

**Opportunities for Reducing Delinquencies and Defaults
In Federal Housing Credit Programs:
A Review of New Technologies and Promising Practices**

Thomas H. Stanton*

ABSTRACT: New technologies offer opportunities and create new risks for programs of the FHA, VA, Rural Housing Service, and Ginnie Mae. This article surveys promising practices in the private sector that merit consideration by federal housing credit agencies. Most important, the private market uses scoring-based systems to skim the most creditworthy borrowers that previously were served by federal agencies such as FHA. Federal housing agencies now need to adopt similar systems to provide financial early warning against the possibility that adverse selection creates intolerable levels of financial risk. Other systems can help to enhance risk management, for example by monitoring the financial performance of mortgage lenders in federal programs.

INTRODUCTION

Waves of technological change are overtaking the residential mortgage market. The result has been to change the structure of the mortgage banking industry, force consolidation, permit the emergence of entirely new types of services, and to punish those market participants that do not keep up.

Technological advances can create opportunities for federal credit programs. Reforms in the early 1990s, including the Credit Reform Act and the Chief Financial Officers Act, have encouraged financial discipline in federal credit programs. The new technologies enable agencies to develop increasingly robust credit subsidy models and capture higher quality program information than was possible before.

While credit reform posed daunting computational problems at its inception (Cuny, 1991), new data systems today make the calculations increasingly manageable. Perhaps even more important, the new technologies will improve the linkage between federal agencies' portfolio management systems and the information that is required to create auditable financial statements for each program and agency.

Credit reform has exerted a substantial positive influence upon the management of credit programs. Federal credit agencies today have become sensitive to the costs of loan defaults and the need to allocate scarce budgetary resources wisely. The application of credit reform provides a substantial incentive for credit agencies to focus upon ways to manage the incidence and cost of defaults on loans or loan guarantees that their programs provide each year.

* Thomas H. Stanton, J.D., is a Washington, DC attorney who specializes in the design and administration of federal programs, especially with respect to credit and financial institutions. Mr. Stanton chairs the Standing Panel on Executive Organization and Management of the National Academy of Public Administration. He teaches the law of public institutions as a Fellow of the Center for the Study of American Government at Johns Hopkins University.

The new technologies and promising practices from the private sector offer federal credit managers the opportunity to reduce defaults and manage their programs more cost-effectively than ever before. The new technologies also can help federal credit programs to continue to serve their public purposes despite the resource constraints and downsizing that have been imposed upon many agencies.

Technological changes also pose challenges to federal credit programs. This article will focus on those federal programs that serve people and communities by providing federal mortgage credit. Former Federal Housing Administration (FHA) Commissioner Nicolas P. Retsinas (1998) asks about the people who may be left behind as the credit markets apply new technologies:

"Can we tinker with a technologically advanced system to build in protection for less credit-worthy borrowers in less credit-worthy communities?"

The adaptation of sound promising practices by federal credit agencies is one way to help meet the challenge posed by today's new technologies. The table on page 4, below, summarizes the promising practices to be discussed here. The discussion of the promising practices includes a survey of related business practices in the private sector. Many of the practices presented here, and new practices that are constantly emerging, offer federal credit programs the chance to succeed in the important task of serving borrowers and communities that otherwise might be left out of the private marketplace.

The most promising new practices relate to the application of credit scoring and mortgage scoring to credit management. Score-based servicing systems have the potential to reduce defaults by permitting early intervention with the delinquent borrowers who most need help. Scoring thus not only helps to target origination to borrowers who can repay their loans but also can help the less creditworthy borrowers to obtain prompt help when they get into trouble with their mortgage payments. (Stanton, 1999).

A number of these promising practices may help federal housing credit agencies better to manage the financial risks of their single-family programs, including the Section 502 direct loan program of the Rural Housing Service (RHS) and the major single-family loan insurance or guaranty programs of FHA, the Department of Veterans Affairs (VA), and the RHS. This study does not attempt to address the distinct issues that face specialized federal housing programs such as the HUD insured and assisted multifamily program. Many of those issues appear to involve flawed financial incentive structures rather than the effects of emerging technologies that are relevant here.

Ultimately, federal credit agencies can meet the challenge posed by Commissioner Retsinas, but only if they possess the authority, the capacity, and the mandate to become much more flexible organizations than most are today. Commissioner Retsinas himself sought, but was denied legislation to transform the FHA into a Federal Housing Corporation. A HUD report at the time (HUD, 1995) proposed that the new government corporation, to be known as the Federal Housing Corporation,

"unlike the existing FHA, would function through consolidated, flexible product line authority and new operational flexibilities so that it can easily adapt to market demands and customer needs." (HUD, 1995, p. 49)

In October 1996 the Federal Credit Policy Working Group and the Financial Management Service co-hosted a workshop on promising practices for federal credit agencies. (Transcripts of the three-day workshop are available at <http://www.financenet.gov/financenet/fed/fcpwg/reports.htm>.) Several years later, the residential mortgage market has changed substantially. Design and management of federal credit programs must become flexible enough to change too, if government mortgage programs are to succeed in serving the many borrowers who otherwise will not be well served by the conventional mortgage market.

SUMMARY TABLE OF PROMISING PRACTICES

I. LENDER MONITORING

- **Expand the Ginnie Mae IPADS and CPADS lender monitoring systems to support improved lender monitoring by the VA and RHS. (IPADS measures the default rates of loans serviced, and CPADS measures default rates of loans originated by particular lenders).**
- **Enhance IPADS by (1) applying more current measures of loan performance, (2) applying credit scores and mortgage scores to all mortgages in future Ginnie Mae pools, and (3) testing lender servicing against peer groups based upon credit scores or mortgage scores.**
- **Supplement IPADS with evaluations of servicers by a nationally recognized rating service**
- **Enhance CPADS by applying credit scores and mortgage scores to all mortgages in future Ginnie Mae pools and testing the quality of lender origination against peer groups based upon credit scores or mortgage scores.**

II. LOAN SERVICING AND LOSS MITIGATION

- **Apply a scoring-based system to help select groups of borrowers in federal direct loan programs for special servicing and cost-effective intervention**
- **Create incentives for servicers of federally guaranteed loans to use a scoring-based servicing system**

III. FINANCIAL EARLY WARNING SYSTEMS

- **Monitor credit scores, and possibly mortgage scores, as a financial early warning system to signal promptly any changes in level of credit risk that threaten the financial soundness of a program**
- **Employ a credit rating service or other financial advisor to help (1) benchmark each federal direct loan or loan guarantee program against practices in the financial services sector and (2) obtain information about "weak links" in their credit exposure, including systems, procedures and the quality of their portfolios**

IV. NEW PARTNERSHIP ARRANGEMENTS

- **Use credit scores and mortgage scores to help set and reset strategic direction for federal mortgage programs**
- **Explore alternative risk-sharing arrangements with private parties**

IMPLICATIONS OF TECHNOLOGY-DRIVEN CHANGE FOR GOVERNMENT MORTGAGE PROGRAMS

The pace of change in the residential mortgage market is astonishing. Once a lender has a database management system in place that permits real-time access to loan-level information, then the process of testing alternative risk management approaches can repeat itself at a rapid rate. New technologies allow large lenders to pilot new techniques on subgroups of their portfolios and then to deploy successful strategies quickly.

The process builds on itself. Once a new concept, such as credit scoring or mortgage scoring, becomes widespread, then new approaches build upon it. Credit scoring is a statistical method that attempts to predict the probability that a loan applicant or existing borrower will default or become delinquent (Mester, 1997). Loan scoring combines a borrower's credit score with loan characteristics (e.g., the loan-to-value ratio) to attempt to predict the probability that the loan will default (Avery, et al., 1996). The database is credit scored; then the scoring process is refined; and then it is applied to new functions, such as the expansion from origination to servicing and loss mitigation.

Not all loans benefit from credit scoring or loan scoring. If the probability of default varies largely based upon factors other than the borrower's individual credit, then credit scores do not add much value to credit administration. If loan data are not standardized, or if sound historical data are unavailable, then loan scores will lack predictive value. Moreover, effective loan scoring requires large amounts of high-quality data. Many different types of data are required, including information about loan origination and continuing loan performance, borrower characteristics, and the financial outcome, i.e., whether the loan prepays, becomes delinquent, defaults, or pays in full on time. The data must be available for a long period of time. For the single-family home mortgage market, including FHA and VA single-family loan programs, such data are available.

The new technologies have strong and immediate consequences for market participants. Database management systems change the economics of virtually every function in the loan cycle. Technologies have reduced the origination process to a function that can be performed with a computer terminal. Much of the value of origination activities, such as appraisals and title searches, is being absorbed by mining of databases by large lenders. The chart on the next page, produced by the Office of Federal Housing Enterprise Oversight (OFHEO) in 1995, provides a schematic display of some changes that technologies have facilitated (OFHEO, 1995), shifting value-added from the primary mortgage market to the government-sponsored enterprises in the secondary market.

Yet, that chart already is out of date. The application of credit scoring and data mining to servicing has compounded the rate of change in the mortgage market. Servicing now involves economies of scale that were impossible with the old paper-based systems (OFHEO, 1996). Countrywide Home Loan Company, the largest originator of FHA/VA loans, now services a portfolio of some \$200 billion in mortgages.

The result has been to turn the average mortgage into a score-based commodity instead of being an extension of credit to a particular individual with a particular house in a particular location. This is reflected in the tightening of spreads available to lenders on their mortgage portfolios. Yet, new technologies have meant that the transformation from personal to impersonal lending has increased rather than decreased the quality of portfolio management.

FIGURE 1

One Example of the Effects of New Technologies on Business Processes in the Mortgage Market

For lenders that have deployed the new technologies early, success has meant a combination of growth and increased profitability. Other lenders have lagged. They have faced increasing costs, i.e., diseconomies of scale, as mortgages bypass them in favor of firms possessing the new high-tech portfolio management systems.

Consolidation has been relentless. At the end of the first quarter of 1998, the top five mortgage servicers accounted for almost 20 percent of outstanding mortgage servicing; banks and other mortgage lenders already have announced mergers that will raise the servicing of the top five firms to almost 23 percent. In origination, the top 25 mortgage originators accounted for over half of all first quarter lending in 1998 (*Inside Mortgage Finance*, 1998).

Even technology problems have added to the disparity between successful and less successful lenders. Year 2000 problems undoubtedly have contributed to the volume of mergers, both in the mortgage industry and among lenders generally. If a lender cannot handle its portfolio because of Y2K problems, selling the portfolio now becomes a means of avoiding the consequences of system failures.

Private mortgage insurers also are facing a squeeze. The new default estimation systems have meant less market demand for coverage than before. Large lenders such as Fannie Mae and Freddie Mac have found it profitable to reduce the amount of insurance coverage on loans and to rely instead on their own credit risk management systems.

In another development that would have been impractical only a few years ago, Freddie Mac has begun to pilot a method of reinsurance through a derivative security that can help to transfer credit risk on mortgage pools to investors. The MODERNs program builds upon other securities-based risk sharing arrangements such as catastrophic bonds in which the amount of repayment to investors depends upon whether losses have occurred due to a specified insured catastrophe such as an earthquake.

The new technologies also affect government mortgage programs. Tracking earlier warnings (OMB, 1998), an actuarial report on the state of the FHA's Mutual Mortgage Insurance Fund (Price Waterhouse, 1998, p. 7) suggests that the new technologies can facilitate a process of adverse selection:

“[T]he improvement of the government-sponsored enterprises' (GSEs') ability to underwrite high quality, high LTV loans might cause an adverse selection effect. That is, without modifying its underwriting rules, FHA might end up with lower average quality loans....FHA is studying the development of its own mortgage scoring system. However, because of the relatively low volume and short performance history, little information can be drawn to quantify any of these effects. The ongoing developments in these areas should continue to be closely followed in the future.”

The conventional mortgage market has made steady incursions into the market share of federal mortgage programs, and especially the market traditionally served by FHA. In 1985, FHA provided mortgage insurance for 21 percent of the new homes sold. A steady decline in market share over the 1990's has meant that FHA at the end of the first quarter of 1998 served only 10 percent of new homes sold (*Inside Mortgage Finance*, 1998a).

At the same time, the private mortgage market has been able to achieve steady improvements in the credit quality of conventional mortgages compared to those insured by FHA. In 1986, FHA mortgages were 1.9 times more likely and VA loans 1.8 times more likely, than conventional mortgages to become 90 days past due. By the end of 1998, these ratios had jumped to 4.7 times higher for FHA and 4.2 times higher for VA, compared to conventional mortgages. (Office of Policy Development and Research, May 1999, p. 68).

The bulk of these changes occurred before the widespread private use of credit and mortgage scoring systems for origination of new loans. Those systems now are available to help private lenders to select creditworthy borrowers from the subprime mortgage market. The same systems are available to FHA and other government mortgage programs to monitor risk exposure and help protect against an unexpected influx of borrowers whose loans eventually default in unacceptable numbers. Score-based systems also can help Ginnie Mae and other federal housing credit agencies to monitor on a more current basis the performance of lenders that originate and service government-guaranteed loans.

In a sense, technology seems to foster a kind of arms race: the most effective technologies can help leading firms to command market share and reduce the supply of new product to less advanced market participants. For government, with a mandate to supplement rather than dominate the market, technologies may provide the key to defensive approaches that may be essential for the continued viability of some programs.

However, some caution is merited in undertaking a process of technology absorption, especially of large systems. First, the application of a technique such as credit scoring is more than merely a passive process. Active review of scores and outcomes may be required, for example, to assure that the system remains current (Todd, et al., 1998).

Second, the federal government's track record in technology absorption has been mixed. Some agencies such as Ginnie Mae have used contractors to build useful systems that have become a model for other federal programs as well (Financial Management Service, 1996, pp. III-IV-9 to 23). Other agencies such as the Internal Revenue Service have faced substantial difficulty in absorbing major systems.

The National Academy of Public Administration (NAPA) has begun to study the lessons of effective technology absorption. One promising analysis comes from a presentation at NAPA by Dr. Robert M. Alloway, formerly a staffer to the House Subcommittee on Government Management, Information and Technology. Dr. Alloway conducted research on the appropriate design of projects such as the adoption of new technologies (Alloway, 1976). He has found that two variables predict much of the success of a project:

- (1) the difficulty of the task, i.e., the complexity or uncertainty of the technology project; and
- (2) the organizational context of the project, i.e., the extent that the new technology causes changes that cut across organizational lines, and the extent that the organization's leaders are able to integrate the new technology into organizational patterns.

In other words, the success of Ginnie Mae's deployment of IPADS and CPADS was facilitated by the fact that the agency could adopt the new technology without causing substantial disruptions to the Ginnie Mae organization. By contrast, consider the absorption of loan servicing technologies. These technologies create economies of scale that may call for centralization of

loan servicing into one or a few servicing centers. The organizational challenge could be substantial because of the disruption that centralized servicing could cause for the many field offices of an agency that previously did this work.

In technology absorption, active support of the highest levels of an agency may be required to deal with the organizational disruptions that can be caused by technology-driven changes in work processes. If agency managers do not perceive such support, then they should consider more modest technologies that can be absorbed by particular organizational units without serious disturbance of other units. The following promising practices, and especially the discussion of new partnership arrangements, below, should be considered with these organizational issues in mind.

The rural housing direct loan program of the Rural Housing Service provides an excellent example of process redesign that has led to adoption of private sector technologies and substantial increases in quality and cost-effectiveness of loan administration.

This agency was under pressure from capable private sector servicers who wanted the Congress to privatize RHS loan servicing. The RHS responded with a multiyear program to centralize servicing of rural housing direct loans in St. Louis, to add new technological capability to field offices to help with loan origination and servicing, and to relocate and downsize staff to accommodate the changes. The Office of Management and Budget supported the RHS effort with a multiyear commitment of the funds needed for the new technology and staff training.

All parties lived up to their commitments, and the new office is now operating on the basis of state-of-the-art servicing technologies. The result of centralized servicing has been to begin to create the capacity of the Rural Housing Service to gather high quality loan level data and to monitor loan performance in a timely manner. When a borrower begins to become delinquent, the RHS now is able to intervene early, and allocate its scarce staff resources more effectively, to try to avert a default. The RHS experience shows how technology absorption is possible in a federal credit agency, to the extent that senior federal officials exert the necessary leadership and secure the multiyear commitments of resources that may be needed to help ease the transition to new ways of doing business.

PROMISING PRACTICES: LENDER MONITORING

The federal government provides mortgage insurance and mortgage loan guaranties for borrowers who often might not receive similar terms from the conventional mortgage market. To protect its financial position, the government needs to monitor the performance of the lenders that originate and service FHA, VA, and RHS-guaranteed loans.

Most FHA and VA loans are securitized in pools that are guaranteed by Ginnie Mae. Because of its immense risk exposure, Ginnie Mae has pioneered systems to monitor the performance of lenders whose origination and servicing practices will help determine the financial soundness of mortgages in Ginnie Mae pools. The promising practices in this section involve expanding the application of these Ginnie Mae lender-monitoring systems.

Ginnie Mae's IPADS and CPADS Lender Monitoring Systems Today

The two Ginnie Mae systems are known as IPADS, the Issuer Portfolio Analysis Database System, and CPADS, the Correspondent Portfolio Analysis Database System. They

track the performance of lenders in servicing Ginnie Mae pools and in originating mortgages for Ginnie Mae pools, respectively.

Ginnie Mae currently is staffed with 56 full-time positions to oversee a portfolio of \$540 billion of guaranteed mortgage-backed securities. IPADS permits Ginnie Mae to concentrate scarce supervisory and staff resources upon parts of the portfolio that are likely to pose the greatest financial risks.

IPADS provides Ginnie Mae with information about the state of the portfolio of mortgages in each pool that Ginnie Mae guarantees. Pool information, including delinquency and default rates, is updated monthly; loan-level information is updated quarterly.

Through use of financial ratios, Ginnie Mae is able to use IPADS to focus upon issuers and issuer portfolios that fall outside of expected parameters (Ginnie Mae, undated; and Coopers & Lybrand, undated). IPADS tracks delinquency rates of lenders and compares these to average delinquency rates for the state where the mortgage property is located. IPADS also includes an artificial intelligence program that helps to identify the poorest performing servicers in peer groups.

Ginnie Mae invested in its own Mortgage-Backed Security Information System (MBSIS) in 1989. IPADS became operational in 1990 as a database system that downloads MBSIS information monthly and analyzes the data to provide a comprehensive view of each issuer portfolio and the aggregate Ginnie Mae portfolio. In this function, Ginnie Mae resembles a large mortgage insurer that routinely must apply such monitoring systems and proactive analysis of portfolios provided by its business partners if it is to avoid assuming unexpected levels of risk from partners who engage in unsound origination or servicing practices.

Ginnie Mae expanded upon IPADS to create CPADS as a comparable system to track the performance of mortgage lenders that originate loans for sale into Ginnie Mae pools. CPADS has been operational since March 1994.

CPADS focuses on loan originators, tracks loans that may have been sold to correspondent lenders, and provides a continuing report on delinquency and default rates of each loan originator over the past two year period. These rates are compared with normal rates for lenders of similar size and loans of similar age and location. The VA uses CPADS information to identify the lenders whose originations pose the greatest risk of default on VA loans, and to concentrate supervisory resources on those lenders.

IPADS and CPADS parallel systems in use in the private sector. Large mortgage lenders and mortgage insurers must use such monitoring and proactive analysis of loans that they purchase or insure if they are to avoid assuming unexpected levels of risk from partners who engage in unsound origination practices or who offer them portfolios of low quality loans. However, as is discussed below, private sector systems build upon loan-level scoring information to gain a more thorough measure of lender performance in originating loans.

Promising Practice: Expand the Ginnie Mae IPADS and CPADS systems to support improved lender monitoring by the VA and RHS

The IPADS database system currently uses performance scores for each lender that combine the lender's FHA and VA mortgage activity. CPADS does permit VA to track the

performance of VA loans originated by each lender, but only for the first two years after origination.

Needed now is a refinement of IPADS and CPADS information to help give VA access to a more comprehensive database that contains information about lenders' track records in originating all outstanding VA loans and also in servicing those loans. Such a system can help VA to obtain a more accurate picture of the performance of its business partners and to allocate scarce supervisory resources accordingly.

IPADS and CPADS also offer an opportunity to the Rural Housing Service to build a database. Especially to the extent that RHS guaranteed home loans are serviced with support from a service bureau with a high quality data processing system, Ginnie Mae should be able to derive information for IPADS and CPADS analyses that are keyed specifically to the performance of RHS lenders.

However, many smaller lenders who do not use service bureaus such as Alltel or Fiserv may not be included in such databases. Indeed, the top 100 RHS lenders service about half of outstanding rural housing loans; the other 1,900 lenders service an average of less than 100 loans each. It may not be cost-effective to bring information from such lenders into the IPADS and CPADS databases, at least for a while.

Possible Enhancements to IPADS and CPADS

IPADS and CPADS already receive loan level information from mortgage servicers or their service bureaus. It should be possible, at little additional cost, to apply credit scores or loan scores to all of those loans. Also, with the widespread adoption of electronic data interchange, it should be possible to receive loan information quite promptly. Approaches to enhancing IPADS and CPADS will differ somewhat because of the different types of performance measured by each system.

Promising Practice: Enhance IPADS by (1) applying more current measures of loan performance, (2) applying credit scores and mortgage scores to all mortgages in future Ginnie Mae pools, and (3) testing lender servicing against peer groups based upon credit scores or mortgage scores.

The Promising Practice. Ginnie Mae's IPADS system was state-of-the-art at its inception. It is time now to build upon improvements in available technology and in the practices common to the mortgage industry. Two enhancements suggest themselves: (1) monitor current performance of the mortgage loan and apply more current measures than third-month delinquency; and (2) run mortgage scores for all mortgages in future Ginnie Mae pools and test servicing performance against peer groups based upon credit scores or mortgage scores.

Consider each of these in turn. First, Ginnie Mae pools tend to be serviced by large and technically adept companies. This base of strong partners has permitted Ginnie Mae to require electronic data interchange (EDI) rather than paper-based interactions with its issuers. Application of EDI can permit Ginnie Mae to incorporate current measures of performance such as one-month delinquencies into IPADS. Also, enhanced database management systems now can permit Ginnie Mae to apply IPADS measures over the life of each mortgage rather than only for a two-year period.

To the extent that Ginnie Mae has access to appropriate systems, IPADS also might be used to develop information-based tests of performance. Data mining can lead to more effective credit management and Ginnie Mae has access to one of the richest datasets in the mortgage market. IPADS underwent evolution such as the addition of regional data and the expert system screen; data mining can put IPADS in a position to make continuing refinements to performance measures as the mortgage market and the performance of mortgage servicers continues to evolve.

The second IPADS enhancement relates to the application of credit scores or mortgage scores to Ginnie Mae pools. Credit scores help to predict a borrower's propensity to make loan payments. Mortgage scores vary somewhat, but generally are valuable to help predict defaults. Ginnie Mae may want to experiment with application of various scores to determine which are most appropriate for IPADS and CPADS.

Once Ginnie Mae settles upon one or more approved measures, it may be useful to require that all mortgage loans be scored before they are included in Ginnie Mae pools. Such scoring might best be recorded by FHA, VA and RHS as a part of the origination data that they require for their new loan files.

This would permit Ginnie Mae to rate servicer performance according to peer groups that are defined by the average scores of mortgages serviced by each issuer. That way Ginnie Mae can avoid penalizing servicers of more difficult mortgages and also hold servicers of easier mortgages to a higher standard. Again, experimentation would be useful to determine whether other factors such as geographic location of the loans also should be used to define peer groups. As with IPADS today, Ginnie Mae would dedicate its scarce supervisory resources to review lenders whose performance lags their peer groups.

Related Business Practices. The credit markets are evolving rapidly. Lenders that originate or service credit cards, for example, have moved from application of credit scores to even more refined methodologies that take account of interactions among borrower characteristics. Data mining allows lenders to test on a continuing basis for the factors that correlate best with borrower propensities to become delinquent or to default (van der Schalie 1997, and 1995).

Application of credit scores or mortgage scores to all mortgages is becoming less and less expensive every day. Indeed, about half of all new originations in the mortgage market today occur through automated underwriting systems that apply some form of score. Fannie Mae, Freddie Mac and mortgage insurers have found that their mortgage lenders have requested expansion of these systems to include FHA/VA loans as well as conventional mortgages. If Ginnie Mae were to require scoring of all mortgages that will be included in Ginnie Mae pools, this would be unlikely to be seen as onerous or unfair or expensive.

In short, Ginnie Mae is in a position to capture enviable economies of scale of new technologies that can permit IPADS to remain state-of-the-art on a continuing basis. As with the original IPADS and CPADS development, much of this work can be contracted to capable firms at low cost compared to the likely benefits in terms of improved credit administration, both for Ginnie Mae and for the other members of the Housing Consortium.

Promising Practice: Supplement IPADS with evaluations of servicers by a nationally recognized rating service

The Promising Practice. In functional terms, the purpose of IPADS is to monitor the performance of the lenders that service mortgages in Ginnie Mae pools. Because of developments

in the mortgage markets, it now is possible to obtain an independent measure of servicer quality that can help Ginnie Mae (1) to identify servicers that do not meet industry standards, and (2) to obtain diagnostic information about the part of a servicer's operation that may require special review.

Ginnie Mae should consider experimenting with the application of evaluations of servicers by one of the nationally recognized rating services such as Standard & Poor's or FitchICBA. Ginnie Mae might begin by proposing this requirement for servicers that IPADS indicates are low performers compared to their peers.

It will be necessary to proceed with sensitivity to the industry in implementing this idea. Large servicers may find such independent evaluations to be helpful and inexpensive. Indeed, private issuers of mortgage-backed securities require such rankings, and it is likely that the largest servicers now receive ratings and attain acceptable ranking status.

By contrast, smaller mortgage lenders are likely to be threatened by such evaluations and also may find the cost objectionable. By focusing on low performers identified by IPADS, and also by experimenting with such evaluations as a substitute rather than an addition to other government monitoring activity, Ginnie Mae may find applications of this business practice that yield significant benefits compared to the costs.

Related Business Practices. The major private rating services now evaluate servicers and issue rankings as to their level of performance. Evaluations are thorough and include factors such as staff and management experience, quality of technology, data manipulation and reporting, portfolio composition, internal controls and operating procedures (with special emphasis upon factors such as payments processing, customer service, delinquency management and collections, and foreclosure and REO management), and cost and other efficiency measures (Standard & Poor's, 1997).

These evaluations do not seem expensive compared to other costs of doing business. One rating service charges in the range of \$20,000-\$25,000 plus expenses to visit a site, conduct an evaluation and produce a report. The servicer would pay for the evaluation; as a third party, Ginnie Mae would need to require the servicers then would provide a timely copy of the evaluation report and ranking to Ginnie Mae.

Promising Practice: Enhance CPADS by applying credit scores and mortgage scores to all mortgages in future Ginnie Mae pools and testing the quality of lender origination against peer groups based upon credit scores or mortgage scores

The Promising Practice. CPADS helps Ginnie Mae to measure of the quality of mortgages originated by lenders for sale into Ginnie Mae pools. Today, credit scores and mortgage scores on each loan before it is included in a Ginnie Mae pool can easily supplement the CPADS information. CPADS then can be used to measure the quality of originated mortgages of each lender, adjusted by geographic area, and also changes in quality of originated mortgages. Improved database management also can provide CPADS users with the opportunity to develop and refine performance measures that keep pace with market developments.

As was discussed above, with respect to IPADS, the application of credit scoring and mortgage scoring is not likely to be expensive compared to the benefits in terms of averted defaults. The potential uses of such scoring can be seen in the following discussion of private sector practices.

Related Business Practices. One private mortgage insurer monitors its risk position as follows:

- (1) Once insurance is in force, the company runs all loans through an automated underwriting system to obtain a mortgage score for each loan. The company also obtains FICO credit scores for each loan.
- (2) The company categorizes the mortgages according to credit quality.
- (3) The company then conducts an automated review of the quality of loans in groups and subgroups: companywide, insured through each of the company's insuring offices, originated or serviced by each lender, and originated by each office of each lender.
- (4) The company pays special attention to early payment defaults as an indicator of lender performance.
- (5) For large lenders, this system can detect problem patterns within 90 days of origination or sooner. It takes longer for patterns to emerge with respect to lenders that originate smaller numbers of loans.

The mortgage insurer uses its performance information to visit lenders whose performance is unacceptably low. The company reports that the Fair Isaac (FICO) score seems to correlate especially well with early payment defaults. The FICO score is also useful to help explain performance problems to lenders. The company reports that most lenders respond positively when they are approached with evidence that average FICO scores on their originations have lagged those of their peer group.

The private mortgage insurer follows up by monitoring average FICO scores for originations of mortgages by the lender (or by the office of the lender) that has been singled out for review. Alternatively, the insurer may specify that it will not accept originations of mortgages from that lender or office that fall below a specified FICO score.

The mortgage insurer also has two other quality systems. They are worthy of note here even though Ginnie Mae and other federal housing credit agencies may not be able to emulate the private sector in responding to signals.

The mortgage insurer has one system that analyzes market trends, for example whether a particular local market is stable, declining or improving. These market trends are routinely factored into mortgage scores to test the credit quality of newly originated mortgages. In case of an early warning, the private mortgage insurer will tighten its underwriting standards with respect to mortgages that it will insure. By contrast, a federal agency such as FHA may *increase* its market share in declining markets to help offset the reduction in conventional financing (GAO, 1997, p. 32).

The other system relates to fraud. The mortgage insurer monitors for fraud through a claims investigation unit. Originators with poor performance are placed on a caution list or else cut off from doing business with the insurer. By contrast, it is difficult for government to cut off private partners except after provision of extensive procedural rights. Instead, the use of a caution list, and imposition of prior review requirements and other detailed reviews, may be useful as a quick tool for a federal agency to respond to threats to its credit position.

PROMISING PRACTICES: LOAN SERVICING AND LOSS MITIGATION

In the past two years the private markets have made dramatic improvements in mortgage servicing and loss mitigation techniques. These improvements reflect the application of scoring models to help servicers to apply the most appropriate forms of intervention when borrowers become delinquent on their mortgage loans.

Off-the-shelf models for loan servicing and loss mitigation are now readily available. Freddie Mac and the Mortgage Guaranty Insurance Corporation (MGIC) have tested and improved upon a system known as EarlyIndicator. Fannie Mae has developed a system called Risk Profiler and is currently sharing that system in a pilot test with the Veterans Administration. Both of these models essentially provide an early warning system when a borrower misses a payment (Steele, 1998; and Cornwell, 1998). GE Capital Mortgage Insurance Company also is piloting a new system, known as Loss Mitigation Optimizer.

These score-based servicing systems offer different opportunities for federal housing credit agencies. If a federal program involves direct lending, then the credit agency can adopt a system directly. If a federal program involves provision of mortgage insurance or a loan guaranty, such as most programs of the FHA and VA and the loan guaranty fund of the RHS, then the federal credit program may be able to offer incentives for participating private lenders to adopt one of the systems.

Promising Practice: Apply a scoring-based system to help select groups of borrowers in federal direct loan programs for special servicing and cost-effective intervention

The Promising Practice. For federal direct loan programs, the federal government itself bears the responsibility for servicing the loans. In the mortgage market, federal direct loan programs include the RHS Section 502 program or the VA Vendee Loan Program.

When a borrower misses a payment, a number of outcomes are possible: (1) left to the current strategies of the direct loan servicer, the borrower will soon pay and return to current status, (2) the borrower would benefit from some other form of intervention, such as a reminder, a warning, or counseling to select a new payment option or otherwise to deal with the problem that caused the delinquency, or (3) the borrower somehow has begun the road to default in a way that intervention is unlikely to help. A federal direct loan program also may provide for other possible outcomes. For example, a borrower may require an interest subsidy to help meet mortgage payments during difficult economic times. Needed is some way to distinguish the various cases as early as possible, so that intervention can be targeted to appropriate cases and tailored to the needs of each particular case.

Score-based servicing models identify borrower and loan characteristics that can help to predict the outcome soon after a borrower misses a payment date. EarlyIndicator combines two models, (1) to predict borrower behavior when a payment is missed, thereby indicating whether, when and how intervention might be needed, and (2) for delinquencies of over 30 days, to predict the odds that the borrower ultimately will default, thereby suggesting loss mitigation approaches (Freddie Mac and MGIC, 1998).

The two leading servicing models have been tested with respect to FHA and VA loans, and would seem directly applicable to the VA Vendee Loan Program. By contrast, it may be important for an untested loan program such as the RHS direct home loan program, to work with MGIC, Freddie Mac or Fannie Mae to include loan performance data in the model's database.

Credit scores, such as the FICO score that now comes as an option with EarlyIndicator, would seem to apply to rural borrowers already. By contrast, mortgage-related scores may need to be calibrated to the special characteristics of RHS loans before the score-based servicing models would be completely applicable. Further work is needed on this issue.

Related Business Practices. EarlyIndicator involves separate scorecards that apply to loans at each stage of delinquency, at 30, 60, and 90 days and through foreclosure. The proprietary program translates key variables into a single score, calibrated on a scale from 101 to 400. The higher the score, the lower the probability that the servicer needs to take action to bring the loan current to avoid a foreclosure. Thus, as a general rule the highest scoring loans, above 395, will successfully reinstate payments. By contrast, over 90 percent of the lowest scoring mortgages, below 130, will eventually generate a loss.

The score is valuable for servicers because they can avoid intervention with borrowers likely to reinstate themselves and can concentrate scarce resources on those borrowers whose mortgages are likely to require special assistance or workouts. By targeting these borrowers earlier, the servicer has more options to help avoid foreclosure and the related damage to a borrower and his or her way of life (Comeau and Cordell, 1998).

GE reports, for example, that its new Loss Mitigation Optimizer product has helped the company to double its cure rate for seriously delinquent mortgages. GE now finds that 55 percent of its workouts of loans that are four months behind are successful; that compares to a rate below 30 percent before GE began using Loss Mitigation Optimizer (*Inside Mortgage Technology*, 1998).

Promising Practice: Create incentives for servicers of federally guaranteed loans to use a scoring-based servicing system

The Promising Practice. Averting defaults and foreclosures is an important part of the mission of each federal credit agency. Default aversion is important both to protect the program against unacceptable levels of loss due to loan termination and also to protect borrowers against the harsh consequences of foreclosure.

Some incentives already exist for servicers of FHA, VA and RHS guaranteed mortgage loans to adopt automated loss mitigation systems. Fannie Mae, Freddie Mac and MGIC are actively promoting use of their loss mitigation systems. They offer these systems inexpensively to servicers as a way of reducing losses from credit risk. As has been true of automated underwriting systems, lenders are likely to want to expand their use of scoring-based loss mitigation systems to their government portfolios as well as their conventional loans.

In addition, if the automated systems prove cost-effective for federal mortgage loans, it may be possible for FHA, VA and RHS to relax certain regulatory requirements for those lenders that use an acceptable loss mitigation system. FHA, for example, has created a system of monetary and process rewards for lenders that score well in their loss mitigation performance (FHA, 1998).

Federal housing credit agencies also may want to explore establishing a system of classes of mortgage lender. Preferred lenders could receive considerable regulatory flexibility, certified lenders would receive some regulatory waivers, and the remaining lenders would be subject to detailed requirements and scrutiny. This is similar to the three-tier system that the Small Business Administration applied to lenders in its guaranteed loan program (Financial Management Service,

1996, pp. I-12 to I-16).

If IPADS includes appropriate measures of servicer performance, Ginnie Mae may have available a database on lender performance that helps to distinguish between servicers that use automated loss mitigation systems and those that do not. FHA may be able to use CPADS to help generate information relating to the special statutory authority of FHA to take action with respect to lenders whose default rates are more than twice the average for their locality. See, "Termination of origination approval agreement," 24 CFR Sec. 202.11(d). Systematic application of that authority may lead to better practices by the originators and servicers that most need improvement.

Finally, legislative changes can help to create appropriate incentives to adopt loss mitigation systems. The U.S. Department of Education, for example, benefited when the Congress enacted legislation that permitted the department to terminate schools with default rates above a clearly defined limit. As a result of the new rules, schools near the limit have retained credit management services to counsel borrowers as to their first payment obligations and to intervene early after a payment is missed. The guaranteed loan program also has benefited from a reduction in the credit subsidy rate that had been assigned to the program.

Related Business Practices. VA and Fannie Mae, working with four servicers of VA mortgages, are undertaking a controlled experiment to test the application of Fannie Mae's Risk Profiler system to servicing of VA mortgages. This test is being conducted at no cost to the government.

Starting May 1, 1998, the four servicers have begun to apply Risk Profiler to their servicing portfolios of VA loans. About 500,000 loans will be included in the test, out of a total VA guaranteed loan volume of roughly 3 million loans outstanding. The four servicers range in size from one of the largest to a servicer of more modest size

The servicers will perform a data-based test on the 500,000 loans. Half of the loans will be serviced in the traditional manner. The other half will be scored and serviced with stratified techniques that involve special attention for early delinquency loans with weak scores. VA and the servicers will follow the performance of the loans for a six-month period. Fannie Mae plans to use information from the test as feedback to revise and improve the VA loan segment of the Risk Profiler database.

The four servicers are willing to undertake the experiment because of the savings that they will achieve in managing delinquencies of high-score loans (i.e., those that tend to reinstate with no or little intervention) and in reducing defaults that otherwise would require costly attention. If the pilot program is successful, then VA could revise its servicing regulations to permit all VA loan servicers to benefit from more flexible requirements if they use Risk Profiler (or, eventually, other acceptable systems).

In the conventional market, Fannie Mae has relaxed its own servicing guidelines for users of Risk Profiler. The new guidelines allow servicers to forego the initial calls to borrowers with high scoring (i.e., low-risk) loans that otherwise would be mandatory between the 17th and 20th days of delinquency. Lenders also may wait until the 40th day of delinquency to call on low-risk borrowers. Waiting allows the lender to conserve resources when a borrower brings a loan current before the call deadline.

Private lenders have an incentive to service loans well. They take significant financial risk when a mortgage defaults, even if first losses on the mortgage are covered by private

mortgage insurance. Also, private mortgage insurers and large lenders such as Fannie Mae and Freddie Mac possess the ability to define the terms on which they will do business, and may decline to do business, with lenders or servicers with high levels of delinquency or default.

PROMISING PRACTICES: FINANCIAL EARLY WARNING SYSTEMS

The rapid rate of change in today's credit markets makes it imperative that market participants use financial early warning systems to alert managers to emerging problems. Indeed, one consequence of today's high-tech systems has been a propensity of some market participants to push the limits of credit risk

Moody's Investors Services has warned that the new systems cannot capture all factors that drive credit quality and that, "...computers and automation cannot dictate ...quality if the competitive business environment drives lenders to make loans to ever-riskier borrowers" (Adelson and Stesney, 1998).

A financial early warning system is especially important for federal credit programs. In today's information-driven market, the government cannot afford to rely upon low quality information about risk compared to the information available to the private partners that are originating and servicing loans that the government guarantees.

Financial early warning systems can be simple and effective. What is important is that they be refined as a part of a continuing process of keeping up with market changes. The 1996 Workshop on Promising Practices, cosponsored by the Financial Management Service and the Federal Credit Policy Working Group, presented several early warning systems that have these characteristics. (Financial Management Service, 1996, pp. V-1 to V-36).

Promising Practice: Monitor credit scores, and possibly mortgage scores, as a financial early warning system to signal promptly any changes in level of credit risk that threaten the financial soundness of a program

As was noted earlier, adverse selection has been a perennial problem for federal credit programs, especially in the residential mortgage market. Lenders have become increasingly skilled at exploring the subprime mortgage market for creditworthy borrowers. The result has been a movement into the conventional mortgage market of creditworthy borrowers who previously would have been served by a federal program. The problem for the federal programs is that they risk that their portfolios will come to include an unacceptable proportion of borrowers who are likely to become delinquent or default.

As former FHA Commissioner Nicolas Retsinas (1998) has pointed out,

"The FHA opened the homeownership doors to borrowers shut out of the mortgage market. However, to be successful, FHA cannot only insure 'B' and 'C' risk borrowers."

The Promising Practice. The advent of new information-based technologies means that the process of adverse selection can take place much more rapidly than was possible before. Needed is a financial early warning system to (1) establish the current baseline level of credit risk associated with federal loan and guaranty programs, (2) monitor on a real-time basis the level of credit risk associated with newly originated mortgages in those programs, and (3) signal promptly

any changes in level of credit risk that threaten the financial soundness of a program.

Fortunately, credit scoring provides a low cost measure that is associated, albeit imperfectly, with credit risk on a federal loan. Similar to the way that Ginnie Mae developed IPADS and CPADS to avoid unacceptable losses, FHA, VA and RHS all might utilize credit scoring of a sample of their guaranteed or direct loans to provide the basis for early warning analysis. Indeed, FHA and VA may want to explore using their partnerships with Fannie Mae and Freddie Mac and some mortgage insurers, to create a real time system of monitoring mortgage scores associated with incoming mortgages.

As with any financial early warning system, a major question relates to the actions that a government agency is empowered to take if it receives an early warning signal. Each program agency may want to review its legal authority and prepare a "what-if" handbook of measures that are available in response to a signal. If an agency lacks sufficient authority to act, discussions with the relevant authorizing committees might be useful. A repertoire of responses is to be desired, as a way of permitting an agency to avoid the Hobson's choice between applying a draconian measure, say to shut down some part of a program altogether, or waiting to see whether the signal might have been premature.

Related Business Practices. As has been noted throughout this report, Fannie Mae, Freddie Mac, mortgage insurers and large lenders all possess sophisticated data systems that permit them to monitor their risk exposure on a current basis. They also possess a repertoire of potential responses, from issuing warnings or applying financial penalties to partners with low performance to suspending partners from doing further business with them.

Promising Practice: Employ a credit rating service or other financial advisor to help (1) benchmark each federal direct loan or loan guarantee program against practices in the financial services sector and (2) obtain information about "weak links" in their credit exposure, including systems, procedures and the quality of their portfolios

Propelled by technology and new forms of business organization, the financial services sector is evolving rapidly in a direction of greater efficiency and accountability and higher quality customer service, based upon responsiveness to differences in individual customer needs. Indeed, the residential mortgage market seems to have lagged somewhat behind developments in other loan markets, notably credit cards.

Federal credit programs would benefit from a source of high quality information about promising practices both in the mortgage market and in other credit markets that might provide useful models for the management of credit risk.

The Promising Practice. A credit rating service is one promising source of such information. The structured finance group of a credit rating service customarily reviews the quality of loan portfolios and associated risk factors such as loan origination, servicing and information management. The rating services have considerable experience with ratings of private mortgage insurers and mortgage-backed securities, for example, that they could bring to bear in an assessment of the major FHA or VA. They also have experience with a variety of types of loans, such as credit card receivables, auto loans, small business loans subprime home mortgage loans, and types of rural loans that might be applied to less familiar programs such as those of the RHS.

Each of the federal credit agencies may want to explore employment of a credit rating service to help obtain information about the "weak links" in their credit exposure, including

systems, procedures and the quality of their portfolios. There is one caveat: in turning a rating service into a consultant, the federal credit agency needs to assure that the rating service maintains its tradition of independence of judgment that is an essential part of the published ratings process.

Other financial services firms, or accounting firms, may be able to provide similar information. However, investment banking firms tend to be transaction-oriented and generally less interested in providing management advice; some accounting firms may lack the focus on credit administration that is common to credit rating services (Stanton, 1993).

Related Business Practices. Private issuers of mortgage-backed and other asset-backed securities frequently benefit from the scrutiny of financial advisors and credit rating services. Often, the alternative to changing pricing on a transaction may be to adopt improved business practices as indicated by a financial advisor.

The federal government had experience with the benefits of benchmarking against private sector practices in the late 1980s. Starting in 1987, a number of federal agencies, including the Department of Education, sold some of their loan portfolios to private purchasers. In the process, financial advisors and rating services identified significant and valuable opportunities to improve credit management and to learn from private sector practices (Financial Management Service, 1989).

Federal agencies frequently hire consultants. However, it is not customary for federal agencies to hire financial advisors except in the context of particular transactions. The Office of Federal Housing Enterprise Oversight has hired a credit rating service for diagnostic support, but this is a rare example. The Department of Education recently retained a credit rating service to help assess the quality of servicing of the direct student loan program.

The General Services Administration has developed a schedule that will permit federal agencies to contract for a range of asset management services, including financial advisors and credit rating services. To the extent that federal housing credit agencies participate in this interagency process, the roster of firms that are selected would reflect the potential needs of their programs.

PROMISING PRACTICES: NEW PARTNERSHIP ARRANGEMENTS

It should be possible for the FHA or VA to form a useful partnership with private companies to share credit risk and help manage the government's risk position on portfolios of mortgages originated to meet FHA and VA standards. However, focusing merely upon the issue of risk sharing traditionally has raised concerns that other important policy issues might be neglected.

In particular, private mortgage insurers and private lenders with their own money at risk would tend to avoid the potentially most risky parts of today's FHA and VA originations. Thus, there is a direct tradeoff between the amount of risk that private parties might take, and manage, and the types of borrowers served and mortgages that would be provided in a partnership arrangement. This tradeoff needs to be addressed explicitly in any partnership arrangements.

Promising Practice: Use credit scores and mortgage scores to help set and reset strategic direction for federal mortgage programs

Assume for a moment that Ginnie Mae found it cost effective to gather credit scores and mortgage scores for all FHA and VA mortgages sold into Ginnie Mae pools. FHA and VA then could use that information to identify those borrowers and mortgages for which their programs are most important.

FHA, for example, might find that it serves borrowers who do not possess as high a FICO score or who do not have access to enough downpayment to qualify for service through the conventional market or even through the subprime part of that market. At the other end of the range, FHA would be able to identify those borrowers and mortgages that fail to meet FHA underwriting standards that help to protect the financial soundness of the program.

In other words, FHA would be able to use credit scores and mortgage scores to define the types of borrowers and mortgages that depend upon the FHA program to help assure access to homeownership. These statistical bands of credit scores and mortgage scores would be likely to vary according to market developments, locally, regionally and nationally.

Once FHA has defined its market statistically in this way, it should be possible for federal managers to explore risk-sharing arrangements that continue to provide access in the FHA target market. Criteria for pools of mortgages would include not only financial soundness considerations but also requirements for service, expressed for example in terms of average credit or mortgage scores, with respect to borrowers or types of mortgages that FHA seeks to serve.

Promising Practice: Explore alternative risk-sharing arrangements with private parties

To take yet another step towards adoption of private sector practices, it is time for the government to consider experimenting with risk sharing arrangements. If qualified private parties can take substantial amounts of risk, then they will gain an incentive to administer capably the credit risk on mortgage pools. Rating services now provide an independent check on the quality of mortgage servicers, and score-based systems, once again, provide an opportunity to monitor accurately the performance of these private parties.

Some risk sharing arrangements may fail. A process of careful experimentation with smaller mortgage pools and analysis of the factors related to high performance can help to limit the government's loss exposure in any particular transaction. The VA's test of Risk Profiler is an excellent model of a way to construct an experiment that yields useful information without risking widespread losses. The government may be able to design risk-sharing experiments that have similar characteristics.

A variety of risk-sharing arrangements might be possible for FHA or other federal housing credit agencies. Conversations with private mortgage insurers indicate that various approaches, involving sharing of different amounts of risk, would be attractive to different private firms. FHA or another federal mortgage agency might simply purchase reinsurance coverage for a specified pool of loans. That reinsurance could cover first losses on the pool or some other prescribed loss coverage. The seller of the reinsurance would manage the government's risk position, including monitoring of the performance of FHA lenders.

Freddie Mac recently purchased reinsurance on a selected pool of mortgage loans from its own portfolio. That transaction is relevant here because of the way that Freddie Mac appears

to be using a limited pilot to help judge the costs and benefits of a structure that later might be applied to larger parts of Freddie Mac's mortgage business as well.

Once FHA and mortgages of other government programs are routinely scored, it should be possible to test the relative advantages of these approaches in champion-challenger comparisons. Relevant factors include amount of risk sharing, the extent of service to appropriate market segments, and the price.

The issue of price raises special considerations. The differences in accounting conventions and financial measures between the public and private sectors may mean that the costs and benefits of private risk sharing cannot be appropriately measured under current rules. Accounting for costs and benefits of risk-sharing arrangements raises the same issues that arise when government agencies contemplate sales of loan assets. One expert (Phaup, 1995, p. 2) presents a gloomy assessment:

“It is clear that none of the government’s existing accounting or budgetary measures of value are suitable for evaluating the desirability of a proposed asset sale. Thus, it is unlikely that any procedural rule based upon existing budgetary or accounting measures would be capable of distinguishing accurately those asset sales that are harmful to the government’s from those that are not.”

CONCLUSION: NEW OPPORTUNITIES AND NEW FORMS OF RISK

New technology-based business practices suggest an answer to the question asked by FHA Commissioner Nicolas Retsinas: credit scoring and associated promising practices can help federal mortgage programs better to serve borrowers and communities that are not adequately served by the conventional mortgage market. Using credit scores and mortgage scores can permit a federal agency such as FHA to calculate its risk position and take steps to target, manage and price that risk.

This survey indicates how the gap in credit management practices is widening between the private sector and federal credit agencies. Federal housing credit programs seem especially vulnerable to adverse selection at the hands of private competitors that have successfully adopted new mortgage technologies. This makes modernization of government practices essential, merely to try to defend the status quo. In addition, of course, the new technologies and business practices also can help federal agencies to serve their important public missions more effectively and cost-effectively.

Fortunately, government has not been standing still. All of the federal housing credit agencies have begun to employ new business practices to help manage their programs. Perhaps the most instructive recent example comes from the Rural Housing Service and the modernization of the management of the rural housing direct loan program. Leadership from the top levels of a federal agency, support from OMB in the form of a multiyear commitment of needed resources, and a clear and achievable technology absorption plan all helped to make the RHS effort a likely success.

It is probably not an exaggeration to suggest that moving prudently to adopt new technologies and business practices will be essential if federal credit agencies are to meet the challenge suggested by Mr. Retsinas. To some extent, federal programs may be able to adapt current private sector systems to their immediate credit management needs. Over time, however,

as the effects of change continue to mount, it will be necessary to restructure programs more fundamentally, to assure that they remain nimble and capable of sustaining a process of continuing adaptation to new circumstances.

The new technologies are generating competitive pressures on market players, both private and governmental, and such organizational strength and flexibility will become increasingly relevant to programmatic success. For the moment, and even without such basic change, many of the practices presented here can offer federal credit programs the chance to serve their missions more effectively.

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