

## 6. Economics of Deposit Insurance

*Entries in this section are more academic and focus on the following: bank risk-taking, managerial incentives, bank stability, portfolio choice, charter values and shareholder return, and bank capital regulation. Also discussed are the costs and benefits of deposit insurance.*

Allen, Linda, and Anoop Rai. 1996. Bank Charter Values and Capital Levels: An International Comparison. *Journal of Economics and Business* 48, no. 3:269–84.

Although recent regulatory policies, such as the Basle capital requirements, purport to level the international financial playing field, country-specific effects may still endure. These country-specific factors may stem from regulatory policies (such as deposit insurance, access to discount window borrowings, too big to fail and forbearance policies, lender of last resort privileges), or may be the result of market forces (such as monopoly power, cost synergies, information impediments to development of domestic financial markets). In this paper, the authors utilized a market-based valuation measure, Tobin's Q, to determine whether bank charter values include a country-specific component. Although they found the existence of country-specific components in Spain, Japan, and the United States, their significance declined over the period 1991–1993. (©1999 EconLit)

Armaos, John. 1992. Bank Runs and Partial Suspension of Convertibility. Series in Money, Economics, and Finance, Working Paper FB-92-34. Columbia First Boston.

This paper attempts to justify theoretically the use of partial suspension of convertibility as an effective measure—under certain circumstances—against bank runs. Its use was frequent in the days of the National Banking System in the U.S. and before the advent of deposit insurance. The paper shows that partial suspensions can eliminate panics and be optimal (efficient) at the same time and then proceeds to show that their characteristics generally agree with those actually observed in the marketplace. (©1999 EconLit)

Arshadi, Nasser. 1989. Capital Structure, Agency Problems, and Deposit Insurance in Banking Firms. *Financial Review* 24, no. 1:31–52.

This paper applies and synthesizes various theories of corporate finance, including capital structure, agency insurance, and regulation, to the case of banking firms and the deposit insurance system. It is argued that a value-maximizing bank would reach its optimal capital structure by minimizing the agency costs of incentive conflicts among stockholders, managers, uninsured depositors, and the deposit insurance agency. Although a regulatory imposed capital requirement may reduce the agency costs inherent in the insurance contract, it cannot produce a universal capital structure that is optimal for all insured banks. The observed capital structure patterns also suggest that banks actively seek an optimal capital structure. (©1999 EconLit)

Benston, George J., William C. Hunter, and Larry D. Wall. 1995. Motivations for Bank Mergers and Acquisitions: Enhancing the Deposit Insurance Put Option versus Earnings Diversification. *Journal of Money, Credit, and Banking* 27, no. 3:777-88.

This article examines the prices bid for target banks in the early to middle 1980s. The authors study two hypotheses: (1) the earnings diversification hypothesis, which holds that acquirers would bid more for merger partners that offered risk-reduction opportunities, and (2) the deposit insurance put-option hypothesis, which holds that acquirers would bid more for targets that offered opportunities to increase risk and/or become “too big to fail.” The results produced by an empirical analysis of a sample of 302 mergers are consistent with the earnings diversification hypothesis and inconsistent with the deposit insurance put-option hypothesis.

Berkovec, James A., and J. Nellie Liang. 1993. Selection in Failed Bank Auction Prices: An Econometric Model of FDIC Resolutions. Finance and Economics Discussion Series, no. 93-40. Board of Governors of the Federal Reserve System.

The FDIC uses a sequential auction procedure to sell failed banks, a procedure that results in the use of one of four alternative transaction methods. The methods vary by the amount and quality of the assets and deposits sold. The authors contend that the sequential auctions cause selection bias to be introduced into prices paid for failed banks. This article estimates an econometric model of the FDIC auction process and failed-bank prices that corrects for selection bias and yields estimated values for the different types of assets and deposits of failed banks. Estimates of the selection effect indicate that the majority of the FDIC’s cost differences across transaction types can be attributed to the selection process in which banks are assigned a resolution method on the basis of observed and unobserved differences in quality, leaving little to be explained by relative efficiency.

Besanko, David, and Anjan V. Thakor. 1993. Relationship Banking, Deposit Insurance, and Bank Portfolio Choice. In *Capital Markets and Financial Intermediation*, edited by Colin Mayer and Xavier Vives, 292-327. Cambridge University Press. [Followed by comments by Richard J. Gilbert and Carmen Matutes.]

This article examines the consequences of interbank competition and bank-capital market competition on the portfolio choices of banks and on the welfare of borrowers in a regulatory environment of (de facto) complete deposit insurance. They focus on an industry characterized by “relationship banking,” that is, by repeated, bilateral credit transactions between banks and borrowers. The article develops a model of dynamic asset-portfolio choice for a bank operating over two time periods. It examines the dependence of the bank’s portfolio choice on its anticipated future information advantage as well as on credit market structure. The authors analyze the results and discuss the policy implications of the analysis.

Bhattacharya, Sudipto, Arnoud W. A. Boot, and Anjan V. Thakor. 1998. The Economics of Bank Regulation. *Journal of Money, Credit, and Banking* 30, no. 4:745–70.

The authors review the economics of bank regulation as developed in the contemporary literature. They begin with an examination of the central aspects of modern banking theories in explaining the asset transformation function of intermediaries, optimal bank liability contracts, coordination problems leading to bank failures and their empirical significance, and the regulatory interventions suggested by these considerations. In particular, the authors focus on regulations aimed primarily at ameliorating deposit-insurance-related moral hazards, such as: cash-asset reserve requirements, risk-sensitive capital requirements and deposit insurance premia, and bank closure policy. Moreover, they examine the impact of the competitive environment (bank charter value) and industry structure (scope of banks) on these moral hazards. They also examine the implications of banking theory for alternatives to deposit insurance. (©1999 EconLit)

Bond, Eric W., and Keith J. Crocker. 1993. Bank Capitalization, Deposit Insurance, and Risk Categorization. *Journal of Risk and Insurance* 60, no. 4:547–69.

This article examines the complementary relationship between bank capitalization and deposit insurance as tools that reduce the exposure of risk-averse depositors to a bank's random portfolio returns. In a costly state verification framework where banks possess private information about solvency, the authors establish that debt contracts are optimal and that banks both capitalize and purchase insurance. Moreover, optimal insurance contracts charge premiums which are conditioned on bank risk as indicated by the level of capitalization. A full-insurance scheme without risk categorization results in an equilibrium where banks totally decapitalize. (©1999 EconLit)

Boot, Arnoud W. A., and Anjan V. Thakor. 1991. Off-Balance-Sheet Liabilities, Deposit Insurance, and Capital Regulation. *Journal of Banking and Finance* 15, no. 4–5:825–46.

The authors examine the effect of banks' off-balance-sheet activities (particularly loan commitments) on their asset portfolio risk when banks, as well as borrowers, are free to choose asset risk. They formally establish that banks that have loan commitments have lower asset risk than banks that do not. Loan commitments may, thus, reduce the bank's portfolio risk and lower the exposure of the federal deposit insurer. The authors then analyze the implications of the interaction between banks' on- and off-balance-sheet activities for the recently adopted Bank for International Settlements capital guidelines, maintaining a clear distinction between loan commitments and other off-balance-sheet activities. (©1999 EconLit)

Boyd, John H., and David E. Runkle. 1993. Size and Performance of Banking Firms: Testing the Predictions of Theory. *Journal of Monetary Economics* 31, no. 1:47-67.

In recent years, two important literatures on the theory of banking firms have developed. One examines the economic functions of banks in environments in which agents are asymmetrically informed. Another considers the incentive effects (moral hazard) resulting from deposit insurance. Both theories make predictions about the relation between banking firm size and performance. An empirical analysis of large bank holding companies investigates measures of market valuation and risk of failure. Limited support is provided for either set of theoretical predictions. (©1999 EconLit)

Boyd, John H., Bruce D. Smith, and Chun Chang. 1998. Deposit Insurance: A Reconsideration. Working Paper 593. Federal Reserve Bank of Minneapolis.

This paper offers a general equilibrium analysis of the consequences of deposit insurance programs, the way in which they are priced, and the way in which they fund revenue shortfalls. The central issue of any insurance program is how the government makes up the program's losses.

Brewer, Elijah III. 1995. The Impact of Deposit Insurance on S&L Shareholders' Risk/Return Trade-Offs. *Journal of Financial Services Research* 9, no 1:65-89. Also 1989. The Impact of Deposit Insurance on S&L Shareholders' Risk/Return Trade-Offs. Issues in Financial Regulation Working Papers Series, no. 1989-24. Federal Reserve Bank of Chicago.

This article empirically examines how savings and loan associations' (S&Ls') stock returns respond to asset mix changes. When deposit insurance is underpriced, increases in financial leverage and the riskiness of the asset portfolio should lead to increases in expected return on common stock. In particular, changes in asset components which increase the volatility of an institution's portfolio should lead the stock market to upwardly revalue S&L equity. This hypothesis is examined using data for the July 1984-December 1989 period. Increases in commercial mortgage loans, acquisition and development loans, and investments in service corporations appear to cause higher return for shareholders of poorly capitalized, failing S&Ls. Similar increases appear to have little impact on the common stock returns of well-capitalized S&Ls. (©1999 EconLit)

Calomiris, Charles W. 1989. Do "Vulnerable" Economies Need Deposit Insurance? Lessons from the U.S. Agricultural Boom and Bust of the 1920s. Issues in Financial Regulation Working Paper Series, no. 1989-18. Federal Reserve Bank of Chicago.

This paper examines whether deposit insurance is desirable for economies that are intrinsically vulnerable to large income disturbances. The paper provides cross-sectional evidence on movements of price, income, and wealth, and on indicators of financial distress as experienced by various states in the 1920s. The author measures changes in the size, number, and portfolio structure of national and state-chartered banks before and during the crisis. He evaluates differences in the performance of the state-chartered banking systems in response to the crisis.

Specifically, he compares the rate of bank suspension and bank failure, the cost to depositors of failures, and the ability of the banking systems to recover from the crisis.

Carr, Jack L. 1993. Deposit Insurance, Savings, and Economic Growth. In *Economic Policy, Financial Markets, and Economic Growth*, edited by Benjamin Zycher and Lewis C. Solmon, 29–52. Westview.

This chapter briefly reviews developments in the literature on economic growth and examines some of the policy implications of the new economic models. The author maintains that in policy discussions it becomes crucial to distinguish between a private-interest theory of policy and a public-interest theory. The chapter then examines one particular policy and its effect on economic growth: the enactment of compulsory deposit insurance in both Canada and the United States. The data presented support a private-interest theory of deposit insurance. Because deposit insurance has a major effect on the operation of the banking sector, the author argues that deposit insurance has affected the efficient allocation of savings and the growth rate.

Carr, Jack, and Franklin G. Mathewson. 1989. The Effects of Deposit Insurance on Financial Institutions. Working Paper 8903. Institute for Policy Analysis, University of Toronto.

In this paper, the authors examine the impact of non-risk rated deposit insurance upon the behavior of financial institutions. In particular, they focus on the impact of deposit insurance on the financial structure of deposit-taking firms. Finally, the paper offers a political economy interpretation of the jurisdictional competition between governments that precipitated the introduction of the deposit insurance in Canada at a time of financial stability. Contrary to general belief, the authors believe that deposit insurance serves private and not public interests. (©1999 EconLit)

Chen, Andrew H., and Jacky C. So. 1996. Insolvency, Foreign-Branch Deposits, and Option-Based Risk-Adjusted Deposit Insurance in the 1980s. In *Research in Finance*, vol. 14, edited by Andrew H. Chen, 175–95. JAI Press.

This study argues that asset returns of commercial banks are sub-Gaussian and that it is, therefore, inappropriate to use a traditional risk measure, such as the standard deviation of return, to estimate insolvency risk into the Black-Scholes option pricing model to determine deposit insurance premiums. New estimates obtained from a log-stable option pricing model indicate that Black-Scholes models underestimate insolvency risk and fair insurance premiums. The common belief that regional banks are less risky, and thus subsidize money-center banks within a flat-rate deposit insurance system, is not supported if it is restricted to explicit coverages. However, because most money-center banks have more foreign deposits than non-money-center banks, they benefit at the expense of non-money-center banks to the extent that foreign deposits are perceived to be implicitly insured by the FDIC.

Chen, Cheng-Yuaun. 1994. *Optimal Capital Requirements for Insured Banks*. Ph.D. diss., University of Texas at Dallas.

This dissertation examines the problem of defining and computing optimal capital requirements for insured banks. Capital requirements are optimal when they make an arbitrarily fixed deposit-insurance premium actuarially fair for each bank. They can be determined if an appropriate deposit insurance contract can be designated for a plausibly conceivable world. This contract must deal with the liquidity problems inherent in the current flat premium system, and it must permit the calculation of several unobservable variables from market data, given widely accepted valuation techniques for financial contracts.

Cook, Douglas O., and Lewis J. Spellman. 1991. Federal Financial Guarantees and the Occasional Market Pricing of Default Risk: Evidence from Insured Deposits. *Journal of Banking and Finance* 15, no. 6:1113–30.

The authors develop a two-date state preference model that demonstrates that investors' valuation of third-party guaranteed debt depends on the financial condition of the guarantor. As the solvency ratio of the guarantor declines, investors demand higher promised rates on the firm's debt securities, and price the firm's risk variables more sensitively. The empirical results are derived from sample data of Federal Savings and Loan Insurance Corporation (FSLIC) guaranteed obligations from the late 1980s. The evidence shows differences in the market's perception of the FSLIC's insolvency between 1987 and 1988. The market response to a decline in the financial condition of the guarantor affected the value of insured certificates of deposit (CDs). This resulted in higher CD rates in relation to the U.S. Treasury curve. In other words, it caused the pricing of insured deposits to become more risk-sensitive.

Cook, Douglas O., and Lewis J. Spellman. 1996. Firm and Guarantor Risk, Risk Contagion, and the Interfirm Spread among Insured Deposits. *Journal of Financial and Quantitative Analysis* 31, no. 2:265–81.

The authors develop a model of third-party guaranteed debt and show that interest-rate premiums are related to firm guarantor risk and not to firm-specific risk. The study applies the model to thrifts issuing certificates of deposit (CDs) guaranteed by the Federal Savings and Loan Insurance Corporation (FSLIC), and then estimates the firms' probabilities of insolvency and guarantor risk across 20 months, beginning in January 1987. This period spans the insolvency of the guarantor followed by two recapitalizations. The relative stability found in firm risk across time offers no evidence of generalized risk contagion among firms. The elevated CD premiums and rate spreads are, therefore, attributed to increases in guarantor risk rather than changes in firm risk.

Cooper, Russell, and Thomas W. Ross. 1991. *Bank Runs: Liquidity and Incentives*. Working Paper 3921. National Bureau of Economic Research.

Diamond–Dybvig (1983) provides a model of intermediation in which bank runs are driven by pessimistic depositor expectations. Models which address these

issues are important in the ongoing discussion which weighs the costs (incentive problems) and the benefits (preventing runs) of deposit insurance. This paper extends the Diamond–Dybvig analysis to consider several important questions for evaluating deposit insurance that could not be addressed within their framework. First, it provides conditions for runs when banks can invest in both illiquid and liquid projects. This results in a weakening of the conditions necessary for bank runs relative to the Diamond–Dybvig model in which no liquid investments occur in equilibrium. Second, it characterizes how banks respond to the possibility of runs in their design of deposit contracts and investment decisions, particularly through the holding of excess reserves. Finally, the authors use this framework to evaluate the costs and benefits of deposit insurance and other forms of intervention. To do so, they introduce moral hazard and monitoring into the model to explore the incentive effects of deposit insurance. The implementation of a capital requirement can, along with deposit insurance, support the optimal allocation. (©1999 EconLit)

Cooperman, Elizabeth S., Winson B. Lee, and Glenn A. Wolfe. 1992. The 1985 Ohio Thrift Crisis, the FSLIC’s Solvency, and Rate Contagion for Retail CDs. *Journal of Finance* 47, no. 3:919–41.

This paper uses both an ARIMA transfer-function intervention model and a panel data analysis to examine the effect of the Ohio deposit insurance crisis in 1985 on the pricing of six-month retail certificates of deposit (CDs) for federally-insured Ohio banks and savings and loans. Adjusting for pricing reactions due to changes in market rates, the authors find a significant, unanticipated rise in CD-rate premiums on the initial event week of the crisis that continued for approximately seven weeks. Consistent with a contingent insurance guarantee hypothesis, rate premiums are found to be risk based. (©1999 EconLit)

Cooperstein, Richard L., George G. Pennacchi, and F. Stevens Redburn. 1995. The Aggregate Cost of Deposit Insurance: A Multiperiod Analysis. *Journal of Financial Intermediation* 4, no. 3:242–71.

This paper extends the standard single-period model of deposit insurance to a multiperiod setting. It incorporates a variety of features describing bank and regulator behavior, such as endogenous capital adjustments and regulatory forbearance. Budgetary costs of deposit insurance are found using contingent claims techniques. The results show how the market value of a bank’s net worth, a critical input of the model, can be estimated using accounting cash flow data and information from aggregate bank stock prices. Using Call Report data on U.S. commercial banks, the authors provide empirical estimates of the aggregate cost of deposit insurance under alternative regulatory policies. (©1995 Academic Press)

Cordella, Tito, and Eduardo Levy Yeyati. 1998. Financial Opening, Deposit Insurance, and Risk in Model of Banking Competition. Working Paper 98/87. International Monetary Fund.

Using a model of banking competition for deposits, this paper studies the effect of increased competition, arising from the relaxation of entry barriers, on the determination of interest rates and on banks' risk-taking behavior. The paper finds that lower entry costs foster competition in deposit rates and reduce banks' incentives to limit risk exposure. Although higher insurance coverage amplifies this effect, two alternative arrangements help to reduce it.

Crabbe, Leland, and Mitchell A. Post. 1994. The Effect of a Rating Downgrade on Outstanding Commercial Paper. *Journal of Finance* 49, no. 1:39-56.

Douglas W. Diamond (1991) argues that a firm's reputation determines whether it borrows directly or through an intermediary. The authors test the Diamond model by examining the quantity response of commercial paper issued by bank holding companies to a rating downgrade. From 1986 to 1991, cumulative abnormal declines averaged 6.69 percent in the first two weeks after the downgrade and 11.05 percent in the subsequent twelve weeks. In contrast to commercial paper issued by bank holding companies, large CDs issued by affiliated banks did not change significantly in the period around a downgrade, suggesting that deposit insurance may have removed market discipline from the CD market. (©1999 EconLit)

Crouhy, Michel, and Dan Galai. 1991. A Contingent Claim Analysis of a Regulated Depository Institution. *Journal of Banking and Finance* 15, no. 1:73-90.

A model of financial intermediation to determine the market value of bank equity, deposits, and deposit insurance is developed. The implicit equilibrium interest rate on deposits is derived and analyzed. Three types of risk are considered in the model: interest-rate risk, financial risk, and default risk. The effect of different regulatory measures, such as capital adequacy, reserve and liquidity requirements, deposit insurance, and interest-rate ceilings, is analyzed and their impact on the bank behavior is also assessed. Moreover, the authors investigate the interactions among these measures to determine which are dominant under alternative circumstances and which are redundant. (©1999 EconLit)

DeGennaro, Ramon P., and James B. Thomson. 1994. Anticipating Bailouts: The Incentive-Conflict Model and the Collapse of the Ohio Deposit Guarantee Fund. Working Paper no. 9407. Federal Reserve Bank of Cleveland.

The collapse of the Ohio Deposit Guarantee Fund (ODGF) in March 1985 provides a laboratory for examining the financial market's belief in the incentive-conflict model proposed by Kane (1989). Research in this area has yet to examine the stock returns of federally insured institutions in the context of this model. Thus, research has not addressed the question of whether financial market participants recognize the implications of the model; that is, whether they anticipate the bailouts it implies. This paper finds that the stock of firms insured



by the poorly capitalized Federal Savings and Loan Insurance Corporation (FSLIC) does reasonably well during the 41-day event window centered on the ODGF's Bank Holiday, whereas the stock of firms insured by the relatively well-capitalized FDIC does not. More important, observed differences in the abnormal returns of FDIC-insured and FSLIC-insured firms are consistent with the incentive-conflict model.

Demirgüç-Kunt, Asli, and Enrica Detragiache. 1998. The Determinants of Banking Crises: Evidence from Developing and Developed Countries. *International Monetary Fund Staff Papers* 45, no. 1:81–109.

This paper studies the factors associated with the emergence of systemic banking crises, using a large sample of developed and developing countries in 1980–94 and using a multivariate logit econometric model. The results suggest that crises tend to erupt when the macroeconomic environment is weak, particularly when growth is low and inflation is high. In addition, high real interest rates are clearly associated with systemic banking-sector problems, and there is some evidence that vulnerability to balance-of-payments crises has played a role. Countries with an explicit deposit insurance scheme were particularly at risk, as were countries with weak law enforcement.

De Nicolo, Gianni. 1992. Optimal Banking Arrangements in Some Diamond and Dybvig Models with Sequential Service. Ph.D. diss., University of Minnesota.

This dissertation examines the aggregate-risk version of the Diamond and Dybvig (1983) model of banking with sequential service, a model that introduces a restriction limiting the ability of the banking system to implement timely suspensions. Under this restriction, the first-best allocation is either unattainable (as a unique equilibrium) or is attainable (as a unique equilibrium) by arrangements more complex than Diamond and Dybvig's threat of suspension. In these models a planner can choose to relinquish control of part of his or her resources to agents, who individually invest in the technology and make a privately observed liquidation decision of their autarkic investment. The models differ according to the observability of this decision in the final period and according to agents' preferences.

De Nicolo, Gianni. 1996. Run-Proof Banking without Suspension or Deposit Insurance. *Journal of Monetary Economics* 38, no. 2:377–90.

In a model of banking with asymmetric information among depositors and multiple sources of aggregate risk, the author shows that a demand deposit arrangement with state-contingent deposit payments and a priority-of-claims provision on final date resources is (almost) best. Under this arrangement, intermediaries infer the realization of aggregate risk and of a privately observed signal on the outcome of the risky technology from depositors' withdrawal choices, and panics as well as information-based runs are averted. Neither suspension provisions nor deposit insurance are necessary for an efficient, run-proof banking system. Furthermore, intermediation provides information-

production services that a credit market does not necessarily provide. (©1999 EconLit)

Dennis, Steven A., Ian G. Sharpe, and Ah Boon Sim. 1998. Implicit Deposit Insurance and Deposit Guarantees: Characteristics of Australian Bank Risk Premia. *Accounting and Finance* 38:91-114.

This article examines the hypothesis that yields on newly issued CDs of Australian banks incorporate a premium that reflects bank risk. The empirical analysis of Australian banks' CD premiums suggests the data are consistent with this hypothesis and therefore supports the view that CD holders do not perceive their deposits as being risk-free. Nor does it find any statistically significant difference between the premiums paid by private banks with implicit deposit insurance and the premiums paid by government-owned banks with explicit government guarantees.

Diamond, Douglas W., and Philip H. Dybvig. 1983. Bank Runs, Deposit Insurance, and Liquidity. *Journal of Political Economy* 91, no. 3:401-19. Also 1992. Bank Runs, Deposit Insurance, and Liquidity. In *Financial Crises*, vol. 1, edited by Michael Bordo, 401-19. Ashgate.

This seminal article shows how bank deposit contracts can provide allocations superior to those of exchange markets and therefore offers an explanation of how banks that are subject to runs can attract deposits. In the authors' model, investors face privately observed risks that lead to a demand for liquidity. Traditional demand deposit contracts that provide liquidity have multiple equilibria, one of which is a bank run. But bank runs cause real economic damage and are not simply reflective of other problems. Certain types of demand deposit contracts can prevent runs, however. The authors examine these, but more importantly, show that there are circumstances when government provision of deposit insurance can produce superior contracts.

Dowd, Kevin. 1993. Re-examining the Case for Government Deposit Insurance. *Southern Economic Journal* 59, no. 3:363-70.

This paper reevaluates the Diamond-Dybvig analysis of deposit insurance and their argument that deposit insurance should be provided by the government. It extends their model to include share capital; shows how share capital can reassure depositors of the safety of their deposits; and suggests how such capital can provide an alternative, and probably superior, means of protecting the banking system against problems caused by bank runs. (©1999 EconLit)

Duan, Jin-Chuan, and C. W. Sealey. 1997. Determinants of Banks' Deposit Insurance Liabilities: Exogenous versus Managerial Influences. In *Research in Finance*, vol. 15, edited by Andrew H. Chen, 255-74. JAI Press.

The authors develop and test a model to estimate the extent to which banks' deposit insurance liabilities are determined by economic and financial factors as opposed to managerial decisions to take risks. The approach used here differs

from previous work in that the authors model banks' risk-shifting behaviors in a manner analogous to that used in the portfolio selection and timing literature. The results suggest that managerial decisions, especially portfolio timing, have played an important role in determining deposit insurance liabilities.

Duesterberg, Daniel Joseph. 1991. *Bank Panics: Causes, Consequences, and Policy Responses*. Ph.D. diss., Indiana University.

The author's examination of historical evidence reveals that both psychological factors, or "sunspots," and fundamental economic conditions have contributed to bank panics. Previous work shows that in a finite horizon setting, the banking system is inherently unstable. The author demonstrates that the same instability characterizes the banking system even when the time horizon is infinite. He shows that deposit insurance definitely eliminates this instability and that suspension of payment may do so. He uses the infinite horizon setting to capture the periodic recurrence of bank panics, and assigns an objective probability distribution to their occurrence. He then shows that bank panics occur as an equilibrium outcome.

Eberle, Paul Barron. 1990. *Deposit Insurance Guarantees and Bank Risk-Taking: A Model of the Banking Industry*. Ph.D. diss., University of Missouri at Columbia.

This dissertation develops a free-entry model of the banking industry under uncertainty, a model that analyzes the effect of deposit insurance on a bank's expected terminal net worth, the amount of risk assumed by the bank, and consumer welfare. Results from the model show that in the absence of deposit insurance, a risk-neutral bank will diversify its portfolio between safe and risky assets. When deposit insurance is provided at no cost to banks, a bank will invest its entire portfolio in the risky assets and promise depositors the greater expected return on the risky asset.

Economides, Nicholas, Glenn R. Hubbard, and Darius Palia. 1996. The Political Economy of Branching Restrictions and Deposit Insurance: A Model of Monopolistic Competition among Small and Large Banks. *Journal of Law and Economics* 39, no. 2:667–704.

This article suggests that the introduction of bank branching restrictions and federal deposit insurance in the United States likely was motivated by political considerations. Specifically, it argues that these restrictions are instituted for the benefit of the small unit banks that were unable to compete effectively with large, multiunit banks. The authors analyze this "political hypothesis" in two steps. First, they use a model of monopolistic competition between small and large banks to examine gains to the former group from the introduction of branching restrictions and government-sponsored deposit insurance. They then find strong evidence for the political hypothesis by examining the voting record of Congress. (©1999 EconLit)

Engineer, Merwan. 1989. Bank Runs and the Suspension of Deposit Convertibility. *Journal of Monetary Economics* 24, no. 3:443-54.

This article examines a longer-horizon version of Diamond and Dybvig's (1983) model. In the extended model, suspending the convertibility of bank deposits into cash does not always prevent a bank run. A bank run may occur even if the bank can adjust new withdrawal payments after observing too many withdrawals. This result is based on the assumption that depositors have unknown liquidity demands and preferences which they discover over time. The article also explores the effects of deposit insurance and alternative payment policies on the bank-run equilibrium.

Flannery, Mark J. 1989. Capital Regulation and Insured Banks' Choice of Individual Loan Default Risks. *Journal of Monetary Economics* 24, no. 2:235-58.

How bankers choose the riskiness of their individual assets is an important question. It is well known that fixed-premium deposit insurance leads a bank to prefer a high-variance asset portfolio, but its effect on individual asset choice has not been carefully evaluated. This paper demonstrates how bank examination procedures and capital adequacy standards can make the value of a bank's deposit insurance contract concave in individual asset risks. Insured bankers may therefore have a rational preference (*ceteris paribus*) for relatively safe individual loans, even while they prefer risky portfolio returns. The model's implications for loan securitization and the federal regulators' new risk-based capital standards are discussed. (©1999 EconLit)

Giammarino, Ronald, Eduardo Schwartz, and Josef Zechner. 1989. Market Valuation of Bank Assets and Deposit Insurance in Canada. *Canadian Journal of Economics* 22, no. 1:109-27.

The authors examine a sample of Canadian banks and use option pricing theory to infer the market value of a bank's assets from the observed market value and volatility of its equity. They find that market value estimates are significantly different from corresponding book values. These differences vary significantly across banks, suggesting that market values provide bank-specific information not found in book values. They also derive the risk-adjusted deposit insurance premia for these banks. The results suggest that the current flat-rate deposit insurance premium system has resulted in significant cross subsidization among banks. (©1999 EconLit)

Goodfriend, Marvin. 1991. Money, Credit, Banking, and Payments System Policy. Federal Reserve Bank of Richmond *Economic Review* 77, no. 1:7-23.

This article employs contract theory to analyze the evolution of the payments system. Insights gained are used subsequently to evaluate three prominent public payments system policies: monetary policy, central bank lending, and deposit insurance. (©1999 EconLit)

Goodhart, Charles A. E., and Haizhou Huang. 1999. A Model of the Lender of Last Resort. Working Paper no. WP/99/39. International Monetary Fund.

This paper develops a model of the lender of last resort. It provides an analytical basis for “too big to fail” and a rationale for “constructive ambiguity.” Key results are that if contagion (moral hazard) is the main concern, the Central Bank (CB) will have an excessive (little) incentive to rescue banks, and the resultant equilibrium risk level is high (low). When both contagion and moral hazard are jointly analyzed, the CB’s incentives to rescue are only slightly weaker than with contagion alone. The CB’s optimal policy may be nonmonotonic in bank size.

Goyeau, Daniel, Alain Sauviat, and Amine Tarazi. 1994. La Prévention des ruées bancaires: Assurance-dépôts et réglementation des fonds propres (The prevention of bank runs: Deposit insurance and capital regulation). [With English summary.] *Revue d’Economie Politique* 104, no. 6:801–25.

According to the authors, a deposit insurance system is generally considered a first-order necessity for the prevention of bank runs. However, such a system generates a moral-hazard problem, encouraging banks to increase the riskiness of their activities. Formerly, when the Black-Scholes option valuation model is used, the theoretical value of the insurance premium appears to be positively related to bank leverage and to bank asset risk. If the premium is defined on a fixed-rate basis, banks will maximize its value, thereby increasing their risk of failure. The question then is whether prudential regulation is able to deal with this moral-hazard problem. In both risk-neutrality and risk-aversion frameworks, regulation can be inefficient as long as the actual risk endured by banks is not correctly appraised. In response to these limits, the literature on bank risk implicitly classifies different reform proposals within two categories. In the first set, the occurrence of bank runs is completely eliminated. In the second set, the risk of bank runs is considerably reduced but potentially present.

Goyeau, Daniel, Alain Sauviat, and Amine Tarazi. 1995. Responsabilité limitée et choix de portefeuille des banques (Limited liability and bank portfolio choice). [With English summary.] *Finance* 16, no. 1:93–112.

In this paper the relevancy of bank capital regulation is reexamined when an explicit fixed rate deposit insurance is taken into account. More precisely, the question which is raised is whether capital regulation is the only way to efficiently limit bank risk-taking when failure possibility exists. The analysis indicates that this result, previously obtained in the literature, relies essentially on the choice of a binomial distribution of risk. Indeed, when various states of the world are taken into account mean-variance analysis and thus bank self discipline is relevant again. The necessity of imposing capital constraints cannot therefore be justified by the existence of limited liability and the effect of capital regulation on risk remains ambiguous. Therefore, in the light of this indeterminacy, an alternative system relying on variable rate deposit insurance or market discipline imposed by perfectly informed depositors might be preferable. (©1999 EconLit)

Gunther, Jeffery W., Linda M. Hooks, and Kenneth J. Robinson. 1997. Adverse Selection and Competing Deposit Insurance Systems in Pre-Depression Texas. Financial Industry Studies Working Paper 4-97. Federal Reserve Bank of Dallas.

In 1910, Texas instituted a unique deposit insurance program for its state-chartered banks, consisting of two separate plans: the depositors guarantee fund, similar in operation to the deposit insurance schemes adopted in several other states; and the depositors bond security system, which required the procurement of a privately issued insurance policy. In this paper, the authors hypothesize that the provision of a choice in funds led to risk-sorting among the banks, with the relatively conservative institutions opting for the comparatively rigorous bond security system. When a probit model with heteroskedasticity is used, the evidence obtained from balance-sheet data recorded at the time the banks were required to enlist in an insurance plan indicates that such was the case, since the alternative plan relying on privately issued insurance was unpopular except among relatively conservative and well-managed institutions.

Hannan, Timothy H. 1989. The Impact of Bank Regulatory Requirements on Large Corporate Lending. Finance and Economics Discussion Series no. 63. Board of Governors of the Federal Reserve System.

This paper defines the burden imposed on banks by reserve requirements, deposit insurance premiums, and capital adequacy requirements and estimates the extent to which it has inhibited large corporate lending by banks. Evidence consistent with the hypothesis that all three of these elements of the regulatory burden inhibit large corporate lending by banks is found. Coefficient point estimates suggest that capital requirements have a particularly strong effect on the lending behavior of banks for which capital requirements are binding. (©1999 EconLit)

Hassan, M. Kabir. 1992. An Empirical Analysis of Bank Standby Letters of Credit Risk. *Review of Financial Economics* 2, no. 1:31-44.

Bank exposure to off-balance-sheet activities in general and Standby Letters of Credit (SLCs) in particular has become a major concern to regulators. The risk-exposure of SLCs has been re-examined by employing option pricing methodologies to calculate implied asset risk from bank equity and flat deposit insurance, and from risk-premia on bank subordinated debt. The results indicate that SLC reduce systematic risk, equity risk and implied asset risk. It appears that Standby Letters of Credit contribute to the overall diversification of a bank's assets. (©1999 EconLit)

Hassan, M. Kabir. 1993. The Off-Balance-Sheet Banking Risk of Large U.S. Commercial Banks. *Quarterly Review of Economics and Finance* 33, no. 1:51-69.

OBS banking activities have grown rapidly in recent years. The risk-based capital requirements of OBS activities presume that some OBS activities expose banks to additional and potentially excessive risk. This study employs Ronn-Verma option pricing methodology to calculate implied asset risk, and examine the risk-behavior of OBS activities. This approach incorporates the non-linearity of an

option pricing model, deposit insurance and regulatory closure rules. A pooled cross-section and time-series analysis reveals that OBS activities, in general, reduce total risk but do not affect systematic risk. The explanatory power of models is improved significantly when implied asset risk, instead of equity risk, is used to proxy for total risk. The results suggest that risk-based capital regulations of OBS activities may unduly penalize large banks. (©1999 EconLit)

Hassan, M. Kabir, Gordon V. Karels, and Manfred O. Peterson. 1994. Deposit Insurance, Market Discipline, and Off-Balance-Sheet Banking Risk of Large U.S. Commercial Banks. *Journal of Banking and Finance* 18, no. 3:75–93.

The “market discipline” of off-balance-sheet banking activities (OBSAs) is examined by employing contingent claims valuation techniques to derive implied asset variances from bank equity, and from risk-premia for bank subordinated debt. Specifically, implied asset variances have been calculated from market and on- and off-balance-sheet information using options pricing techniques. Theoretically these implied asset variances are better than equity variance or risk-premia in proxying bank risk because they capture portfolio effects as well as the non-linear nature of contingent claims model and the impact of closure rules. Empirical results suggest the existence of “market discipline” of OBSAs. Market participants price these OBSAs as risk-reducing. (©1999 EconLit)

Hassan, M. Kabir, and William H. Sackley. 1994. A Methodological Investigation of Risk Exposure of Bank Off-Balance-Sheet Loan Commitment Activities. *Quarterly Review of Economics and Finance* 34, no. 3:283–99.

This study provides further empirical evidence of capital market reactions to the growth and riskiness of bank off-balance-sheet loan commitment activities. Previous studies have ignored the impact of regulation on the measurement of bank risk. In this research Ronn-Verma (1986) and Gorton-Santomero (1990) option pricing models are employed to calculate implied asset risk from bank equity and subordinated debt. This approach incorporates the nonlinearity of contingent claims valuation models, deposit insurance and regulatory closure rules. This research reports strong evidence that loan commitments reduce bank risk. In addition, decreases in equity risk, subordinated debt default risk and implied asset risk resulting from increases in loan commitments activities implies that loan commitments may contribute to the overall diversification of bank portfolio risk. It, therefore, may be inappropriate to include loan commitments in a risk-based capital calculation. (©1999 EconLit)

Hazlett, Denise Janine. 1992. Deposit Insurance and Regulation in a Diamond–Dybvig Banking Model with a Risky Technology. Ph.D. diss., University of Minnesota.

The author uses the Diamond–Dybvig banking model, amended to include a risky technology, to study how well alternative feasible deposit insurance schemes work as substitutes for suspension of convertibility. To overcome the moral hazard that accompanies deposit insurance in this model, the author holds that two kinds of regulation are needed: solvency and incentive compatibility regulations.

The presence of the risky technology has implications about the effectiveness of deposit insurance in preventing bank runs. The author's findings suggest that even a full guarantee of deposits will not rule out bank runs in environments with significant amounts of state-dependent liabilities. In some environments, co-insurance and deductible schemes are even less likely to prevent bank runs than is the full guarantee. However, the co-insurance and deductible schemes are both less susceptible to abuse of the deposit insurance guarantee than is the full guarantee.

Hazlett, Denise. 1996. Re-examining the Case for Government Deposit Insurance: Comment [on Dowd article in vol. 59, no. 3]. *Southern Economic Journal* 62, no. 4:1090-91.

Dowd presented a modified version of Diamond and Dybvig's banking model and claimed that for some parameters of his model, a bank capital holder can earn a profit by guaranteeing the optimal Diamond-Dybvig deposit withdrawals. According to Dowd, the capitalist willingly puts up his own resources as a guarantee on deposits, because of the profits he will earn from doing so. These profits, according to Dowd, made government-provided deposit insurance unnecessary. Hazlett's "Comment" shows that no such profits exist. By definition, the optimal Diamond-Dybvig deposit withdrawals require that all of the returns from deposited resources be paid out to depositors. There is no surplus for the bank capital holder to claim as profits.

Ho, Lok-Sang. 1992. Deposit Insurance: An Economic Perspective. *Hong Kong Economic Papers*, no. 22:21-33. [Followed by untitled speeches given by Jao and McLean at the Hong Kong Economic Association forum on bank deposit insurance.]

In the wake of the failure of the Hong Kong branch of the Bank of Credit and Commerce International (BCCHK), public interest in the subject of deposit insurance in Hong Kong has been revived, and in response, the government has now restudied the subject (it had long held that establishing any form of deposit insurance was not in the public interest). This paper examines the various arguments for and against deposit insurance in the light of economic theory, and presents some recommendations.

Jacklin, Charles J. 1989. Demand Equity and Deposit Insurance. Research Paper 1062. Graduate School of Business, Stanford University.

The services provided by the liability side of banking are examined in an economy in which everyone is identical *ex ante* and banks are uninsured. Demand equity deposit claims are shown to provide all the service that can be provided by demand debt claims without the risk of banking panics as long as there is not both aggregate uncertainty about liquidity demands and asymmetry of information about the quality of bank assets. Demand debt claims are conjectured to have evolved because both these conditions were met historically. Given the rapid development of financial markets, these conditions may no longer hold and thus demand equity claims may offer a viable alternative to government-insured



demand debt claims. With demand equity claims, only insurance against fraud need be provided to ensure a safe deposit system. (©1999 EconLit)

Jacklin, Charles J. 1993. Market Rate versus Fixed Rate Demand Deposits. Research Paper 1265. Graduate School of Business, Stanford University.

In an economy with uninsured banks, market rate deposits are shown to provide services identical to fixed rate deposits without risking banking panics as long as there is not both aggregate uncertainty about liquidity demands and asymmetric information about bank asset quality. However, if both assets and information revealed through market prices, the analysis may explain the evolution of fixed rate deposits before the introduction of deposit insurance. Moreover, it provides currently relevant insights regarding deposit contract forms and deposit insurance. (©1999 EconLit)

Jayanti, S. V., Anne Marie Whyte, and Quang A. Do. 1996. Bank Failures and Contagion Effects: Evidence from Britain and Canada. *Journal of Economics and Business* 48 no. 2:103–16.

This paper examines contagion effects of bank failures in Britain and Canada. British banks experienced no significant reaction while Canadian banks reacted negatively to failures of domestic banks. The differing reactions may be attributable to the difference in regulatory response to the failures. Results suggest that the market is more likely to react negatively when increased regulations are proposed in the wake of a failure. Furthermore, the existence of a formal deposit insurance scheme may not be enough to prevent contagion effects; the actual and perceived response of regulators to bank failures may shape the investor response. (©1999 EconLit)

Kane, Edward, J. 1995. Three Paradigms for the Role of Capitalization Requirements in Insured Financial Institutions. *Journal of Banking and Finance* 19, no. 3–4:431–59.

Standard models for deposit insurance strike analogies to more familiar financial contracts and conceive of risk as exogenous. The oldest model of deposit insurance likens it to passively underwriting casualty insurance. A more sophisticated, but still bilateral model likens deposit insurance to writing a passive put option on the enterprise whose funding is insured. Delays in acknowledging the wreck of the S&L industry and its federal insurer (FSLIC) discredit these models as guides to managing a deposit-insurance fund. Deposit insurance is better interpreted as a trilateral performance bond that enhances the credit of an insured institution. This interpretation endogenizes risk, emphasizes incentive conflict, and underscores the need to optimize loss-control activity. The bonding model clarifies that a subset of the monitoring and disciplinary activities traditionally undertaken by government officials can usefully be privatized. (©1999 EconLit)

Kane, Edward J., and Berry K. Wilson. 1998. A Contracting-Theory Interpretation of the Origins of Federal Deposit Insurance. *Journal of Money, Credit, and Banking* 30, no.

3 (part 2): 573–95. Also 1998. A Contracting-Theory Interpretation of the Origins of Federal Deposit Insurance. Working Paper no. W6451. National Bureau of Economic Research.

Conventional wisdom holds that the enactment of federal deposit insurance helped small rural banks at the expense of large urban institutions. This article uses asymmetric-information, agency-cost paradigms from corporate-finance theory and data on bank stock prices to show how deposit insurance could and did help stockholders of large banks. The broadening stockholder distribution of large banks during the stock market bubble of the late 1920s undermined the efficiency of double-liability provisions in controlling incentive conflict among large-bank stakeholders. Federal deposit insurance restored depositor confidence by guaranteeing depositor funds and having government officials assume the task of monitoring managerial performance and solvency at U.S. banks.

Karels, Gordon V., John M. Geppert, and Arun J. Prakash. 1997. Deposit Insurance, Capital Adequacy Requirements, and Interest Rate Dynamics. *Journal of Business, Finance and Accounting* 24, no. 9–10:1311–31.

This article evaluates the interaction between deposit insurance and bank deposit rates in a long-run equilibrium setting with a premium structure; analyzes the long-run effects of a general deposit insurance system; and takes an in-depth look at the time series behavior of insured and uninsured interest rates.

Konishi, Masru. 1994. Essays on Financial Economics. Ph.D. diss., University of Western Ontario.

This dissertation contains four essays on financial economics. The first develops an information-based banking model to examine the choice by lenders between negotiated debt transactions and open-market transactions when the loan market is subject to adverse selection. The second essay applies a version of the information-based banking model developed in the first essay to examine the role of financial deepening in the context of a dynamic model. The third essay seeks to show that the existence of a loan sales market enables the deposit insurance provider to implement risk-adjusted insurance premiums to banks. The fourth essay develops a life-cycle model of corporate finance in which a mixed age group of borrowers exists, to show that higher default rates in financial markets need not be associated with lower social welfare.

Kopcke, Richard W. 1995. Safety and Soundness of Financial Intermediaries: Capital Requirements, Deposit Insurance, and Monetary Policy. Federal Reserve Bank of Boston *New England Economic Review* (Nov./Dec.): 37–65.

According to the author, when not all investors are fully informed about the prospective returns on all assets, the cost of funds for financial intermediaries depends on savers' state of confidence in their investments. Because the regulations that govern intermediaries affect the price of risk in financial markets and because this influence varies with economic conditions, the actions of regulators, like those of the monetary authority, may need to be adjusted as

economic conditions change in order to foster the prudent valuation of assets. Prompt enforcement of fixed, risk-based capital requirements, for example, amplifies the credit cycle and may make financial intermediaries less able to cope with economic shocks. Hence, the author contends, regulatory and monetary policies would stabilize financial markets best by managing the price of risk so that it dampens cycles in economic activity.

Kuester, Kathleen A., and James M. O'Brien. 1989. Bank Equity Values, Bank Risk, and the Implied Market Value of Banks' Assets, Liabilities, and Deposit Insurance. Finance and Economics Discussion Series, no. 98. Board of Governors of the Federal Reserve System.

This paper models the stock market's valuation of banks' assets and liabilities and the value to bank stockholders of the deposit insurance option. It estimates these market valuations for a sample of 234 large banks and examines their sensitivity to bank portfolio characteristics that indicate potential default risk. The average value of deposit insurance is found to vary over three periods and two estimation methods from 0.5 cents to 2.0 cents. Several types of loans and measures of loan performance are shown to have a significant effect on the values of bank assets and deposit insurance. (©1999 EconLit)

Kupiec, Paul H., and James M. O'Brien. 1997. The Pre-Commitment Approach: Using Incentives to Set Market Risk Capital Requirements. Finance and Economics Discussion Series, no. 1997-14. Board of Governors of the Federal Reserve System.

This paper develops a model of bank behavior that focuses on the interaction between the incentives created by fixed-rate deposit insurance and a bank's choice of its loan portfolio and its market-traded financial instruments. The model is used to analyze the consequences of the Federal Reserve Board's proposed Pre-Commitment Approach (PCA) for setting market risk capital requirements for bank trading portfolios. Under the PCA, a bank determines its own market risk capital requirement subject to known regulatory penalties should its trading activities generate subsequent losses that exceed its market risk capital commitment. (©1999 EconLit)

Lai, Van Son. 1989. Essays in Deposit Insurance, Financial Guarantees, and Gap Management. Ph.D. diss., University of Georgia.

This dissertation consists of three essays, one each on deposit insurance, private financial guarantees, and gap management. The first essay models the effects of uncertainty caused by closure rules and forbearance policies on the valuation of deposit insurance. The second essay uses option pricing theory to develop several models for the valuation of vulnerable loan guarantees in which the guarantor defaults. The third essay presents a synthesis and new evidence on the linkage between net interest margin and maturity gaps in U.S. commercial banks.

Levonian, Mark E. 1991. Have Large Banks Become Riskier? Recent Evidence from Option Markets. Federal Reserve Bank of San Francisco *Economic Review* (fall): 3-17.

This paper examines trends in risk at the largest U.S. commercial banks during the late 1980s. Prices of exchange-traded options on bank equity are used to derive several measures of banking risk. The results show that the riskiness of bank assets and activities did increase at large banks during the period. However, market capital-asset ratios generally rose, leaving the burden on the deposit insurance fund little changed. Hence, while the results support the notion that banks now engage in a riskier business than previously, the general increase in capital has been sufficient to hold overall banking risk relatively constant. (©1999 EconLit)

Li, Anlong. 1991. Optimal Bank Portfolio Choice under Fixed-Rate Deposit Insurance. Working Paper no. 91-11. Federal Reserve Bank of Cleveland.

This paper analyzes the optimal investment decisions of insured banks under fixed-rate deposit insurance. In the presence of charter value, trade-offs exist between preserving the charter and exploiting deposit insurance. Allowing banks to dynamically revise their asset portfolios has a significant impact on both the investment decisions and the fair cost of deposit insurance. The optimal bank portfolio problem can be solved analytically for constant charter value. The corresponding deposit insurance is shown to be a put option that matures sooner than the audit date. An efficient numerical procedure is also developed to handle more general situations. (©1999 EconLit)

Liang, Youguo, Sunil Mohanty, and Frank Song. 1996. The Effect of the Federal Deposit Insurance Corporation Improvement Act of 1991 on Bank Stocks. *Journal of Financial Research* 19, no. 2:229-42.

This study used a multivariate regression model to investigate the effect of the passage of the Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991 on returns to the shareholders of bank-holding companies. The empirical results suggest that the shareholders of well-capitalized banks benefited from the enactment of the FDICIA, while those of undercapitalized banks experienced significant losses during the announcement period. However, the shareholders of adequately capitalized banks did not gain or lose significantly from the enactment of the FDICIA. The FDICIA also affected stock returns of large and small bank-holding companies similarly. (©1999 EconLit)

Matutes, Carmen, and Xavier Vives. 1996. Competition for Deposits, Fragility, and Insurance. *Journal of Financial Intermediation* 5, no. 2:184-216.

In the presence of economies of scale, depositors' expectations are shown to give rise to vertical differentiation and to yield multiple market equilibria, some of which exhibit institutional or systemic collapse. This fragility is due to a coordination problem among depositors and not to bank competition. Nevertheless, failure perceptions do influence rivalry which in turn affects the failure probability, in particular equilibria. Deposit insurance improves welfare

by preventing collapse, extending the market, and minimizing frictions. However, deposit insurance also may induce fiercer competition for deposits and increase the deadweight losses associated with failing institutions. The welfare impact of deposit insurance is shown to depend on market structure, and is thus ambiguous even in a world of full liability and no moral hazard in bank investments. (©1996 Academic Press)

McCallie, John Douglas. 1990. *The Impact of Deregulation and Deposit Insurance on the Thrift Industry: An Empirical Analysis*. Ph.D. diss., Auburn University.

From 1980 to 1988 more than 560 thrifts failed, with an estimated total resolution cost of over \$150 billion. According to the author, many observers maintained that legislation in the early 1980s, which deregulated thrifts, was misguided and was a major cause of the thrift crisis. Other writers challenged the hypothesis that deregulation was a dominant cause. Rather, they claimed that moral-hazard behavior caused by the existence of federal deposit insurance was the major culprit in the thrift debacle. This study tests the validity and the relative importance of these two prominent and competing theories on the cause of the thrift crisis.

McClatchey, Christine Anna. 1995. *The Impact of Deposit Insurance on Risk-Taking Behavior: An Application to Credit Unions*. Ph.D. diss., University of Nebraska at Lincoln.

Previous studies of deposit insurance have been mostly devoted to examining changes in the risk-taking behavior of banks or savings and loans. This dissertation examines changes in credit union risk-taking following the establishment of the National Credit Union Share Insurance Fund (NCUSIF) in 1971. The author uses time-series data and several financial ratios that proxy for capital adequacy, liquidity, and loan delinquency to empirically test if credit unions increased risk after deposit insurance was implemented. The test's results did not support the increased risk-taking hypothesis. Although federal credit union capital ratios did fall immediately after adoption of deposit insurance, this was most likely the result of reduced capital requirements, not deposit insurance.

McCulloch, J. Huston, and Min Teh Yu. 1998. *Government Deposit Insurance and the Diamond–Dybvig Model*. *Geneva Papers on Risk and Insurance Theory* 23, no. 2:139–49.

The apparent banking market failure modeled by Diamond and Dybvig (1983) rests on their inconsistently applying their “sequential servicing constraint” to private banks but not to their government deposit insurance agency. Without this inconsistency, banks can provide optimal risk-sharing without tax-based deposit insurance, even when the number of “type 1” agents is stochastic, by employing a “contingent bonus contract.” The threat of disintermediation noted by Jacklin (1987) in the nonstochastic case is still present but can be blocked by contractual trading restrictions. This article complements Wallace (1988), who considers an alternative resolution of this inconsistency. (©1999 EconLit)

McKenzie, George. 1990. Capital Adequacy Requirements, Deposit Insurance, and Bank Behavior. *Economic and Social Review* 21, no. 4:363–75.

As financial market regulations were eliminated during the 1980s, the fragility of the international financial system was increasingly exposed. In turn, this generated interest in the design of prudential regulations and safety-net procedures for banks. The thesis of this article is that the two—prudential regulation and safety-net procedures—must be treated as interdependent and not as substitutes for each other. A capital-adequacy requirement ensures that there is a buffer against a decline in the value of bank assets, but it does not eliminate the possibility of runs. On the other hand, deposit insurance creates a moral-hazard problem that can best be limited by the setting of appropriate capital requirements and risk weights.

Mishra, Chandrasekhar. 1991. Deposit Guarantee Nonperformance, Bank Insurance Fund, and Private Reinsurance for a Vulnerable Deposit Insurer. Ph.D. diss., University of Texas at Dallas.

This dissertation examines the alleged inadequacy of the deposit insurance fund in light of the increasing number and costs of bank failures during the 1980s. At the time, the author argues, the level of the fund that protects bank depositors was dangerously low, especially considering the notion that there exist implicit guarantees that extend to uninsured deposits and non-deposit debts. Hence, the author argues, the potential role of private insurance companies should be reexamined. Private deposit insurance could, he maintains, provide improved diversification of the federal deposit insurer's risk and offer protection against future catastrophic losses.

Murton, Arthur James. 1992. Essays in Banking and Deposit Insurance. Ph.D. diss., University of Virginia.

This dissertation consists of three essays on banking and deposit insurance. The first essay extends the Diamond–Dybvig model of banking to focus on how the bank contract will be structured when the threat of a bank run is present. The second essay examines how government provision of deposit insurance promotes financial stability by preventing bank runs. The third essay examines the role of bank charter values and bank regulation and supervision in controlling bank risk-taking.

Ozler, Sule. 1989. Commercial Bank Lending to Developing Countries: The Expansion of the Market. *Contemporary Policy Issues* 7, no. 3:1–10.

The developing country debt crisis brought attention to the type of lending behavior that predominated while the commercial bank market developed. This article presents the major characterizations of bank behavior, particularly regarding predictions that can be tested empirically. Critically comparing existing empirical studies with these predictions shows that the magnitude of default risk and deposit insurance were incorporated into the lending behavior. However, these alone do not explain the evolution of the market. One can understand this

evolution in terms of information imperfections in the market, but this evaluation contradicts a major role for agency problems in the banking firms. (©1999 EconLit)

Ozler, Sule, and Harry Huizinga. 1992. Bank Exposure, Capital, and Secondary Market Discounts on Developing Country Debt. Working Paper no. 3961. National Bureau of Economic Research.

Previous empirical studies of secondary market discounts for developing countries have ignored important creditor country factors. The empirical evidence in this paper indicates that, after controlling for repayment indicators of borrower countries, bank exposure and capital are important determinants of secondary market discounts: an increase in the exposure of large banks to a particular country leads to a decrease in the secondary market discounts on the debt of that country, while an increase in the capital of large banks leads to an increase in secondary market discounts. Among the repayment indicators of developing countries, only debt ratios are found to be significant determinants of the discounts. This suggests that the impacts of exposure and capital can be explained by the presence of deposit insurance. The evidence presented on the stock market pricing of lender banks supports this view. (©1999 EconLit)

Park, Sangkyun. 1990. Contagion of Bank Failures: The Relation of Deposit Insurance and Information. Ph.D. diss., University of California at Los Angeles.

It has been argued that bank failures are contagious because of the lack of bank-specific information. This dissertation models an economy in which individuals rationally maximize utility using a Bayesian inference rule. The model illustrates how rational depositors, lacking bank-specific information, run on solvent banks. The logic developed by the model is as follows: When depositors are not informed of the financial structure of individual banks, they infer the soundness of a particular bank from the condition of the banking system as a whole. Given this, a high failure ratio signals an adverse condition within the banking sector and therefore results in a high perceived deposit risk and a low expected return from deposits. Depositors run on banks if the expected return from deposits falls below that from holding currency. These developments explain the phenomenon of general bank runs after a large number of bank failures and implies that sound banks can prevent runs on themselves if they are able to provide reliable information about their financial structure. Hence, a banking system can be stable even if the government does not provide deposit insurance.

Park, Sangkyun. 1996. Banking and Deposit Insurance as a Risk Transfer Mechanism. *Journal of Financial Intermediation* 5, no. 3:284–304.

This paper models an economy in which risk-averse savers and risk-neutral entrepreneurs make investment decisions. Aggregate investment in high-yielding risky projects is maximized when risk-neutral agents bear all nondiversifiable risks. A role of banks is to assume nondiversifiable risks by pledging their capital in addition to diversifying risks. Banks, however, do not completely eliminate

risks when monitoring by depositors is imperfect. Government deposit insurance that uses tax revenue to repay depositors transfers remaining risks to entrepreneurs. Deposit insurance can improve welfare because imperfect monitoring by the government largely results in income transfer among risk-neutral agents rather than lower production. (©1996 Academic Press)

Peria, Maria, Soledad Martinez, and Sergio Schmukler. 1998. Do Depositors Punish Banks for “Bad” Behavior? Examining Market Discipline in Argentina, Chile, and Mexico. Policy Research Working Paper (February). The World Bank.

This paper examines the existence of market discipline in the banking industries of Argentina, Chile, and Mexico during the 1980s and 1990s. Using a bank panel data set, the authors test for the presence of market discipline by studying whether depositors punish risky banks by withdrawing their deposits. They find that across countries and across deposit insurance schemes, market discipline exists even among small, insured depositors. Standardized coefficients and variance decomposition of deposits indicate that bank fundamentals are at least as important as other factors affecting deposits. GMM estimations confirm that the results are robust to the potential endogeneity of bank fundamentals.

Pozdena, Randall J. 1992. Danish Banking: Lessons for Deposit Insurance Reform. *Journal of Financial Services Research* 5, no. 3:289-98.

An alternative to a large deposit insurance fund, some observers have recommended prompt closure of banks that fail to maintain a high level of market-value capital. Others, however, see such an “early closure” policy as impractical, and potentially damaging to the competitive position of U.S. banks. Because the Danes have employed a policy of early closure based on marked-to-market portfolios, their experience is relevant to this debate. The article describes Danish banking policy, and discusses its effects on the behavior of banks and on processes for resolution of weak banks. The Danish policy appears to have provided depositor protection and resolved problems with large and small banks without a deposit insurance fund and without significant burdens on either the banks themselves or the public purse. (©1999 EconLit)

Ramos, Alberto M. 1996. Deposit Insurance, Bank Capital Structures, and the Demand for Liquidity. Working Paper no. 96-8. Federal Reserve Bank of Chicago.

This paper provides an economic explanation for the extraordinary and historically unprecedented accumulation of liquid assets by the banking system in the aftermath of the Great Depression. At the end of the 1930s, the banking system held over 35 percent of its assets in non-interest-bearing cash. Why were these holdings so high and why was the same phenomenon not observed in Canada? The paper argues that, unlike what happened in Canada, U.S. banks emerged from the Depression severely undercapitalized and did not immediately replenish the capital account because it would have been extremely expensive at the time to do so. To calm depositors’ fears, bank managers increased the share of liquid assets in their portfolios to reduce their risk exposure on the asset side.



To shed some light on this observation, the author constructs a banking model that generates some empirically testable implications.

Ritchken, Peter, James B. Thomson, Ramon P. DeGennaro, and Anlong Li. 1993. On Flexibility, Capital Structure, and Investment Decisions for the Insured Bank. *Journal of Banking and Finance* 17, no. 6:1133–46.

Most models of deposit insurance assume that the volatility of a bank's assets is exogenously provided. Although this framework allows the impact of volatility on bankruptcy costs and deposit insurance subsidies to be explored, it is static and does not incorporate the fact the equity holders can respond to market events by adjusting previous investment and leverage decisions. This paper presents a dynamic model of a bank that allows for such behavior. The flexibility of being able to respond dynamically to market information has value to equity holders. The impact and value of this flexibility option are explored under a regime in which flat-rate deposit insurance is provided. (©1999 EconLit)

Romer, David H. 1995. Why Weren't There More S&L Failures? Ph.D. diss., University of California at Berkeley.

The first chapter of this dissertation examines the relationship among insurance, franchise value, and banks' risk and capital decisions. The author develops a model in which banks with fixed-price deposit insurance weigh the option value of deposit insurance against the expected franchise value of the bank. The second chapter examines the relationships between asset risk and franchise values and between asset risk and ownership structure. Stock price data from publicly traded S&Ls are used to measure portfolio risk and franchise or charter values. The empirical results indicate excessive risk-taking on behalf of S&Ls. The results also show stockholder-controlled S&Ls holding riskier portfolios than managerially controlled S&Ls, suggesting a moral-hazard problem. The third chapter investigates the heterogeneity in savings institutions' responses to the deregulation of the thrift industry in the 1980s. This chapter explicitly models the heterogeneity of banks and finds a separating equilibrium wherein some thrifts hold safer portfolios in order to protect information rents, whereas others hold riskier assets in order to maximize the option value of deposit insurance.

Rose, Peter S. 1996. The Diversification and Cost Effects of Interstate Banking. *Financial Review* 31, no. 2:431–52.

This study examines recent interstate bank geographic diversification inside the United States. More than 80 holding companies that gradually evolved into interstate banking companies were tested for significant linkages to risk and efficiency indicators. The study finds that while geographic expansion frequently is associated with increases in risk, when banking firms were grouped by threshold levels of geographic diversification more highly diversified interstate banks appear to achieve reductions in risk exposure and operating costs. The study's results suggest the spread of interstate banking may change the industry's

risk and cost profile significantly with profound implications for the future of the deposit insurance fund. (©1999 EconLit)

Schellhorn, Carolin Dorothee. 1991. *The Role of Subordinated Debt in Measuring and Regulating Financial Institution Riskiness*. Ph.D. diss., University of Texas at Austin.

This dissertation extends the market-oriented approach to the pricing of risk-adjusted deposit insurance premiums by substituting uninsured subordinated debt for uninsured senior debt in the capital structure of a bank. The inclusion of subordinated debt in the assumed capital structure allows the unobservable variables—bank asset value and asset variance—to be derived from observable variables in both debt and equity markets. Two important results are obtained: First, for an exogenously assumed time until the next closure decision, estimates of risk-adjusted deposit insurance premiums appear to be different when the estimation procedure includes market information about debt as well as equity. Second, an endogenous solution is provided for the market-perceived time until the next regulatory closure decision. When endogenous solutions for the market-perceived length of the deposit insurance contract period are used, point estimates of the time variable suggest regulators increased their use of forbearance in the late 1980s.

Simons, Katerina, and Stephen Cross. 1991. Do Capital Markets Predict Problems in Large Commercial Banks? Federal Reserve Bank of Boston *New England Economic Review* (May): 51–56.

During the debate over deposit insurance reform, the nature and limits of market discipline became an especially important topic. The widely accepted argument in favor of greater reliance on market discipline is that market discipline will restrain managerial risk-taking and reduce potential losses to the deposit insurance fund. Opponents of this view support the traditional reliance on supervision by the bank regulatory agencies as the primary method of maintaining the safety and soundness of the banking system and the integrity of the deposit insurance fund. This article attempts to shed some empirical light on the issue by studying the effectiveness of market discipline as it is exercised by bank stockholders. The authors use residual analysis to test whether the market anticipates a bank's downgrade to problem-bank status. The results show that shareholder returns fail to anticipate bank downgrades by examiners.

Smith, Brian, and Robert White. 1992. The Impact of Stabilization of Interim Audits on the Pricing of Deposit Insurance. *Journal of Business Finance and Accounting* 19, no. 1:113–32.

The authors use quarterly financial statement information from 119 credit unions in British Columbia (Canada) for the years 1976–1983 to analyze the benefits and costs—in terms of deposit insurance premiums paid—of having an interim audit performed. After adjustments for economies of scale, a cross-sectional analysis of audit costs indicates that such costs are best modeled as constant percentages of liabilities. The benefits of an interim audit outweigh the costs only when the financial institution is highly leveraged, the institution has relatively low

liquidation or merger expenses, or its asset-to-liability ratio is especially volatile. The models presented also suggest a guide as to whether a credit union should be provided a temporary loan rather than be liquidated or merged. The regulatory choice of stabilization is most beneficial when liquidation and merger expenses are high, audit costs are low, and returns are less volatile.

Smith, Bruce D., and Cheng Wang. 1998. Repeated Insurance Relationships in a Costly State Verification Model: With an Application to Deposit Insurance. *Journal of Monetary Economics* 42, no. 2:207–40.

The authors consider the problem of an insurer who enters into a repeated relationship with a set of risk averse agents in the presence of ex post verification costs. The insurer wishes to minimize the expected cost of providing these agents a certain expected utility level. The authors characterize the optimal contract between the insurer and the insured agents. They then apply the analysis to the provision of deposit insurance. The authors' results suggest—in a deposit insurance context—that it may be optimal to utilize the discount window early on, and to make deposit insurance payments only later, or not at all. (©1999 EconLit)

Spiegel, Mark. 1989. Risk Aversion, Deposit Insurance, and Collective Action Problems among Banks. *Economic Research Reports*, no. 89-03. New York University.

Collective action problems are likely to arise in concerted lending situations. The sources of lending structures which hinder collective actions are therefore of policy concern. This paper introduces a monopolistically-competitive model in which bank risk aversion and Federal deposit insurance policy combine to induce banks to choose a level of concentration ex-ante which hinders their collective action ex-post. Decreases in loan concentration result in an increase in the degree of credit contraction in bad states, an increase in the probability of default, and an increase in the expected burden on FDIC funds. (©1999 EconLit)

Spiegel, Mark. 1996. Fixed-Premium Deposit Insurance and International Credit Crunches. Federal Reserve Bank of San Francisco *Economic Review*, no. 2:3–15.

This article demonstrates that the introduction of fixed-premium deposit insurance, both explicit and implicit, can magnify the degree to which credit extension is sub-optimal by increasing the number of banks participating in the lending package. The analysis is conducted through a monopolistically competitive two-period model of foreign lending. Results show that deposit insurance raises the number of banks participating in a lending package through three channels: first, deposit insurance acts as a subsidy on lending; second, deposit insurance weakens the degree to which the market induces banks to organize in a manner that will minimize the public-good problem associated with relending to a problem debtor; finally, implicit deposit insurance removes much of the remaining liability side of the bank balance sheet from a private regulating role.

St. Hill, R. L. 1995. A Post-Keynesian Perspective on Commercial Bank Behavior and Regulation. *Metroeconomica* 46, no. 1:35-62.

This paper presents a post Keynesian perspective on commercial bank behavior and regulation. It is assumed that: (1) the quantity of loans is endogenous; (2) banks are dual purpose institutions whose functions are to create credit and supply means of payment and liquidity; (3) uncertainty pervades decision making; and (4) banks are price setters in retail markets, but price takers in wholesale markets. The effects of a number of instruments of regulation are analyzed including lender of last resort, liquid reserve requirements, deposit insurance, capital adequacy and open market operations. (©1999 EconLit)

Thomson, James B. 1992. Modeling the Bank Regulator's Closure Option: A Two-Step Logit Regression Approach. *Journal of Financial Services Research* 6, no. 1:5-23.

This article models the regulator's decision to close a bank as a call option. A two-equation model of bank failure that treats bank closings as an event timed by bank regulators is constructed and estimated for bank failures that occurred from 1984 through 1989. The results of the regression experiment are consistent with the underlying theoretical model, since a majority of the regressors in the closure equation are significant with the correct sign. Overall, the results support the hypothesis that delayed closure of insolvent financial institutions is a function of the incentive system facing bank regulators. The results of this study imply that for regulators to adopt more timely insolvency-resolution policies, fundamental changes in the regulatory incentive system are necessary.

Urrutia, Jorge. 1990. The Cost of Deposit Insurance: Derivation of a Risk-Adjusted Premium. *Insurance: Mathematics and Economics* 9, no. 4:281-90.

The author develops a model for determining a risk-adjusted insurance premium to be charged by the Federal Deposit Insurance Corporation. The model introduces co-insurance and deductible clauses for deposit insurance and is an alternative to models based on an option-pricing formula. The resultant risk-sensitive insurance premium is (1) an increasing function of the interest rate paid on a bank's deposits, the bank's loan-loss rate, the bank's deposit-to-capital ratio, and the expenses incurred by the FDIC and the insured bank; and (2) a decreasing function of the interest rate earned on the bank's loans and the rate of return on the FDIC's investments. The models with co-insurance and deductibles reduce the FDIC's liabilities and result in smaller insurance premiums than the full insurance model. Compared with the flat insurance premium, a risk-adjusted insurance premium would encourage discipline on the part of bankers and depositors, reducing the moral-hazard problem.

Wang, Yu-Lin. 1994. The Resource Allocation Effects of Deposit Insurance: A Pilot Study. Ph.D. diss., University of Minnesota.

This dissertation studies the resource allocation effects of deposit insurance, using the idea that a necessary condition for resource allocation effects is a corner solution: there are types of investments that insured institutions finance, but other

institutions do not. Examining a sample of commercial construction projects undertaken during the 1980s in a city in Minnesota, the author asks if there is some class of projects, determined by their characteristics, that were financed only by insured institutions. The finding suggests that the sample does not include a class of projects in which financing was exclusively provided by insured institutions. Thus the evidence is not consistent with a resource allocation effect caused by deposit insurance.

Williamson, D. Stephen. 1997. Discount Window Lending and Deposit Insurance. *Review of Economic Dynamics* 1:246–75.

The author constructs a banking model in which roles for government-provided deposit insurance and discount window lending emerge when branch banking is restricted. Additionally, banks evolve endogenously as an efficient arrangement for sharing risk. Discount window lending permits better risk-sharing by making bank assets more liquid, but is limited because of a moral-hazard problem that arises from adverse selection in the loan market. Deposit insurance also creates the potential for better risk-sharing, but accomplishes this through contingent transfers rather than enhancements of liquidity. Banks tend to take on more risk with deposit insurance and to take less care in screening loans, but this result is consistent with an increase in welfare for depositors and borrowers.

Yu, Min Teh. 1991. Two Essays in Deposit Insurance. Ph.D. diss., Ohio State University.

In this dissertation, the first essay seeks to ascertain whether economically accurate reporting would have developed alarming figures before the shortfall of Federal Savings and Loan Insurance Corporation (FSLIC) resources had reached enormous proportions. The essay develops and compares alternative methods for generating market-based measurement of the FSLIC's true income. The second essay shows that the potential market failure modeled by Diamond and Dybvig can easily be rectified without taxpayer-backed government deposit insurance if one relaxes their arbitrarily imposed "sequential servicing constraint" and uses a "contingent bonus contract." The purpose of this second essay is merely to demonstrate that the Diamond and Dybvig model does not constitute evidence of what they claim. The Diamond and Dybvig model therefore does not make the case for a continuation of federal deposit insurance in the wake of the government deposit insurance debacle.

Zarruk, Emilio R. 1989. Bank Spread with Uncertain Deposit Level and Risk Aversion. *Journal of Banking and Finance* 13, no. 6:797–810.

This paper derives a model of the banking firm under uncertainty and risk aversion. The selection of the bank's optimal spread between loan and deposit rates is emphasized. The model's results provide some implications for bank asset quality, capital regulation, and deposit insurance. For example, it is shown that increases in the level of equity capital tend to increase the bank's spread under decreasing absolute risk aversion. This implies an improvement in bank asset quality. On the other hand, as the deposit supply function becomes more

volatile, the bank's spread narrows, which implies a decline in the quality of the bank's assets. (©1999 EconLit)

Zarruk, Emilio R., and Jeff Madura. 1992. Optimal Bank Interest Margin under Capital Regulation and Deposit Insurance. *Journal of Financial and Quantitative Analysis* 27, no. 1:143-49.

This paper examines the relationships among capital regulation, deposit insurance, and the optimal bank interest margin. In a model where loan losses are the source of uncertainty, changes in capital regulation or deposit insurance premiums have direct effects on the bank's interest margin. An increase in bank capital requirements or in deposit insurance premiums results in a reduced interest margin under nonincreasing risk aversion. Comparative static analysis also explores the relation between asset quality and interest margin. It is shown that a mean-preserving spread of the distribution of loan losses results in a reduced margin. (©1999 EconLit)