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## The Spread of Deposit Insurance and the Global Rise in Bank Asset Risk since the 1970s

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**F**or the past three decades, a vast amount of literature has developed on the adoption and expansion of deposit insurance and its role in increasing the systemic insolvency risk of banking systems.

This literature has shown that the installation of deposit insurance or an expansion of its generosity tends to be associated with higher asset risk, higher leverage, and a greater probability of a banking crisis, suggesting that the rise of deposit insurance may be one of the contributors to the pandemic of unprecedentedly frequent and severe banking crises around the world.

Several studies also examine the origins of deposit insurance, the extent of its coverage, and other design features of deposit insurance systems. Interestingly, however, contributions to the two literatures—on the causes and consequences of deposit insurance, respectively—have occurred largely independently from one another.

We show that it is useful to address the questions of causes and consequences jointly within a common empirical model, which uses the identification of the causal influences on asset risk of deposit insurance adoption and expansion to improve the measurement of its consequences, especially consequences for systemic bank insolvency crises. In doing so, we also seek to avoid endogeneity bias that can confound identification of the impact of deposit insurance on risk. Studies of the consequences of deposit insurance for increased crisis risk have relied on risk comparisons that fail to rule out endogeneity bias related to omitted variables and reverse causality. It is conceivable that some of the observed relationship between deposit insurance and risk taking could be driven by influences that exogenously raise risk and that also raise (or initiate) deposit insurance coverage as a response to increased risk.

To address that problem, we note that many of the

drivers of deposit insurance adoption and generosity are international influences that can plausibly serve as exogenous determinants with respect to measuring the risk-increasing consequences of deposit insurance. That is, these international influences should not reflect local economic changes that could cause local risks to rise.

Theory suggests that deposit insurance can either increase or decrease banking system risk. On the one hand, by removing the incentive of depositors to withdraw funds from banks when bank risk increases, credible deposit insurance can reduce liquidity risk and make the banking system more stable. On the other hand, deposit insurance may be a source of “moral hazard”—it may increase the risk appetite of banks because their ability to attract deposits no longer reflects the risk of their portfolios. Deposit insurance can also cause “adverse selection,” for instance, as the result of unwitting increases in risk when the absence of market discipline permits poor risk managers to operate banks. If the capital position and asset risk of banks are not regulated and supervised carefully, the insurance-induced risk taking may increase insolvency risk and undermine financial stability in the long run, despite the liquidity risk reductions that deposit insurance creates.

We construct a three-step model of the origins of deposit insurance, its changing generosity over time, and the consequences of deposit insurance risk taking, which treats all three aspects as endogenous variables. In the first two steps of the model, international influences predict the origins and generosity of deposit insurance coverage. We develop a new measure of the generosity of deposit insurance coverage, which we use as the dependent variable in the second step of the model. In the third step of the model, instrumented values of the predicted generosity of deposit insurance are used to explain observed outcomes of banking systems.

From the perspective of a theory of insolvency risk, the likelihood of failure is increasing in leverage and asset risk, and asset risk is increasing in the proportion of risky assets relative to cash assets and in the riskiness of risky assets (i.e., the riskiness of loans). As such, balance sheet information on liability and asset structures has first-order importance for insolvency risk. We consider three complementary balance sheet measures: the loans-to-assets ratio of a country’s banks in a given year, the extent of household lending (or mortgage lending) of a country’s banks in a given year (measured by the proportion of bank loans to households, or the proportion of bank loans that are mortgage loans), and the debt-to-assets ratio of a country’s banks in a given year. The first is an assets-side measure that captures risk increases resulting from a

smaller proportion of low-risk, cash assets.

The second measure (mortgage lending or household lending) captures systemic loan portfolio risk increases due to mortgage lending exposure. Data on household loans primarily reflect mortgage lending and are available for a broader sample than narrowly defined mortgage lending. Although mortgages may not be high-risk loans for individual banks during normal times, there is substantial evidence that they are high-risk assets from the standpoint of systemic insolvency risk. When real estate prices decline, such declines can have widespread and severe implications for mortgage portfolios. For that reason, mortgage lending may entail greater systemic risk to the banking system. Several recent studies point to the importance of mortgage lending in promoting systemic risk, and our findings of a positive connection between mortgage lending and crisis risk also corroborate that view.

Including the extent of household and mortgage lending in our analysis is useful for two reasons. First, if a banking system’s debt-to-assets and loans-to-assets both rose, but the riskiness of loans fell sufficiently, bank failure risk could remain unchanged. Thus, it is important to consider loan risk alongside leverage and the loans-to-assets ratio when gauging changes in banking system risk. Second, mortgage loans are not only systemically risky, they are also a politically important category of lending. By tracking how mortgage loans respond to changes in deposit insurance, we can consider the possibility that the politics of deposit insurance and the politics of subsidizing mortgage credit interact. It is commonly recognized as standard economic theory to consider deposit insurance, in the absence of sufficiently strong prudential regulation, as providing a put option subsidy to banks. The rents from that subsidy can be used to fund other subsidies that banks may be encouraged to provide to borrowers. We hypothesize that the rise of deposit insurance (which, in the absence of prudential safeguards, provides a subsidy for risk that accrues to banks) makes it easier for governments to use banking systems as a means of subsidizing politically influential household mortgage borrowers (because the government can pressure banks to share the deposit insurance protection subsidy with a politically favored class of borrowers). By including the proportion of household and mortgage lending in our model, we are able to test the hypothesis that rising deposit insurance promotes increases in asset risk through multiple channels: the rise in loans-to-assets, and the increased lending risk associated with the lack of loan diversification and reduced loan liquidity associated with a greater focus on real estate lending. Our research is the first to study the real

estate lending channel of deposit insurance.

The third measure of systemic risk we examine is a liabilities-side measure that captures bank risk increases that result from rising leverage in the banking system. In theory, of course, a rise in any one of these measures may not increase bank insolvency risk if that rise is offset by a sufficient decline in other measures. As we will show, however, the observed increases in systemic insolvency risk measured by one or more indicators is not offset by declines in any other risk measures.

Our findings can be summarized as follows. First, we find that international influences on the expansion of deposit insurance protection (captured by interactions among countries that have adopted deposit insurance and measures that account for endorsement or mandate from the IMF, World Bank, and the European Union) robustly predict the creation and expansion of deposit insurance coverage. We also find that it is important to consider other variables (which serve as controls in the three-step regression model) that influence the propensity to enact or expand deposit insurance. In particular, deposit insurance is more likely to be enacted or to expand during recessions and in the wake of a major banking crisis.

Second, we find that exogenously determined increases in deposit insurance coverage predict increases in the loans-to-assets ratio. The effect is positive and statistically significant.

Third, with respect to the effects of exogenous increases of deposit insurance on mortgage lending, we find that exogenous increases in deposit insurance result in a higher proportion of household loans or mortgage loans. This suggests that deposit insurance not only expands overall lending relative to the size of banking systems, but that it does so in a way that favors risky household and mortgage lending. Once deposit insurance frees banks from the constraints of market discipline, governments may be more able to use the regulation of the banking system as a means of targeting credit subsidies to household borrowers.

Fourth, we find that the increase in overall lending and the proportion of mortgage lending caused by deposit insurance expansion are not offset by reductions in leverage. On the contrary, these increases in deposit insurance coverage tend to raise leverage ratios.

Having identified endogenous increase in overall lending and the proportion of mortgage in response to increased deposit insurance coverage, we then consider the macroeconomic significance of those increases and link them to the likelihood of crises. First, we find that exogenous increases in the generosity of deposit insurance not only predict higher overall lending and a higher proportion of mortgage lending, but also predict higher lending and mortgage lending as a proportion of GDP. Second, consistent with prior literature, we find (after controlling for other factors) that exogenously more generous deposit insurance tends to result in a significantly greater likelihood and severity of crises. Third, we find that exogenous increases in overall lending and mortgage lending produced by greater international influences promoting deposit insurance are also associated with the greater likelihood and severity of crises.

Our results on asset risk should be interpreted as identifying an effect of risk taking on bank assets that raises insolvency risk and crisis risk in response to increases in the generosity of explicit deposit insurance. Our estimations capture the causal effect of increased deposit insurance generosity. Nevertheless, our results are silent on whether the generosity of deposit insurance affects the liquidity risk of banking systems.

## NOTE:

This research brief is based on Charles W. Calomiris and Sophia Chen, “The Spread of Deposit Insurance and the Global Rise in Bank Asset Risk since the 1970s,” which is available at SSRN, <http://ssrn.com/abstract=3297294>.