



Editors' Introduction

William R. Emmons and Anthony N.M. Pennington-Cross

What role does the federal government play in the private markets for credit and insurance today, and what role should it play in the future? These questions served as the organizing themes for the Thirtieth Annual Economic Policy Conference of the Federal Reserve Bank of St. Louis. This introductory article provides an overview of the conference presentations and discussants' comments.

A distinguished group of scholars and policymakers gathered on October 20-21, 2005, to describe, analyze, and propose reforms to a wide range of federal credit and insurance programs. The discussions took on added importance because virtually all the federal programs at issue were under active legislative consideration at the time of the conference. A note of immediacy was injected into the deliberations by the still-unfolding disaster unleashed by the Gulf Coast hurricanes of August and September 2005 and the hesitating response of national, state, and local governments to the crisis.

Conference participants discussed a wide range of federal credit and insurance programs. The programs included some that provide broad-based social insurance (Social Security, Medicare, Medicaid) and others that more narrowly target housing (low-income mortgage insurance and guarantees, housing-related government-sponsored enterprises [GSEs]), private pensions (defined-benefit [DB] pension insurance), or disaster relief (flood insurance, earthquake insurance, terrorism-risk insurance). In addition to extensive economic

and financial analyses of federal interventions into private credit and insurance markets, several sessions analyzed the political and policymaking processes that bring federal credit and insurance programs into existence and make their operation sometimes difficult to understand and resistant to change. Some speakers focused their remarks on micro-level details, such as program design and participant incentives, while others considered macro-level impacts on financial markets and the long-run sustainability of publicly financed credit and insurance programs.

LONG-TERM SOLVENCY OF THE U.S. GOVERNMENT

Is the United States bankrupt? Most people would scoff at the notion that the U.S. government cannot now, or in future will not be able to, pay its bills. Bankruptcy of the federal government seems particularly far-fetched since the U.S. Treasury continues to issue billions of dollars of long-term unsecured debt every month at historically low yields. Who would lend money to Uncle Sam at 5 percent interest for 30 years if there were any question about timely repayment in full? Indeed, the globally integrated capital markets seem to have imposed no risk premium on Treasury borrowings despite a rapidly growing outstanding debt of about \$5 trillion (\$8 trillion if all intra-government borrowings are included).

Laurence J. Kotlikoff believes the question of the bankruptcy of the U.S. government is not only

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worthy of serious discussion, but that the answer to the question is clearly “yes.” The primary sources of the problem are well-known—extensive social-insurance commitments together with prospective revenue streams that are grossly inadequate to fund these promises. The primary reason most people fail to appreciate the dire financial straits in which the U.S. government finds itself (and, by extension, the future burdens we U.S. taxpayers face), Kotlikoff suggests, is that government accounting is seriously flawed. Government accounts are presented on a “cash,” or non-accrual, basis, in which only those revenues and outlays that already have occurred are recognized. When, instead, a comprehensive, forward-looking accrual framework is applied to the current and likely future financial revenues and obligations of the U.S. government, the fiscal picture is dire.

Citing an estimate by Jagadeesh Gokhale and Kent Smetters (2005), Kotlikoff argues that the U.S. government’s fiscal gap as of 2004—the shortfall of the present discounted value of all likely future government revenues compared with the present discounted value of all likely future government outlays—amounted to \$65.9 trillion. Thus, rather than facing a cumulative federal government debt-to-current-GDP ratio of about 37 percent in 2004 (as suggested by the \$5 trillion of publicly held federal government debt), a more accurate estimate would be 562 percent of current GDP.

Kotlikoff points out that, in one way or another, future government budgets will have to bring revenues and outlays into balance. The issue is whether, as a matter of public policy, we are willing to let things sort themselves out, perhaps in a series of financial crises and forced choices, such as huge tax increases. To plan rationally involves either higher taxes, lower government spending, a partial repudiation or devaluation of government debt (via inflation), or some combination of these approaches. If we don’t choose now the combination of unpleasant policies we find least objectionable, we could face an uncertain and unpleasant economic future. Kotlikoff reviews several specific policy options, then proposes far-reaching reforms to the tax system and arrangements for retirement and medical insurance.

Discussant Anjan Thakor asks whether Kotlikoff’s proposition that the U.S. government may now be, or may become, bankrupt is the right way to think about the situation. Thakor describes three different stages of financial distress in a corporate setting: pre-bankruptcy financial distress, the bankruptcy process itself, and post-bankruptcy liquidation.

The hallmarks of pre-bankruptcy corporate financial distress are a marked deterioration in the business prospects of the firm and, consequently, loss of access to external financing sources. The typical responses of the distressed firm are to restructure its business and/or renegotiate its obligations. Presumably, neither the corporate creditors nor the debtor really want to incur the disruption and inefficiency associated with debt default.

Only when efforts to restructure and renegotiate fail would we expect a distressed firm or its creditors to file for bankruptcy. The formal bankruptcy process brings in an outside party—the bankruptcy court—to continue efforts to resolve the situation. Formal bankruptcy is a process of mediated renegotiation of formal obligations. The bankruptcy court breaks any stalemates that arose during pre-bankruptcy negotiations and imposes solutions on all interested parties. Finally, liquidation occurs only when the business prospects of the firm are judged so dire that no amount of restructuring or renegotiation justifies continuation of the firm.

Does the U.S. government’s financial situation bear any resemblance to any of these stages of bankruptcy? The government’s assets certainly are not in the process of being forcibly liquidated by creditors. For that matter, the notion of a formal bankruptcy process mediated by an outside party appears unrealistic, as well. After all, the vast majority of the U.S. government’s liabilities to foreigners are denominated in U.S. dollars, which can be supplied virtually at will. Furthermore, the relevant debt-to-GDP ratio when using a forward-looking framework would seem to include not only current GDP, but future GDP, as well. On this basis, the debt-to-GDP ratio would be much smaller and less foreboding.

Thakor concludes that the only sense in which the U.S. government's financial situation resembles bankruptcy is that future financial distress is conceivable, if not likely. The country's economic prospects may not be as bright as when earlier promises were made, and renegotiation of some kind may become necessary. But while it may need to renegotiate social and financial contracts between generations and with creditors, the U.S. government does not deserve the term "bankrupt." To avoid abrupt and painful course corrections later, Thakor nevertheless believes that Kotlikoff's reform proposals deserve serious consideration today.

MANAGEMENT OF FEDERAL FINANCIAL INSTITUTIONS

Douglas J. Elliott takes a "plumber's perspective" on federal financial programs and institutions. That is, rather than debating why federal credit and insurance programs of various types exist, or whether they should be changed or eliminated, he describes the challenges of actually managing them properly. The managers of federal credit and insurance programs and institutions operate at the intersection of national politics, regulatory policymaking, and government bureaucracy—a challenging working environment, to say the least.

A feature common to many federal credit and insurance programs is their off-budget headline appeal to politicians. Congress often extends multibillion-dollar government-lending authority or insurance protection without appropriating funds in that amount. This can occur in the form of unfunded programs, such as the National Flood Insurance Program, or in the form of government enterprises, such as the Pension Benefit Guaranty Corporation (PBGC) or the Government National Mortgage Association (Ginnie Mae), or even in the "off-off-budget" form of GSEs, which are privately owned, such as the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac). Thus, a politician can tout a multibillion-dollar federal program benefiting his or her constituents with-

out actually having to secure budget authority for spending in that amount.

Given the uncertain future costs and unclear lines of authority and responsibility inherent in many of these arrangements, program and enterprise managers may pursue goals other than, or in addition to, operating efficiency and minimization of the ultimate cost to the taxpayer. Moreover, Congress often writes rules and provisions into authorizing legislation that reflect political considerations—such as preferences for certain disadvantaged groups or targeted activities—that may conflict with standard management principles for a financial institution, such as risk-based pricing.

The Office of Management and Budget (OMB) and the General Accountability Office (GAO) are two federal government agencies that seek to analyze, and suggest resolutions to, some of the more difficult conflicts among the mandates delivered by Congress to federal credit and insurance programs and enterprises. However, the OMB and the GAO have no authority to restructure or sharpen the focus of any federal credit or insurance program or enterprise, so political considerations inevitably dominate.

Rather than despairing of any escape from the crass politicization of federal financial programs, Elliott points to examples of progress and suggests extending these reforms. An encouraging example of the federal government imposing some discipline and sound management principles on itself is the Federal Credit Reform Act of 1990. The Act required all federal direct loans, loan guarantees, grants, and credit insurance to be budgeted on a comparable basis. That is, rather than applying the government's usual cash-budgeting approach to these inherently long-lived commitments, the Act required all future program cash flows to be projected and then discounted back to the present at an appropriate discount rate. Any shortfall then would be recognized as a subsidy, while a positive net present value associated with the program's cash flows would be recognized as a surplus for the government.

Although the Federal Credit Reform Act of 1990 was a good start, Elliott believes much more can and should be done to improve the management of federal financial programs and institu-

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tions. He raises several practical questions relevant to the analysis and management of these programs:

- What is the right discount rate to apply to cash flows arising from a government-made floating-rate loan?
- Should the government use a discount rate that reflects the uncertainty associated with future cash flows from a federal credit program?
- How, if at all, should the discount rate used for budgeting purposes be related to the price charged, if any, to the users of the program?
- Should a cost-benefit analysis be applied to all federal credit programs? If so, how will indirect and hard-to-measure costs and benefits, such as externalities and long-term effects, be incorporated?
- Should managers of federal credit programs and institutions be required to apply state-of-the-art modeling techniques to the financial risks they encounter, such as credit, market, and operational risks? If so, how will the programs and institutions acquire and retain the expertise necessary to conduct these analyses?
- Can the Federal Credit Reform Act be extended to encompass federal insurance programs and institutions, such as the PBGC, the National Flood Insurance Program, and the federal Terrorism Insurance Program?

In addition to budgeting and legislative reform, Elliott argues that more and/or better people and tools will be required to create meaningful and lasting improvement in the management of federal credit and insurance programs. To justify paying higher salaries to the highly skilled government employees needed to implement better management practices, Elliott proposes creating a “Certificate in Government Financial Institutions Management.” Like the private sector Masters of Business Administration (MBA) qualification, this credential would both motivate young people to acquire a core set of skills and signal to govern-

ment employers—and Congress—that certificate holders deserve a skill premium. At the same time, managers and employees in federal financial programs and institutions must be provided with up-to-date computing, telecommunication, and other tools necessary to master the business challenges they face.

Discussant George J. Benston commends Elliott’s recommendations for improving the management of federal financial programs and institutions, but insists that an understanding of the purpose of, and rationale for, every program or institution is necessary to set priorities and manage incentives in those settings. Benston suggests that cynicism about the origins and purposes of federal credit and insurance programs sometimes is appropriate. Some (many?) were created to benefit special interests, so program structure and details likely will reflect these priorities, despite the best efforts of managers to overcome them.

Benston provides tentative answers to several of the specific questions that Elliott raises, such as the proper discount rate to apply. He reminds us, however, that economic rationality is sometimes not applied to federal programs not because program managers do not know the “right” answer, but because the purpose of the program is to be politically expedient, not economically rational.

FEDERAL CREDIT AND INSURANCE PROGRAMS FOR HOUSING

Significant federal intervention in the private markets for housing construction, finance, and insurance dates from the Great Depression. Today, housing-related federal credit and insurance programs and institutions are administered or regulated in at least five cabinet-level departments: Housing and Urban Development (including the Federal Housing Administration [FHA] mortgage-insurance programs and regulation of housing-related GSEs); Veterans Affairs (VA Home Loan Program); Treasury (borrowing authority for housing-related GSEs and regulation of commercial banks and savings institutions); Homeland

Security (National Flood Insurance Program); and Agriculture (Rural Housing Service).

John M. Quigley analyzes housing-related federal credit and insurance activities covered by the departments of Housing and Urban Development and Veterans Affairs. Despite their flaws and the perpetual need for long-standing programs and institutions to evolve, Quigley believes that the FHA, VA, and the housing-related GSEs have “played major roles in the development of liberal and efficient primary and secondary mortgage markets in the United States.” Most of their activity has been indirect—that is, not dealing with households directly, but with financial intermediaries instead—and much of it has been conducted off-budget. Quigley has no quarrel with the former approach, but suggests the latter policy should be changed. Moreover, Quigley suggests that housing-related federal credit and insurance activities should be targeted more narrowly on first-time homebuyers, in pursuit of the federal government’s stated goal of maximizing the homeownership rate in the United States.

At the peak in 1957, FHA mortgage insurance (funded by borrower premiums) and VA mortgage guarantees (provided by the federal government) together covered as much as 40 percent of the dollar volume of new mortgage originations. Today, the share of new mortgage originations covered by FHA or VA programs has fallen into the single digits. Quigley suggests there are two factors that explain the relative decline of federal government mortgage insurance and guarantee programs during recent decades.

First, private sector mortgage lenders and insurers were able to observe the success of FHA and VA programs and copy them. This demonstration effect is easy to overlook today, when the private mortgage market is large and thriving. After the Depression and World War II, however, there was genuine uncertainty in the private financial market surrounding the feasibility of widespread use of long-term, self-amortizing, relatively high loan-to-value mortgages. Public sector mortgage innovations “primed the pump” for the private sector.

The second factor behind the relative decline

of FHA and VA mortgage programs was innovation or flexibility—or the lack thereof by the government housing agencies in the face of rapidly evolving private sector activities. The clearest example of rigidity imposing market-share losses on FHA and VA programs was fixed-dollar loan limits. In the face of inflation and rising incomes, fewer and fewer mortgage borrowers qualified for FHA and VA programs. Whereas 90 percent of new houses built in 1964 would have qualified for FHA insurance, only 15 percent of new houses built in 1995 would qualify, based on actual sales prices and FHA underwriting guidelines. Loan limits were increased in 1995, but the potential FHA share remains well below 50 percent of new houses being built each year.

Just as the FHA and VA played an important role in developing the primary mortgage market in the United States, Quigley argues that the government-owned Ginnie Mae and the privately owned housing-related GSEs—including Fannie Mae, Freddie Mac, and the Federal Home Loan Banks—played important roles in developing the secondary mortgage market. Quigley suggests that, paralleling the experience of the FHA and VA, a similar decline in the market shares of the government-related mortgage-financing institutions is under way (desirably so) as private sector players copy government initiatives and innovate in new directions.

Quigley reviews the extensive, but contentious, literature that investigates the subsidies received by the housing GSEs by virtue of their association with the federal government. Both the GSEs’ credit guarantees extended to their mortgage-backed securities and the debt they issue to fund portfolios of mortgage investments benefit from certain legal advantages and perceived, or “implicit,” recourse to the government. Quigley concludes that the subsidies are significant and that they are not passed through to mortgage borrowers in their entirety; instead, shareholders, employees, or other financial institutions involved in mortgage securitization appear to be “skimming off” some of the funds intended for borrowers. Regarding the GSEs’ affordable-housing goals, Quigley concludes that there is

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"minimal" evidence that the GSEs are influencing credit or housing activity in targeted markets. There also is some evidence that FHA and GSE affordable-housing activities work at cross purposes to each other—that is, Fannie Mae's and Freddie Mac's targeted lending may crowd out lending that otherwise would have been provided under an FHA program.

Quigley also weighs in on the controversial topic of the broader economic and financial effects of the housing GSEs. Evidence of nationwide integration of previously local mortgage markets, along with a more robust supply of mortgage credit throughout the credit cycle in recent decades, are consistent with positive effects produced by the GSEs. Looking individually at the securitization and investment activities of the GSEs, the evidence suggests that the former is more important than the latter for both integration and stabilization of mortgage markets.

Quigley concludes by observing that "no one designing a housing-finance system anew would configure it much like the current system." Government intervention in mortgage markets, including the FHA, VA, Ginnie Mae, and the housing GSEs, almost certainly spurred the development of our broad and deep mortgage markets. Our robust and flexible housing-finance system, in turn, has produced large benefits for society and the economy by helping to create a "nation of homeowners." Yet, the continuing existence of these programs and institutions, along with massive tax expenditures and subsidies that favor housing, may have become perverse. The bulk of the evidence suggests that federal credit and insurance programs and institutions focused on housing today mainly affect the *amount* of housing consumed, rather than the homeownership rate. In other words, continuing large-scale government intervention in the housing and mortgage markets primarily constitutes a reallocation of economic resources toward housing and away from other, possibly more productive, investment areas. In Quigley's words, "most of the housing market effects are *inframarginal*." The obvious implication for reforming federal housing policy is to seek to target its benefits much more narrowly on first-

time homebuyers, especially those with low or moderate incomes.

Discussant John C. Weicher agrees with much of Quigley's broad characterization of U.S. federal housing policy, but suggests several important qualifications. In particular, Weicher cites data that do not show large declines in the FHA share of home-purchase activity, except very recently. He also suggests that the FHA's influence on homeownership should not be dismissed, particularly for minority groups and because FHA programs appear to accelerate homeownership for many households, perhaps by five years or so, on average. One also should not forget that the FHA pioneered the two most important innovations in the U.S. mortgage market—long-term, low-down-payment, self-amortizing mortgages and mortgage securitization (through Ginnie Mae in the early 1970s). If given the opportunity by Congress, the FHA likely would continue to innovate.

Weicher agrees with Quigley that the housing GSEs appear to exploit their federal charters to generate large profits for private shareholders, rather than passing through all of the subsidy, which was intended for homebuyers. Regarding their legal mission to "lead the industry" in serving low- and moderate-income households, Weicher believes the housing GSEs have failed; indeed, they actually have underperformed the private sector until very recently. Weicher demurs from Quigley's assertion that the FHA and housing GSEs compete directly with each other.

While Quigley and Weicher agree that federal housing policy today is the awkward legacy of many earlier policy decisions taken independently of each other, they differ in how best to reform it. Quigley stresses narrow targeting on first-time homebuyers, but Weicher focuses on institutional reform. In particular, Weicher thinks the FHA should be unshackled and strengthened, while the GSEs should face much tougher oversight, especially in moving into new activities. Both believe the investment portfolios of the housing GSEs should be restricted or eliminated and that more ambitious affordable-housing and first-time homebuyer goals should be set for them.

LESSONS FOR FEDERAL PENSION INSURANCE FROM THE SAVINGS AND LOAN CRISIS

Asset-liability mismatch was a principal cause of the Savings and Loan (S&L) Crisis of the 1970s and 1980s. Savings institutions held long-duration assets that were funded by short-duration liabilities.¹ This balance-sheet structure did not appear unacceptably risky to many observers in the early 1960s because, for decades, interest rate movements had been moderate and long-term interest rates had remained comfortably above short-term rates.

When the interest rate yield curve rose dramatically beginning in the mid-1960s and became inverted (long-term rates exceeded short-term rates) several times for significant periods of time through the early 1980s, the economic value of most S&L institutions vanished. The federal deposit-insurance fund for savings institutions was bankrupted because of the pervasive asset-liability duration mismatch that had existed among covered institutions. Subsequent attempts by the federal government to cover up or wait out the problems failed. The resulting taxpayer bailout ended up being even larger than it would have been if the initial devastating impacts of interest rate movements on the asset-liability mismatch had been recognized promptly, because moral-hazard and adverse-selection incentives compounded the system's losses.

Zvi Bodie believes a similar disaster—including both asset-liability mismatch and the compounding effects of moral hazard and adverse selection—may be unfolding in the federal government's insurance system for private DB pension plans. In fact, Bodie has been warning for 15 years that the possibility of just such a doomsday scenario for DB pension insurance exists. It was only when the federal government's PBGC plunged into deficit in 2002 that his warnings were widely recognized as plausible.

¹ Duration is a measure of the price sensitivity of a financial instrument to changes in interest rates. A long-duration instrument, such as a 30-year mortgage, is more sensitive to a given interest rate change than are short-duration instruments, such as one-year time deposits.

In the case of DB pensions, the asset-liability mismatch at issue is not short-duration liabilities funding long-duration assets. Instead, DB pension plans face long-duration liabilities (future pension obligations) that often are funded to a large extent by an asset class that might, at first glance, appear to be a good hedge—namely, corporate equity investments. After all, today's conventional wisdom is that, in the long run, stock returns essentially always exceed fixed-income returns, which pension liabilities could be expected to resemble (Siegel, 2002). According to this view, stocks actually are less risky than bonds, the longer the investment horizon. Thus, they are ideal for DB pension funding.

Bodie argues that this is a "fundamentally flawed belief about the nature of stock market risk and reward." He notes that the cost of buying protection in the options or swaps markets against a shortfall in an equity portfolio against a fixed benchmark is increasing, the longer the investment horizon. As Bodie explains, "fluctuations in stock prices do not necessarily cancel out over time, no matter how long the time period."

Conventional wisdom before the mid-1960s, of course, was that interest rates could be expected to remain low and that the yield curve would not invert, except in very rare and brief episodes. That conventional wisdom turned out to be wrong, resulting in a taxpayer bailout of several-hundred-billion dollars. Bodie suggests that today's conventional wisdom about stock market returns and pension liabilities could be obscuring a similarly expensive future taxpayer bailout of the PBGC. He believes that pension-accounting and -funding rules, together with PBGC insurance premiums, all should be reformed to recognize the risks inherent in DB pensions' mismatching of their assets and liabilities.

Discussant Deborah J. Lucas largely accepts Bodie's framing of the problems surrounding DB pensions and provides analysis of two specific questions. First, what is the PBGC's current risk exposure? Second, what motivates corporate pension managers to invest in stocks?

To quantify the PBGC's risk exposure, note that two things must happen simultaneously before the PBGC is exposed to loss: A sponsoring

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company must encounter financial distress, and the company's DB plan must be underfunded. To quantify the PBGC's risk exposures, therefore, one must model a compound option.

Even though total underfunding of DB plans was about \$450 billion in 2004, Lucas estimates (using historical data through 2004 and a Monte Carlo simulation model) that the PBGC's expected net cost over a 20-year horizon is "only" about \$119 billion (\$63 billion over a 10-year horizon). This is because not all underfunded plans' sponsors will default on their pension obligations, nor do all defaulting DB plan sponsors have underfunded plans.

Lucas estimates that reducing the share of DB pension plans' assets held in equity from the current 70 percent level to only 30 percent would reduce the PBGC's 10-year expected net cost from \$63 billion to about \$53 billion—still a significant risk exposure. One reason that asset allocation apparently does not play a more significant role in the PBGC's risk exposure is that the extent of underfunding of a defaulting plan matters even more. Typically, a sponsoring firm approaching default stops making pension contributions; moreover, there often is a surge in pension liabilities at plan termination due to vesting and early-retirement rules. Lucas also concludes on the basis of her model that controlling the risk exposure of the PBGC by varying insurance premiums to sponsoring firms is almost certainly infeasible, because the level of premiums and their necessary variation across firms would be politically untenable.

The second important question Lucas addresses is why pension managers invest such a large fraction of plan assets in stocks. While she cannot rule out Bodie's claim that pension managers misunderstand the true risk-and-return characteristics of stocks, Lucas suggests a rational alternative.

Viewed realistically from a point long before a worker's retirement, pension liabilities are not fixed obligations, like nominal bonds. Instead, they are uncertain and share some characteristics of stocks—namely, a positive correlation with returns on human capital. In other words, benefit formulas that base the level of benefits on years

of service and/or the final average wage or salary depend on the worker's earnings profile, which, in turn, depends (in part) on the performance of the economy. Thus, pension managers may rationally invest a large fraction of plan assets in stocks because they constitute efficient hedging assets for the types of liabilities pension plans actually owe.

Lucas concludes that an outright ban on DB investments in stocks would be inappropriate. However, her results are consistent with Bodie's basic argument that U.S. pension managers tend to hold too much of their investment assets in stocks. Bodie and Lucas agree that a likely cause of DB overinvestment in equities is the current pension-accounting framework, which allows sponsoring companies to book current income on the basis of expected asset returns without regard to risk. In addition, the largely risk-insensitive PBGC insurance-premium schedule allows plan sponsors to share some of the downside risk of equity investments with taxpayers while keeping most of the upside risk.

PRIVATE AND PUBLIC RISK-SHARING FOR CATASTROPHES

J. David Cummins analyzes the frequency and severity of natural and man-made catastrophes in recent years, together with various private and public risk-sharing mechanisms. Natural catastrophes include hurricanes, earthquakes, floods, and tsunamis; while man-made catastrophes include oil-platform explosions, aviation disasters, and terrorism.

One conclusion of Cummins's analysis is that the frequency and severity of many types of catastrophes have increased in recent years. He suggests that long-term movements in nature's cycles, such as meteorological trends, or political developments could be at work.² One theme that Cummins uses to tie together trends in natural and man-made catastrophes is the idea that the scale of a catastrophe depends on both the nature of the shock event and our vulnerability to it. For

² Cummins is agnostic on the effect of possible global warming on the frequency and severity of hurricanes.

example, hurricanes Katrina, Rita, and Wilma in 2005 were unusually ferocious storms, but they also struck coastal areas that had been extensively developed and poorly protected. In one sense, therefore, the Gulf Coast hurricanes were both natural and man-made catastrophes. Rapid and continuing development of disaster-prone areas, such as California, Florida, the U.S. Gulf Coast, and Asia, make large future catastrophes more likely.

The escalating costs of catastrophes in recent years have stressed private insurance markets and exposed gaps and flaws in government insurance programs. The sheer scale of catastrophe losses also has forced a reconsideration of whether catastrophes are, in fact, "insurable," in the sense that private buyers and sellers of catastrophe protection can agree to terms of coverage. Private insurance for terrorism risk was withdrawn by some underwriters immediately after the September 11 attacks, for example, while those policies that remained on the market were unattractively priced in the view of many potential buyers.

Breakdown in the terrorism insurance market led to government intervention in the form of a temporary federal terrorism risk reinsurance system (*Terrorism Risk Insurance Act of 2002*; renewed in 2005). Similarly, perceived insurance-market failures after Hurricane Andrew in Florida in 1992 and the Northridge earthquake in California in 1994 led to government interventions—in both cases, by the respective state governments. The National Flood Insurance Program was created in 1968 in response to perceived inadequacies in the private market. Governments in many other countries also are active in providing insurance coverage for catastrophes.

Cummins is optimistic with regard to the global insurability of many catastrophic events, suggesting that the vast financial capacity of financial markets can and should supplement the risk-underwriting capacity of private insurance and reinsurance companies. Catastrophe futures contracts were launched in 1992, and catastrophe bonds followed in 1994. Although the catastrophe futures contracts later were withdrawn because too little trading occurred, catastrophe bonds appear to have established themselves. They effectively expand the pool of capital resources

available to insure catastrophes, and they provide diversification opportunities for investors of all types.

As for the role of government insurance for catastrophe risk, Cummins believes there may be an appropriate risk-sharing role for certain narrow classes of risk, such as terrorism. The risk of terrorism depends, to some extent, on government foreign policy, and much of the information that would be needed for a private insurer to underwrite the risk is classified and, hence, unavailable. Efforts to mitigate terrorism risk depend crucially on the Department of Homeland Security, over which private insurers have no authority. Thus, one could argue that terrorism risk should be borne, at least in part, by the federal government.

Clearly, some existing government insurance programs are poorly designed. For example, the National Flood Insurance Program (NFIP) is not actuarially sound (individual households do not pay premiums that reflect their risks to the program); it does not collect aggregate premiums high enough to cover both losses and operating expenses, so it was insolvent even before the 2005 hurricane season; and there is no control over "repetitive-loss policies," which are properties that flood repeatedly. Moreover, insurance-penetration rates are low even in areas that are designated as flood prone. In sum, the NFIP is a case study in moral hazard, adverse selection, and non-economic management of an insurance program. Cummins believes a private sector solution to the problem of flood insurance is feasible, especially if catastrophe bonds were created to diversify local risks. The appropriate role of the federal government in flood insurance is to reinsure private insurers at prices that would allow the government to break even.

More generally, Cummins believes governments should remove obstacles to private sector solutions to catastrophe insurance. Prime examples of obstacles that could be removed are disadvantageous accounting and tax rules and prudential regulations that affect banks, insurance companies, and other financial institutions. In some instances, governments should mandate universal insurance coverage, such as in earthquake zones and hurricane-prone areas.

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Discussant Dwight M. Jaffee is more skeptical than Cummins that private markets can insure all, or virtually all, catastrophe risks. If these risks are drawn from probability distributions with "fat tails," then standard statistical diversification techniques may fail to provide a sound basis for private sector insurance provision.³

Yet, private insurance for catastrophes has been provided in the past in the United States and in other countries (for example, flood insurance in London). Thus, there must be other impediments that interfere with market solutions to the problem of catastrophe risk. Jaffee suggests that these impediments include excessively risk-averse insurance-company managers; over-zealous insurance regulators; disagreements between insurers and customers about a fair price for coverage⁴; genuine uncertainty surrounding the key risk parameters (the probability of an event and the loss given an event); and the need to share catastrophic losses intertemporally (i.e., pay off losses over time), in addition to across insured parties.

Given that private markets for catastrophe insurance can fail for a number of reasons, Jaffee does not find it surprising that "citizens dependably call on their government to fix the failure." The question of government involvement in catastrophe insurance, therefore, is "not so much 'if' as it is 'how' and 'how long'."

After reviewing federal flood and terrorism-risk insurance, as well as state-backed earthquake and hurricane insurance programs in California and Florida, respectively, Jaffee concludes that government intervention, when necessary, should mimic private sector insurance coverage to the greatest extent possible. In particular, Jaffee would not make catastrophe insurance coverage mandatory for all households or businesses, except where required by mortgage lenders, for example. Government intervention should be temporary, when feasible; governments should use risk-based

³ A fat-tailed probability distribution is one in which extreme events occur more frequently than would be the case if the risk were drawn from a normal distribution.

⁴ For example, fewer than 14 percent of affected homeowners purchase earthquake insurance from the California Earthquake Authority, which is compelled by state law to offer coverage at "actuarially based" rates.

pricing, to the extent possible; and they should avoid using subsidies, to minimize budgetary cost and to prevent risk-increasing behavior on the part of the insured.

PANEL DISCUSSION

Three eminent panelists discussed the following questions during the last session of the conference:

- What is the appropriate role of the federal government in the private markets for credit and insurance?
- What is the outlook for government involvement in these markets?

Panelist Kenneth J. Arrow reflected on the imperfect role of government regulatory mechanisms in recreating the effects of competitive markets for risk-sharing.⁵ One reason competitive markets are missing in the first place is that households are not fully rational. Nor do we understand why risk-averse households do not fully use the risk-sharing opportunities that are available. Even a catastrophe such as a hurricane is a small event on a global scale, so financial markets and institutions surely could disperse the risks that households and businesses face.

Another example of a risk-sharing market that is poorly developed is health insurance. Because of information asymmetries between individuals and health insurers, too little health insurance is traded in the private market. Without government intervention, Arrow asserted, there would be little in the way of a health insurance market.

Some catastrophes, such as war, are too large for markets to be expected to provide full insurance. Other limits to insurability include desirable contracts that are not legally enforceable, or cases where the insurance company has more information than the insurance buyer. On the other hand, the insurance buyer may have more information than the insurance company, opening up the possibility of the well-known problems of adverse

⁵ Professor Arrow did not provide written comments for this volume. This introduction includes a comprehensive summary of his comments at the conference.

selection and moral hazard. In some situations, the quality or quantity of information or service is difficult to monitor, as in medical care. In each case, the result is too little risk-sharing from the perspective of social welfare.

Arrow argued that deposit insurance is an example of a reasonable government response to information-based market failure that some policy-makers do not understand. For example, some government advisors recommended abolishing deposit insurance in the aftermath of the S&L deposit insurance debacle in the early 1990s. Their argument was that, without deposit insurance, depositors would monitor their banks and impose discipline better than government regulators could. Arrow viewed this as a bad idea; how would depositors have enough information to monitor their bank's financial condition?

Another important role for government is ensuring the solvency of private insurance providers. As in the case of banks covered by deposit insurance, it didn't seem reasonable to Arrow to expect individuals to be able to monitor the financial health of their insurance companies. A similar information-gathering role could be played by government in assembling data about hospitals and physicians.

The crucial role of information explains why regulation is important. One form of regulation is required disclosure, as in securities markets. Another is to maintain the quality of buildings through building codes or other goods and services through technical standards. Of course, private bodies, such as rating agencies, sometimes provide adequate information. There is no clear-cut explanation of when private markets gather and disseminate information efficiently and when they do not. We must look at each case individually.

Arrow commended the new field of behavioral economics for questioning the tenets of classical economics. Do consumers choose rationally? Clearly, they do not always do so. It has taken a long time, but economists finally are facing up to the limitations of our assumptions about rational choice.

For example, economists and finance professors themselves may appear irrational by living in an earthquake-prone zone, such as the San

Francisco Bay area, but declining to buy earthquake insurance. Indeed, only 14 percent of Californians own such insurance. It appears to be the case that most people underestimate the probability of an earthquake but overestimate its severity. How does this affect their decisions about whether to buy earthquake insurance or not? The same set of complicated issues exists in the case of flood insurance, with the majority of flooded residents in New Orleans remaining uninsured when Hurricane Katrina hit. Our theories, even the celebrated loss-aversion theory of Kahneman and Tversky (1991), do not explain this behavior.

Another impediment to full risk-sharing is high transaction costs. For example, it is costly to avoid fraud, verify losses, and administer the entire premium-collection and claims-payment process.

Arrow also pointed out the difficulty we face in making rules and laws designed to create incentives to lower risk. For example, suppose we decide that motorcycle riders must wear helmets when they ride. This law will be accompanied by a rule that says no motorcycle rider who is injured while not wearing a helmet will be treated for his or her head injuries. Clearly, a tough set of helmet laws like this should increase the rate at which motorcycle riders wear helmets. It also should reduce the costs to society of treating head injuries. But, Arrow wondered, would we really deny medical treatment to an injured rider who had failed to wear a helmet? Given that everyone will anticipate this response, will the helmet law be credible?

Panelist Robert E. Litan focused his remarks on the unrecognized liabilities of the federal government, particularly with regard to natural disasters. Following the theme suggested by Arrow, Litan stressed the importance of two distinct objectives when governments intervene in the markets for catastrophe risk. First, the government should encourage individuals, businesses, and government at all levels to minimize the cost of disasters that occur. Second, losses should be compensated in a way that interferes least with loss-mitigation efforts.

A key point to remember is that government policies can affect the probability or severity of

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disasters. For example, government policies on automobile emissions may affect the environment, which, in turn, may affect the frequency and severity of hurricanes and droughts.

A long-term view also is necessary when deciding whom to compensate and by how much after a natural disaster. The problem of moral hazard is of great importance because people learn quickly that government compensation observed in the past is likely to be repeated. For example, many houses were rebuilt in Florida after recent hurricanes because, one must presume, people saw how quickly homeowners' losses were compensated in the previous hurricanes.

Private insurance can and does play an important role in assisting government mitigation and compensation objectives. However, Litan believes the private sector cannot replace government involvement altogether for catastrophe risks. Nor is he optimistic about the capacity of catastrophe bonds to supplement insurance markets in a meaningful way.

Litan believes the government should establish a formal reinsurance system for mega-catastrophes, in order to build an insurance surplus and provide incentives for loss prevention and mitigation. Actuarially based pricing would encourage people to choose the risks they undertake on a more rational basis. The unique ability of the federal government to share risks across generations through borrowing and taxation make it the appropriate insurer of last resort.

Panelist Joseph E. Stiglitz focused his remarks on the role of government in risk-bearing. He pointed to the many reasons why private insurance markets might fail, including risks too large for private insurers to bear; moral hazard on the part of individuals who anticipate a government bailout, leading to too little insurance and, perversely, the very bailout they anticipated; intergenerational risks, such as economic depressions; and a variety of contracting problems broadly described by the notion of asymmetries of information between buyers and sellers of insurance. To this list could be added the difficult problems of accounting for insurance liabilities, leading to some uncertainty about the solvency of individual insurance firms.

Stiglitz suggested that recent natural disasters have established two certainties—large numbers of people and businesses who face significant risks from natural disasters have no or inadequate insurance coverage; and, partly as a consequence, it is rational to expect government bailouts when disasters occur. It is not clear whether private or public approaches to these interrelated problems are better.

Stiglitz drew on his experience of the East Asian financial crises of the late 1990s to suggest that the failure of large numbers of individuals to purchase insurance can produce macroeconomic externalities. This consideration alone may constitute a justification for government intervention. On a related note, he argued that Social Security reforms could, under some circumstances, eventually lead to a large number of elderly people living in poverty. In effect, the reduction in risk-sharing implicit in the proposed reforms would leave many people underinsured against old-age poverty. Collectively, this underinsurance would create externalities for society. A government bailout of some sort then would become likely. Likewise, the health insurance system in the U.S. leaves large numbers of people chronically underinsured. The result is a variety of externalities that are borne in varying degrees by everyone else.

In sum, Stiglitz concluded that government bailouts are inefficient and inequitable. It would be preferable to establish more formal risk-sharing mechanisms in advance, both to provide incentives for reallocating risks efficiently and to avoid arbitrary and highly politicized redistributions of wealth in the wake of a catastrophe. To establish such a formal risk-sharing framework, government interventions of one sort or another are inevitable and desirable.

AN UNFINISHED AGENDA

Despite optimism among many participants at the conference that federal legislation would be forthcoming to improve the functioning of many federal credit and insurance programs, very little had occurred by mid-2006. Social Security, Medicare, and Medicaid remain on unsustainable

fiscal paths, with no reform legislation on the horizon. Legislation to reform GSEs remains stalled, as does legislation to reform defined-benefit pension plans. Federal flood insurance reforms await action, even as another hurricane season begins. The Terrorism Risk Insurance Act of 2002 was extended at the end of 2005, but the final form of federal reinsurance for terrorism risk remains uncertain.

The necessary first step in reforming federal credit and insurance programs is debate and discussion. The proceedings of this 2005 Economic Policy Conference of the Federal Reserve Bank of St. Louis provide a foundation of debate and discussion on which future reforms can be based.

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