduct a comprehensive risk assessment or update existing assessments during the design, testing, and implementation of a mobile banking product. Guidance for performing an effective risk assessment is available in the *FFIEC IT Examination Handbook on Management*.²⁰ Risk assessments should be updated in response to changes in technology, business strategy, security threats, product functionality, and legal requirements. Should a risk assessment identify new risks or vulnerabilities, financial institutions should address them promptly to appropriately and effectively mitigate the risks for the institution and its customers.

Conclusion

With greater use of all types of mobile services, mobile banking is expected to continue to grow. Mobile banking provides greater convenience for customers as it allows them to accomplish tasks “on the go.” However, this service is not without risks. Financial institutions are challenged to ensure their mobile banking service is designed and offered in a secure manner, and customers are made aware of steps they can take to protect the integrity of their mobile banking transactions.

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²⁰ FFIEC, IT Examination Handbook on Management 15-24 (June 2004) available at <http://ithandbook.ffiec.gov/it-booklets/management.aspx>; see also FFIEC, *supra* note 10; see also Paul M. Onischuk, “Customer Information Risk Assessments: Moving Toward Enterprise-wide Assessments of Business Risk,” *Supervisory Insights* (Winter 2009) at http://www.fdic.gov/regulations/examinations/supervisory/insights/siwin09/si_win09.pdf.

Overview of Selected Regulations and Supervisory Guidance

This section provides an overview of recently released regulations and supervisory guidance, arranged in reverse chronological order. Press Release (PR) and Financial Institution Letter (FIL) designations are included so the reader can obtain more information.

ACRONYMS and DEFINITIONS	
FDIC	Federal Deposit Insurance Corporation
FRB	Federal Reserve Board
FFIEC	Federal Financial Institutions Examination Council
OCC	Office of the Comptroller of the Currency
NCUA	National Credit Union Administration
Federal bank regulatory agencies	FDIC, FRB, OCC
Federal financial institution regulatory agencies	FDIC, FRB, OCC, and NCUA

Subject	Summary
Guidance and Proposed Revisions to Interagency Questions and Answers For Flood Insurance (PR-163-2011, October 14, 2011, <i>Federal Register</i>, Vol. 76, No. 200, p. 64175, October 17, 2011)	<p>The federal financial institution regulatory agencies and the Farm Credit Administration published guidance updating the <i>Interagency Questions and Answers Regarding Flood Insurance</i> for loans in areas having special flood hazards. The guidance updates questions regarding insurable value and force placement of flood insurance and withdraws a question about insurable value. Comments were due December 1, 2011. See http://www.fdic.gov/news/news/press/2011/pr11163.html</p>
FDIC Updates Deposit Insurance Fund Loss, Income, and Reserve Ratio Projections (PR-161-2011, October 11, 2011)	<p>The FDIC has released updated loss, income, and reserve ratio projections for the Deposit Insurance Fund over the next several years. The projected cost of FDIC-insured institution failures for the five-year period from 2011 through 2015 is \$19 billion, compared to estimated losses of \$23 billion for banks that failed in 2010. The fund is expected to reach 1.15 percent of estimated insured deposits in 2018. See http://www.fdic.gov/news/news/press/2011/pr11161.html</p>
Proposed Rule on Prohibitions and Restrictions on Proprietary Trading (PR-160-2011, October 11, 2011, <i>Federal Register</i>, Vol. 76, No. 215, p. 68846, November 7, 2011)	<p>The FDIC has requested public comment on the proposed interagency rule implementing Section 619 of the <i>Dodd-Frank Wall Street Reform and Consumer Protection Act</i> regarding the Volcker Rule requirements. Section 619 generally prohibits insured depository institutions, bank holding companies, and their banking entities from engaging in short-term proprietary trading of any security, derivatives, and other certain financial instruments for their own account. Section 619 also prohibits owning, sponsoring, or having certain relationships with a hedge fund or private equity fund, with certain exemptions. Comments on the proposed rule are due by January 13, 2012. See http://www.fdic.gov/news/news/press/2011/pr11160.html</p>

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Subject	Summary
Deposit Insurance Assessment Rate Adjustment Guidelines (FIL-64-2011, September 14, 2011)	<p>The FDIC Board approved guidelines describing the process the FDIC will follow to determine whether to make an adjustment to the score used to calculate the deposit insurance assessment rate for institutions with at least \$10 billion in assets. An adjustment may be made if supported by evidence of a material risk or risk-mitigating factor not reflected in the score.</p> <p>See http://www.fdic.gov/news/news/financial/2011/fil11064.html</p>
Joint Final Rule to Adopt Resolution Plans Under Dodd-Frank Law (PR-151-2011, September 13, 2011, Federal Register, Vol. 76, No. 211, p. 67323, November 1, 2011)	<p>The FDIC and the Federal Reserve Board issued a final rule to implement the requirements in Section 165(d) of the <i>Dodd-Frank Wall Street Reform and Consumer Protection Act</i> regarding resolution plans for bank holding companies with assets of at least \$50 billion and companies designated as systemic by the Financial Stability Oversight Council. The final rule requires the plan to describe how the company could be resolved in a bankruptcy proceeding.</p> <p>See http://www.fdic.gov/news/news/press/2011/pr11151.html</p>
Interim Final Rule Requiring Resolution Plans (PR-150-2011, September 13, 2011, Federal Register, Vol. 76, No. 183, p. 58379, September 21, 2011)	<p>The FDIC Board separately adopted an interim final rule for insured depository institutions with at least \$50 billion in total assets to provide the FDIC with a contingency plan in the event of failure. The interim final rule complements the joint rulemaking with the Federal Reserve for Section 165(d) of the <i>Dodd-Frank Wall Street Reform and Consumer Protection Act</i>. The interim final rule and joint final rule coordinate resolution planning in the event an orderly liquidation is required. Comments on the interim final rule were due November 21, 2011, and the rule will take effect January 1, 2012.</p> <p>See http://www.fdic.gov/news/news/press/2011/pr11150.html</p>
Investor Match Program (PR-148-2011, September 7, 2011)	<p>The FDIC launched an investor match program to encourage small investors and asset managers to partner with larger investors to participate in the FDIC's structured transaction sales for loans and other assets from failed banks. The goal of the program is to expand small investor participation, including minority- and women-owned firms.</p> <p>See http://www.fdic.gov/news/news/press/2011/pr11148.html</p>
Clarifications to the FDIC's Statement of Policy for Section 19 of the FDI Act (FIL-57-2011, August 8, 2011)	<p>The FDIC clarified criteria for Section 19, <i>Penalty for Unauthorized Participation of Convicted Individual</i>, of the Federal Deposit Insurance Act. Section 19 prohibits, without the prior written consent of the FDIC, a person convicted of criminal offense involving dishonesty, breach of trust, money laundering, or drugs from participating in the affairs of an FDIC-insured institution.</p> <p>See http://www.fdic.gov/news/news/financial/2011/fil11057.html</p>
Guidance on Federal Debt (PR-133-2011, August 5, 2011)	<p>The federal financial institution regulatory agencies issued guidance on federal debt in regard to the Standard and Poor's rating agency lowering the long-term debt rating of U.S. government and federal agencies' debt securities. For risk-based capital purposes, the risk weights for federal government agencies' debt securities will not change. See http://www.fdic.gov/news/news/press/2011/pr11133.html</p>
Final Rule for Retail Foreign Exchange Transactions (FIL-55-2011, July 8, 2011)	<p>The FDIC issued a final rule imposing requirements on FDIC-supervised banks that engage in retail foreign currency transactions with retail customers. The rule applies to foreign currency futures, options on futures, and options and has requirements in six areas: disclosure, recordkeeping, capital and margin, reporting, business conduct, and documentation.</p> <p>See http://www.fdic.gov/news/news/financial/2011/fil11055.html</p>

Subject	Summary
Guidance on Counterparty Credit Risk Management (PR-113-2011, July 5, 2011, FIL-53-2011, July 5, 2011)	<p>The federal bank regulatory agencies and the former Office of Thrift Supervision issued guidance to clarify supervisory expectations and sound practices for an effective counterparty credit risk management framework. The guidance states banking organizations should use appropriate reporting metrics and limits systems, have well-developed and comprehensive stress testing, and maintain systems that facilitate measurement and aggregation of counterparty credit risk across the organization. See http://www.fdic.gov/news/news/financial/2011/fil11053.html</p>
Host State Loan-to-Deposit Ratios (PR-112-2011, June 30, 2011)	<p>The federal bank regulatory agencies issued the host state loan-to-deposit ratios for determining compliance with Section 109 of the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994. The statewide loan-to-deposit ratio relates to an individual bank and is the ratio of a bank's loans to its deposits in a particular state where the bank has interstate branches. The ratios are used to determine if banks are reasonably helping to meet the credit needs of the communities served by the bank's interstate branches. See http://www.fdic.gov/news/news/press/2011/pr11112.html</p>
Authentication in an Internet Banking Environment (PR-111-2011, June 28, 2011, FIL-50-2011, June 29, 2011)	<p>The FDIC, along with the other FFIEC agencies, issued guidance that updates supervisory expectations for customer authentication, layered security, and other controls for Internet banking. Banks are expected to comply with the guidance by January 1, 2012. See http://www.fdic.gov/news/news/financial/2011/fil11050.html</p>
FDIC Advisory Committee on Systemic Resolution Holds Inaugural Meeting (PR-107-2011, June 22, 2011)	<p>The FDIC held the first advisory committee meeting for systemic resolutions on June 21, 2011. The committee heard presentations about the failure and resolution of systemically important financial companies and, going forward, will provide advice and recommendations to the FDIC relating to the failure of large complex institutions. See http://www.fdic.gov/news/news/press/2011/pr11107.html</p>
Joint Final Rule on Risk-Based Capital Standards (PR-103-2011, June 14, 2011, FIL-48-2011, June 17, 2011, <i>Federal Register</i>, Vol. 76, No. 124, p. 37620, June 28, 2011)	<p>The federal bank regulatory agencies issued a final rule on June 17, 2011, that amends the advanced risk-based capital adequacy standards to be consistent with the <i>Dodd Frank Wall Street Reform and Consumer Protection Act</i> (Dodd-Frank Act). The final rule creates a permanent floor equal to the minimum capital requirements using the federal banking agencies' general risk-based capital rules. The final rule implements Section 171 (known as the Collins Amendment) of the Dodd-Frank Act. See http://www.fdic.gov/news/news/financial/2011/fil11048.html</p>
Joint Proposed Guidance on Stress Testing for Banking Organizations with Total Consolidated Assets of More than \$10 Billion (PR-102-2011, June 9, 2011, FIL-47-2011, June 16, 2011, <i>Federal Register</i>, Vol. 76, No. 115, p. 35072, June 15, 2011)	<p>The federal bank regulatory agencies are requesting comments on the proposed supervisory guidance for stress-testing practices at banking organizations with total assets of more than \$10 billion. The guidance discusses the uses and merits of stress testing in specific areas of risk management and provides an overview of how an organization should develop a structure for stress testing. Comments were due July 29, 2011. See http://www.fdic.gov/news/news/financial/2011/fil11047.html</p>

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Subject	Summary
Advanced Measurement Approach – Operational Risks (FIL-41-2011, June 3, 2011)	The federal bank regulatory agencies and the former Office of Thrift Supervision issued guidance to clarify supervisory expectations and highlight key considerations that implement an effective advanced measurement approach framework. The guidance includes four required data elements: internal operational loss event data, external operational loss event data, business environment and internal control factors, and scenario analysis. See http://www.fdic.gov/news/news/financial/2011/fil11041.html
Notice Regarding the Payment of Interest on Demand Deposit Accounts (FIL-38-2011, May 25, 2011)	The FDIC issued a notice to insured depository institutions (IDIs) that they are required to notify depositors about changes in insurance coverage for demand deposit accounts. The <i>Dodd Frank Wall Street Reform and Consumer Protection Act</i> allows IDIs to pay interest on demand deposit accounts starting July 21, 2011, and allows unlimited deposit insurance for noninterest-bearing transaction accounts. If the account is allowed to pay interest, the IDIs must notify affected customers that the accounts will no longer be eligible for unlimited deposit insurance coverage as a noninterest-bearing transaction account. As of January 1, 2013, noninterest-bearing transaction accounts are insured to the standard maximum deposit insurance amount of \$250,000. See http://www.fdic.gov/news/news/financial/2011/fil11038.html



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