Can a Safety Net Subsidy Be Contained?

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In 1997 the U.S. Congress introduced legislation that would broaden opportunities for combining banks with nonbank financial and nonfinancial businesses.[1] There has been some concern, however, that such combinations would possibly allow a safety net subsidy that banks might receive to spill over to nonbanking companies affiliated with banks. In response to the concern, supporters of this reform have suggested various proposals to try to keep a subsidy within the bank itself.[2] Two mechanisms, in particular, have received considerable attention: the first would restrict nonbanking activities to bank holding company (BHC) subsidiaries and deny them to bank subsidiaries; the second would allow nonbank activities in bank subsidiaries but restrict intracompany transactions.[3]

In this article, I assess the potential of these proposals to contain any existing safety net subsidy, without evaluating the usefulness of the proposals for other purposes.[4] I explain how supervisory and regulatory policies that support

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[1] For example, one might imagine a large financial supermarket offering commercial banking, investment banking, and insurance services, together with some nonfinancial services, such as manufacturing.

[2] Discussions of such proposals can be found in Greenspan (1997), Helfer (1997), Kwast and Passmore (1997), Ludwig (1997), and Whalen (1997).

[3] Throughout this article a BHC subsidiary not owned by the bank will be called either a bank affiliate or a BHC subsidiary. A company owned directly by the bank itself will be called a bank subsidiary.

[4] Reasons for employing intracompany transaction restrictions are discussed more generally in Walter (1996).

the bank safety net may inadvertently subsidize banks. Further, I illustrate how banking organizations can themselves benefit by shifting a subsidy to affiliated institutions, potentially enlarging the subsidy in the process. Although banks *can* pass along a subsidy, restrictions may effectively prevent the subsidy from shifting to institutions affiliated with banks. Nonetheless, competition will tend to cause banks to shift a subsidy to bank borrowers and depositors.

1. THE POTENTIAL FOR A SAFETY NET SUBSIDY

There are three possible means of bank subsidy mentioned in most discussions: underpriced deposit insurance, an unpriced line of credit from the Federal Reserve (the Fed) discount window, and underpriced daylight overdraft loans from the Fed.[5] Additionally, a fourth subsidy, available to the largest banks, exists because of a government policy that protects (free of charge) uninsured creditors of banks considered "too-big-to-fail." The following examines the four ways in which banks could be subsidized. Regulatory expenses borne by banks may equal or even exceed the total subsidy received by these four means. If that situation occurs, then, on net, banks receive no government subsidy.

Underpriced Deposit Insurance

The Federal Deposit Insurance Corporation (FDIC) insures bank deposits against losses produced by bank failures. For its insurance protection the FDIC charges banks a premium. But does the insurance premium adequately compensate the FDIC for the risk it bears? In other words does premium income equal expected claims from bank failures? If not, deposit insurance subsidizes banks. The question can be broken down to two sub-questions. First, on average are premiums set appropriately? Second, does the premium rise commensurate with bank riskiness? If the answer to the first question is no, then the banking industry as a whole receives a subsidy from deposit insurance. Ultimately the subsidy comes from taxpayers since deposit insurance is backed by the full faith and credit of the government. If the answer to the second question is no, then risky banks receive a subsidy from deposit insurance, regardless of whether the banking industry as a whole receives a subsidy. In either case, the subsidy might be passed along to bank affiliates or subsidiaries. As discussed below, evidence on the first question is inconclusive. In contrast, the evidence on the second question indicates fairly clearly that the riskiest banks receive a subsidy from deposit insurance.

[5] See, for example, Furlong (1997) and Helfer (1997), p. 13.

Does the Banking Industry as a Whole Receive a Subsidy?

In 1977 Robert Merton proposed a technique for estimating the fair deposit insurance premium based on a recent finding in the theory of finance. In his pathbreaking article, Merton demonstrated that the recently advanced Black-Scholes formula for options pricing could be applied to determining the actuarially fair premium for deposit insurance. The fair deposit premium here is the expected claims cost to the FDIC of providing the insurance guarantee. Using the techniques proposed by Merton, a number of analysts went on to estimate, empirically, this fair premium for samples of banks. By comparing these estimates with the FDIC's actual premia, analysts drew conclusions about the fairness of FDIC insurance premia. In other words, their findings purported to reveal whether deposit insurance subsidizes banks. Unfortunately, their results differ significantly depending on various maintained assumptions.

Using 1979 and 1980 bank accounting and stock price data, Marcus and Shaked (1984) found that "FDIC [premium] rates greatly exceed estimates of the fair value of the insurance derived from the . . . option-pricing model" (p. 446). These results imply that FDIC premiums were on average a tax on banks, not a subsidy. With 1983 data, Ronn and Verma (1986) use similar techniques but maintain different assumptions about interest rates and FDIC troubled-bank assistance policies. Their modifications lead to higher estimates of the fair premium. Specifically, they produce a weighted-average estimate of the fair premium that is close to, though slightly above, the premium actually collected by the FDIC.[6] Their estimates indicate that on average banks were receiving a subsidy, though a small one.

Pennachi (1987) argues that the FDIC's liability, and therefore the fair deposit insurance premium, depends on how much regulatory control supervisors exercise over bank capital levels. If supervisors are willing and able to require capital-deficient banks to add capital, the FDIC's insurance liability and the fair insurance premium will be relatively small. If supervisors are less willing or unable to require additions to capital, then the fair insurance premium is higher. Pennachi constructs a deposit insurance model incorporating "either the assumption that regulators have full control or no control" (p. 341), and he finds that the estimated fair premium depends crucially on this assumption. Under the full control assumption (implicitly adopted by Marcus and Shaked [1984]), Pennachi finds that the banks in his sample are consistently overcharged by considerable margins. But under the no-control assumption, banks are consistently undercharged by considerable margins. Since Pennachi did not attempt

[6] Ronn and Verma's estimate of the fair deposit premium for the average bank in their 1983 sample of banks is 0.0808 percent (Table I). The FDIC's 1983 actual premium net of rebates was 0.0714 percent (FDIC 1995, p. 109).

to measure the extent of regulatory control, his model did not show whether banks received a subsidy from deposit insurance.

Using banking financial data from 1989, Epps, Pulley, and Humphrey (1996) estimated deposit insurance premia that would be fair (neither excessive nor deficient) for a sample of large banks. They found that the median fair deposit insurance premium was 0.0107 percent of deposits (1.07 cents per $100).[7] This figure compares to the FDIC's premium that year of 0.0833 percent of deposits (8.33 cents per $100). The finding suggests that banks were significantly overcharged for deposit insurance.

More recently, Whalen (1997) developed from the options-pricing model various estimates of the mean and median fair premium using 1996 banking data and assuming various closure thresholds. The closure threshold is that particular magnitude of the ratio of a bank's market value of assets divided by the value of liabilities at which supervisors close problem institutions. A closure ratio of one means that supervisors close banks just when they become insolvent, in other words, when liabilities are equal to assets. A ratio of 0.90 means banks are closed when remaining assets amount to only 90 percent of liabilities. Given closure ratios from 1.0 to 0.90, Whalen's estimate of mean fair deposit insurance premium rises from near-zero up to 0.30 percent (30 cents per $100). His estimates of the median are between zero and 0.04 percent. The actual FDIC premium for most banks in 1996 was zero, so that the fair deposit premium is also a measure of the deposit insurance subsidy. Consequently, Whalen's subsidy estimates range from zero to 30 basis points, depending on the closure threshold assumed. Overall, Whalen concludes that the subsidy is small.

In summary, the studies produce widely varying conclusions about whether, on average, banks receive a subsidy from deposit insurance. As noted in Gorton and Rosen (1995, p. 1379, footnote 8), "empirical research has not reached a consensus on whether deposit insurance is underpriced."

Do the Riskiest Banks Receive a Subsidy?

Until 1993, the FDIC charged banks an insurance premium that varied only with the amount of bank deposits, so that the premium was insensitive to bank riskiness. Under this flat premium system, if rates were set such that, on average, banks were neither overcharged nor undercharged, the riskiest banks were subsidized and the least-risky banks taxed. The options-pricing research cited above produced uniform empirical evidence that the riskiest banks received a deposit insurance subsidy during the era in which the FDIC charged flat premiums.

In response to the Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA), at the beginning of 1993 the FDIC replaced its flat insurance

[7] Median fair insurance premium from Epps, Pulley, and Humphrey (1996), Table 1, p. 713.

premium schedule with premia that vary with a particular estimate of bank risk. With the change, FDIC premia depend on two measures of bank soundness: bank capital and the bank's grade on its latest safety and soundness examination. Higher premia are charged to banks with weak capital and poor examination grades, while lower premia are charged to banks with strong capital and high examination grades. Nonetheless, when Epps, et al. ran tests using rates that vary with bank risk, similar to the way FDIC premiums varied beginning in 1993, the riskiest banks received a subsidy from deposit insurance.

Discount Window Access

While deposit insurance is perhaps the most obvious possible means of subsidy, other potential means exist. One is loans from the Federal Reserve. Fed discount window loans might provide a subsidy in two ways. First, banks might be subsidized simply because the rate charged on discount window loans is too low. In fact, the rate on discount window loans is typically set below interest rates on other comparable loans. For example, on average, from 1986 through 1996, the Fed's discount rate was 75 basis points below the federal funds rate, the rate banks charge on overnight loans to each other.[8] Yet, a portion of the difference between the federal funds rate and the discount rate is consumed by nonprice costs that the Fed imposes on banks borrowing at the discount window (Goodfriend 1983, pp. 343–48; Mengle 1993, p. 27). Further, discount window loans are typically collateralized by low-risk assets, while fed funds loans are unsecured (Mengle 1993, pp. 25–26; Goodfriend and Whelpley 1993, p. 9). Nevertheless, some of the difference between the discount rate and the fed funds rate may remain as a subsidy available to banks from discount window loans.

Second, whether or not a bank borrows from the discount window, having access to the window is valuable. Every bank has the privilege to borrow from the Fed to cover liquidity difficulties. In effect, banks have a standing line of credit with the Fed. The line of credit is beneficial because a bank's creditors know that, in the event of bank liquidity difficulties, funding is available. Banks' creditors charge a lower rate of interest than they would without this assurance. While nonbanks typically must pay a fee to maintain the guarantee of available credit, the Fed imposes no similar fee.[9] The free guarantee provides a subsidy.

[8] Average annual federal funds rates and discount rates (Board of Governors 1989, 1992, 1995, and 1998b, Table 1.35).

[9] According to a search of recent news stories in the financial press, fees for such credit lines range from 5 to 20 basis points of the dollar amount of loan commitment. See, for example, Dunaief (1997) or Goodwin (1994).

Fedwire Overdrafts

Access to the Federal Reserve's Fedwire payments system is another possible source of subsidy. Specifically, by running daylight overdrafts, banks may be able to borrow at below-market rates.[10]

Fedwire operates through bank reserve accounts held at the Federal Reserve. By shifting funds from one bank's reserve account to another bank's reserve account, the Fed provides a means by which banks make payments among themselves. Yet, for a Fedwire transfer to take place, the sending bank need not have sufficient funds in its account to cover the transfer. Banks' reserve accounts are allowed to have a negative balance during the day (a daylight overdraft) so long as the deficit is made up by the close of business.[11] Additionally, the Fed's Regulation J specifies that the receiving bank is guaranteed payment regardless of whether the overdraft is ultimately covered by the sending bank. In effect, the Fed makes an intraday loan to the sending bank, which is used by the sending bank to make payment to the receiving bank until the sending bank's reserve account returns to a positive balance. The amount of the loan is measured by the size of the overdraft. Such loans are valuable to banks since they mean that banks can hold fewer excess reserves and that they can invest fewer resources in assuring that Fedwire payments match Fedwire receipts throughout the day (Mengle, Humphrey, and Summers 1987). Typically, the dollar amount of daylight overdrafts of all banks is quite large. For example, in 1996, daylight overdrafts averaged $46 billion per day (Board of Governors 1997b, p. 206).

The interest rate the Fed charges for these loans, its daylight overdraft fee, was zero until 1994 and remains low compared to short-term loan rates such as the fed funds rate. For example, since late 1997 the rate in annual terms has been 27 basis points, meaning 0.27 percent. This compares to an average fed funds rate of 5.46 percent in 1997 (Board of Governors 1998a,

[10] Fedwire access could grant banks a small subsidy by one other means. When A uses his bank account to effect a $100 payment to B, four parties must fulfill payment obligations in order for B to receive the promised $100: (1) A must place $100 in his bank account, (2) A's bank must provide the Fed with $100, (3) the Fed must shift the $100 to B's bank, and (4) B's bank must deposit $100 in B's account. When A makes a $100 payment to B using an account at a nonbank, for example, A's checkable account with his mutual fund, one additional party is added to the list of those involved in the payment stream. That party is the nonbank. The nonbank must provide $100 to its bank, which then passes it on to the Fed. The remaining steps of the process, from step 3 on, transpire as before. The additional step is necessary because nonbanks do not have direct access to Fedwire. Banks' direct access to Fedwire grants them a slight advantage when competing with nonbanks for transaction accounts. One party, which might fail to meet its payment obligation, is removed from the payment stream. If Fedwire fees fail to offset the advantage, banks are subsidized by direct Fedwire access.

[11] Since 1986, the Fed has placed limits on the dollar amount of a bank's daylight overdrafts. The limits are set based on the bank's capital and its own assessment of its creditworthiness (Hancock and Wilcox 1996, Board of Governors 1994, and Richards 1995).

p. A23). The much lower rate on daylight overdraft loans implies a significant subsidy.[12,13]

Too-Big-To-Fail

Finally, a type of subsidy available to a limited number of banks is that which emerges from a government policy that treats certain large banks as being too-big-to-fail (TBTF). In the event that one of these banks becomes insolvent, an infusion of capital may prevent or delay its failure. While stockholders may suffer losses, uninsured depositors and creditors are likely to be protected. Because it is impossible to predict with certainty which banks might receive government aid, the TBTF policy constitutes an implicit, ambiguous guarantee that is difficult to measure and price. Clearly TBTF banks will pay lower interest rates to uninsured depositors and creditors than smaller banks that will not receive such treatment.

The TBTF policy is motivated by a concern that the failure of one of the country's largest banks will create widespread financial problems. The financial problems could include (1) the failure of other banks that hold deposits with the initial failing bank, (2) runs on other banks, or (3) the collapse of payments systems.[14]

The manner in which the FDIC handled the 1984 insolvency of Continental Illinois National Bank and Trust Company illustrates the use of the TBTF policy. Continental was the seventh largest U.S. bank, with assets of about $41 billion. The FDIC arranged a TBTF-policy rescue for Continental because of fears that if the agency allowed losses on Continental's uninsured deposits, other banks and financial institutions might face serious financial difficulties. Specifically, 2,300 banks held uninsured correspondent balances with Continental. For some of these banks, balances were large relative to capital. Further, there was concern that other large, troubled banks might succumb to runs by their uninsured depositors if such depositors at Continental suffered losses.

Continental's problems came to light in 1982 when the bank began suffering large and growing loan losses. A significant portion of the losses were on energy industry loans sold to Continental by Penn Square Bank of Oklahoma City, a bank that failed in July 1982. By early 1984, Continental's nonperforming loans had reached $2.3 billion. In early May of that year, following widely

[12] See Mengle, Humphrey, and Summers (1987), pp. 3–14, for a discussion of various alternative methods that might be used to estimate the appropriate (nonsubsidizing) overdraft fee.

[13] Many Fedwire payments and therefore daylight overdrafts are motivated by the prohibition of interest payments on corporate demand deposits and of interest on required reserves held with the Fed. One might argue that overdrafts do not represent a subsidy since they occur as banks or their customers attempt to avoid costly regulations. Yet, given the existence of the regulations, the bank can lower its costs by overdrafting, so it receives a subsidy.

[14] The possible problems caused by a large bank's failure are discussed in Wall (1993).

reported rumors of its impending insolvency, the bank began suffering deposit withdrawals by large uninsured depositors. Within ten days, these withdrawals amounted to $6 billion. Since insured deposits accounted for only about $3 billion of Continental's funds, continued runs by uninsured depositors would quickly close it down.

On May 17, 1984, the FDIC, along with a group of major U.S. banks, provided interim assistance in the form of a $2 billion infusion, allowing Continental to continue operations. In July 1984, the FDIC implemented a permanent plan for assistance: a new management team would be installed, the FDIC would inject $1 billion in capital, as well as purchase bad loans with a face value of $5.1 billion for $3.5 billion, and the Federal Reserve and major private banks would arrange a continuation of credit lines. Although Continental's shareholders lost most of their equity, Continental's creditors and depositors, both insured and uninsured, were protected from loss.[15]

The Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA) established requirements restricting the ability of bank supervisors to employ the TBTF policy.[16] The policy can still be employed, however. Section 141 of FDICIA requires the FDIC to determine and employ the least-costly resolution method. Further, this section of the act prohibits the FDIC, when resolving a troubled bank, from protecting uninsured depositors and the bank's other creditors if doing so adds to the expense of resolution. Yet, section 141 grants an exception to these rules. The exception is when the FDIC determines that resolving the troubled bank without protecting uninsured depositors or creditors would have serious effects on economic conditions or financial stability, that is, in cases where the bank essentially is deemed TBTF. Only when the FDIC's Board of Directors, the Board of Governors of the Federal Reserve, and the Secretary of the Treasury in consultation with the President agree to the TBTF exception is that determination allowed. Any decision to employ TBTF is to be reviewed by the General Accounting Office and once employed, the FDIC must recover its losses from a special assessment on insured banks. Furthermore, section 142 of the act restricts the ability of the Fed to delay closure of failing banks through discount window loans (Wall 1993; 12 U.S.C.A. 347b).

For large, low-risk banks the TBTF subsidy is by definition quite small. Interest rates that uninsured depositors and other creditors charge such banks will be only slightly lower due to TBTF backing. In contrast, a large risky bank, one likely to suffer solvency troubles in the near future, will receive large benefits in terms of lowered interest rates if uninsured depositors and creditors believe the bank may be deemed TBTF.

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[15] Background on Continental's rescue from FDIC (1984), pp. 3–6, Sprague (1986), pp. 109–212, and U.S. Congress (1985), pp. 163–97.

[16] See Wall (1993) for a description of TBTF under FDICIA.

Offsetting Costs

Regulatory costs to banks may offset any subsidy provided by these four means. As a result, there may be little net subsidy to leak, or spill over, from the bank.

As discussed in Whalen (1997), estimates of regulatory costs are rough at best. Nevertheless, the available estimates tend to be large relative to estimates of banks' subsidy from deposit insurance (no estimates have been made of the size of other sources of banks' subsidy). According to Whalen's estimates, regulatory costs exceed the deposit insurance subsidy for most banks.

Still, the available estimates of regulatory costs, including those used by Whalen, fail to separate fixed from variable regulatory costs. As a result, no estimates of the size of variable regulatory costs exist. Yet, while it might appear that no subsidy is available to leak if total regulatory costs exceed the gross subsidy, only variable costs are important to a bank when it decides whether it benefits by passing subsidized funds on to affiliates. In deciding whether to take advantage of a subsidy (and whether to pass it on to an affiliate) banks should care little about fixed costs, since they already have incurred these costs and must bear them regardless of the banks' choices, other than the choice to stay in business. Yet, fixed costs may account for a significant portion of total regulatory costs, as suggested by evidence that small banks have higher ratios of regulatory costs to deposits than do large banks.[17] If fixed costs are a large proportion of total costs, then the deposit insurance subsidy may well exceed variable costs.[18]

In summary, for individual banks and for the banking industry as a whole, it is difficult to measure accurately both the subsidy and the offsetting regulatory costs. The reasons for the difficulty are that (1) there are several means by which banks are subsidized, (2) the amount of the subsidy a bank receives from any of these means tends to increase with bank risk, which varies from bank to bank and over time, and (3) bank risk is inherently difficult for outsiders to measure. As a result, regulators cannot be sure whether a net subsidy might spill over from banks. If shifting the subsidy to affiliates benefits banking companies, making such shifts (subsidy leakage) likely, and if subsidy leakage has adverse consequences, then costly regulatory efforts to contain the subsidy may be worthwhile.

[17] For a review of studies on the compliance costs of banking regulation, see Elliehausen and Lowrey (1997).

[18] For further discussion of fixed versus variable regulatory costs, see Kwast and Passmore (1997).

2. BENEFITS TO BANKING ORGANIZATIONS FROM SHIFTING A SUBSIDY

The FDIC bears a portion of the default risk of any bank loan. When a bank fails, the FDIC, as insurer of deposits, takes over the failed bank's assets and liabilities. Because banks share with the FDIC the risk of default on their loans, banks' expected risk-adjusted rate of return on loans is higher than it would be without FDIC deposit insurance. The lower a bank's capital, and the greater the riskiness of its loan portfolio, the greater the risk borne by the FDIC, and the greater the deposit insurance enhancement to the bank's expected returns on loans. Unless the bank's expected return enhancement is completely offset by the FDIC's deposit insurance premium or by tighter supervisory and regulatory restrictions, the bank receives a subsidy.

While the subsidy accrues directly to the bank as higher loan returns than those received by an unsubsidized lender, one might equivalently think of the subsidy as accruing in the form of reduced funding costs. In the absence of deposit insurance, depositors would demand that their interest rate include a risk premium to compensate them for the chance that the bank's assets might default, rendering the bank incapable of repaying depositors. If deposit insurance premia do not likewise compensate the FDIC for this risk, then the bank is paying too little for its deposits in interest plus insurance premium expenses.

Like the subsidy from deposit insurance, similar subsidies—from TBTF, from access to the discount window, and from the ability to borrow from the Fed using daylight overdrafts—also increase with bank risk. The greater a bank's riskiness, the greater its reduction in interest costs from these sources.

If banks receive a subsidy allowing them to raise funds at below-market rates, banking companies can benefit by passing the advantage on to their nonbank subsidiaries (either bank affiliates or direct bank subsidiaries). By passing the subsidy on to these subsidiaries, BHC profits can be enhanced as their subsidiaries' costs decline. Costs incurred by subsidiaries decline when subsidized sources of funds replace market-priced sources. This benefit gives banking companies a strong incentive to replace market-priced funding with subsidized funding, in other words, to shift the subsidy to nonbanks. An example illustrates the holding company's benefit.

Imagine that because of the various subsidy sources banks can purchase funds at an interest rate 1/4 percent (25 basis points) lower than rates available to nonbanks. Imagine further that a bank holding company, Profitable Bancorporation, Inc., owns First National Bank. First National has deposits of $10 billion on which it pays 5.0 percent interest. Profitable has recently acquired a securities dealing company, Securities One, making the latter a Profitable subsidiary and First National's affiliate. Securities One funds its dealing activities with a $100 million debt issue for which it pays the market interest rate of 5.25 percent. Profitable's management quickly realizes that if First National

were to raise an additional $100 million, which it then lent to Securities One, the latter's borrowing costs would decline by $250,000. As a result, Profitable's income would rise by this same amount.

3. WHY CONTAIN A SUBSIDY?

Perhaps the most important reason for containing a subsidy is to prevent its enlargement. An enlarged subsidy means increased costs for taxpayers and greater misallocation of resources.

The aforementioned example shows that Profitable Bancorporation benefits as it enlarges its subsidy by funding its nonbank subsidiary with subsidized deposits. While Bancorporation gains, however, taxpayers lose. First National can borrow at below-market rates because its deposit insurance is underpriced relative to the risk imposed on the FDIC. So the cost to taxpayers, who ultimately back the FDIC, is the additional uncompensated risk they must bear for the $100 million First National raised to fund Securities One.

Another reason for containing the subsidy is to prevent nonbank affiliates from gaining the competitive advantage that leakage could impart. Nonbank access to subsidized funding, either through loans from the bank, or through the bank's equity investment in the nonbank, grants the nonbank an advantage not available to competitors who are not bank affiliated. The advantage encourages the growth of bank affiliates at the expense of other firms. Growth because of access to a subsidy, rather than because of some market advantage, is likely to lead to misallocation of resources.

4. THE TRANSFER OF SUBSIDIES WITHIN BANKING ORGANIZATIONS

There are three potential avenues through which intracompany subsidy transfers may occur: mispriced intracompany loans or asset purchases; dividend payments; and equity investments made at less than a market rate of return. In each case, existing or proposed regulations impose restrictions that tend to limit the opportunity for intracompany subsidy transfer.

Intracompany Loans and Asset Purchases

As discussed earlier, the most straightforward method by which a BHC might transfer funds is to have the bank lend its subsidized funds to its affiliate. Still, there are numerous less-direct means by which funds might be transferred. The bank might purchase assets, say, from its affiliate at greater-than-market prices. The difference between the market price of the purchased assets and the intracompany price paid can amount to a subsidized funds transfer from the bank to its affiliate.

Yet, statutory and regulatory restrictions limit the ability of banks to transfer subsidies through loans and asset purchases. For example, section 23A of the Federal Reserve Act places quantitative limits on a bank's transactions with its affiliates, including transactions such as loans to affiliates or asset purchases from them. Section 23B of the act specifies that such transactions must be made on market terms.[19] In 1996, the Comptroller of the Currency extended 23A and 23B beyond bank affiliates to bank subsidiaries as well (Comptroller of the Currency 1997, p. 25). Likewise, in 1997, the Fed proposed extending 23A and 23B to include subsidiaries.[20]

Dividends

While 23A and 23B restrict banks in their ability to lend or otherwise pass on their low-cost, or subsidized, funds directly to affiliates, still other means remain available. Banks could pass along subsidized funding through dividend payments.[21] Here's how. A bank could gather funds at subsidized rates and pass them to its affiliates and subsidiaries by paying dividends to the parent BHC. The parent might then pass the funds on to bank affiliates and subsidiaries by purchasing debt of these entities or through equity investments in them. In this way funds raised at subsidized rates could leak out to affiliates and subsidiaries and be substituted by the affiliate for more expensive, unsubsidized funding sources.

Though banks are able to pass along dividend payments, the law does limit the amount of these payments to their parent holding companies. For example, except when regulators grant exemptions, dividends of national and state-member banks are limited to no more than the sum of the current year's profits plus the past two years' retained profits.[22] While these limits might somewhat restrict the efficacy of dividends as a means of subsidy transfer, they cannot completely forestall such use. For a bank that is larger than its affiliated nonbank, the sum of several years' profits may amount to a large portion of the nonbank's liabilities. Consequently, the bank could provide a significant share of the affiliate's funding.

[19] See Walter (1996) for a discussion of sections 23A and 23B and their purposes.

[20] The Fed proposal would define a bank subsidiary as an affiliate if the subsidiary is engaged in activities not permissible to the bank, in other words, nonbanking activities. Consequently, the same transaction limits that apply to bank affiliates would also apply to bank subsidiaries.

[21] Comptroller of the Currency Ludwig mentions bank dividend payments as a possible means of subsidy leakage in his statement on July 17, 1997 (Ludwig 1997). Also see Williams (1997).

[22] Board of Governors 1997a, section 4070.1.

Equity Investments of Banks in Direct Subsidiaries

Equity invested by a bank in its subsidiary, like intracompany loans, provides another vehicle for shifting banks' subsidized funds to the nonbank. By doing so, the BHC increases its subsidy.

Proposals that would allow nonbanking activities in BHC subsidiaries only, and prohibit them in bank subsidiaries, would largely exclude subsidy transfers via equity investment. Transfers are excluded because section 23A of the Federal Reserve Act allows banks to make only very limited equity investments in their holding company affiliates.

The Office of the Comptroller of the Currency (OCC) has implemented another method of preventing subsidized funds from passing through to nonbanks. For new nonbanking activities conducted in bank subsidiaries, the OCC requires that all equity invested by banks in subsidiaries be deducted from bank capital when calculating minimum capital requirements (Comptroller of the Currency 1997, p. 25). Ultimately, this means that, at least for banks with binding regulatory capital constraints, each dollar invested as equity in its subsidiary must come from corresponding equity invested in the bank by its stockholders. Since stockholders are not typically protected from loss by the safety net, they receive no subsidy that might be transferred to the bank.

Nevertheless, given the OCC's requirement, a subsidy might yet flow through bank equity investments in nonbank subsidiaries. Stockholders may come out better when a TBTF bank is rescued than if the bank is allowed to fail. Therefore they demand a lower rate of return from the TBTF bank. The result is that equity invested in the bank and passed on to the nonbank carries some subsidy. When the nonbank is owned by a BHC instead of a bank, equity is not funneled through the bank first, so it is granted no TBTF protection. For this reason the BHC structure may provide a somewhat tighter seal against subsidy leakage.

5. THE ULTIMATE BENEFICIARIES OF A SAFETY NET SUBSIDY

A fundamental point about a safety net subsidy to banks is that its incidence will be determined by conditions in the markets for bank loans and deposits. That is to say, competition among banks will tend to make borrowers and depositors (whether businesses or individuals) the ultimate beneficiaries of any safety net subsidy. The idea is that a per-dollar subsidy would have the effect of lowering the marginal cost of bank loans. And competition among banks would tend to induce them to pass this cost savings along. Even if restrictions on intracompany transactions and BHC structures succeed in preventing the transfer of a subsidy within a banking organization, competitive pressure will

tend to dissipate a subsidy in broader markets and will cause the subsidy to be enlarged.

To the extent that banking markets are imperfectly competitive, banks may capture some of the subsidy. But even in this case, the subsidy would be contained not by restrictions on intracompany transactions and structures but by the market power of banks. The following discussion focuses on the perfectly competitive case, using Figure 1 to show how supply and demand conditions in banking markets determine the size of the bank safety net subsidy in equilibrium and its distribution between bank borrowers and depositors.

A per-dollar-of-deposits safety net subsidy is equivalent to a negative sales (or ad valorem) tax.[23] One can analyze the effects of a safety net subsidy by applying a figure frequently used to analyze the effects of taxation.[24]

Figure 1 plots supply and demand conditions for a perfectly competitive banking industry. The horizontal axis measures the quantity of bank loans as well as the quantity of loanable funds that banks raise. The vertical axis measures the interest rate banks charge for loans and the per-dollar cost to banks of raising loanable funds. Banks' marginal cost of funds increases as they pay higher interest rates to attract more funds from depositors, leading to an upward sloping cost curve as depicted by MC. Banks' marginal cost depends not only on the interest rate they pay depositors but on other costs, such as deposit insurance premia, employees' salaries, and operating expenses. Borrowers' demand curve for loans is LD. The curve is downward sloping since borrowers will demand a larger quantity of loans as the loan interest rate declines. In competitive equilibrium the market price and quantity produced of a good are determined where the industry marginal cost curve (its supply curve) intersects the industry demand curve.[25]

Without a subsidy, the equilibrium is at point A. As noted earlier, there is no subsidy when fees and regulatory restrictions associated with the safety net are set just right. The introduction of a subsidy would shift banks' marginal cost curve down to MC′ by a vertical distance equal to the amount of the subsidy, the distance between points A and C.

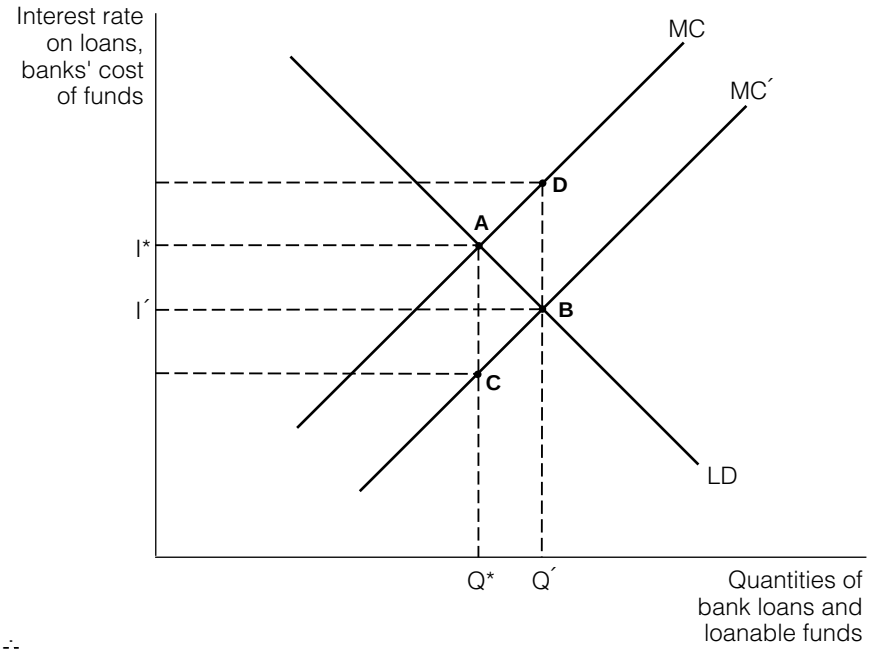
At the initial loan rate (I^*) and quantity of loans (Q^*) made by banks, the subsidy to the industry is the rectangle with height AC and length Q^*; and the entire subsidy is contained within banks. However, this loan rate/loan quantity combination is not an equilibrium because the marginal revenue from a loan

[23] For a discussion of tax incidence in the context of banking, see Fama (1985).

[24] See Henderson and Quandt (1971), pp. 124–26, and Hirshleifer (1976), pp. 31–33, for discussions of the effects of taxation.

[25] Firms produce only when price is greater than or equal to average variable cost, so the only relevant portion of the marginal cost curve is at or above the average cost curve. When price is below average variable cost, each transaction produces a loss, and firms exit the industry. In the long run an industry's competitive equilibrium will occur where marginal and average costs equal price.

Figure 1 Effects of a Subsidy



exceeds its marginal cost, and each bank will see an opportunity to expand its profits by making more loans. As banks compete to make additional loans, they will bid down the loan interest rate, causing the subsidy to leak to borrowers. Further, banks must gather more deposits in order to add loans. To obtain more deposits, interest rates on deposits must increase, causing the subsidy to leak to depositors also. Ultimately competition will tend to move the banking industry to an equilibrium at point B where the loan interest rate equals the marginal cost of funds. At point B, competition among banks has caused the subsidy to be transferred completely to borrowers and depositors.

Competition among banks not only transfers the subsidy but also causes subsidy enlargement and thereby increased taxpayer exposure. In the new equilibrium at point B, the subsidy is the rectangle with height DB and length Q'. Since DB equals AC, and Q' is greater than Q^*, the subsidy has been enlarged.

The extent of the enlargement depends on the interest elasticity of loan demand and the sensitivity of marginal cost with respect to the quantity of loans made. An interest elastic curve is one for which a small change in the interest rate leads to a large change in quantity, so that when plotted as in the

figure, an elastic curve will be close to horizontal. Interest elasticity generally increases as the availability of substitutes increases. Take, for example, the demand curve for bank loans. If borrowers enjoy an array of good nonbank substitutes, the loan demand curve will be interest elastic. With nonbanks offering good substitutes for bank loans, banks will lose many loan customers to nonbanks if they raise loan rates slightly. Likewise, banks may capture a large quantity of loan business from their many nonbank competitors by lowering their interest rates slightly below those of nonbank competitors. In such an environment a subsidy's downward shift of the MC curve, leading banks to drop loan interest rates, induces a large increase in the quantity of subsidized loans. Similarly, with an elastic (relatively flat) MC curve, meaning an MC with little upward slope, the subsidy will cause an almost one-for-one decline in the interest rate on loans so that the quantity of subsidized loans will increase significantly.

In recent decades bank customers gained expanded access to substitutes for bank loans and for bank deposits. As a result, both MC and LD curves are likely to have become more elastic. While regulatory efforts may have limited any safety net subsidy that might accrue to banking, in an environment of elastic MC and LD curves, any subsidy that may remain will tend to be augmented as banks compete to enlarge subsidized lending.

The figure not only illustrates the determination of the ultimate size of any safety net subsidy, but also can be used to identify the group to which the subsidy will tend to flow. The group of bank customers, either borrowers or depositors, with the least elastic curve will receive the greatest interest rate benefit from any subsidy leakage. For example, if the demand for loans is fairly interest inelastic, and the MC curve is elastic, then any downward shift in the MC curve due to a subsidy will produce a large decline in the interest rate charged to borrowers and little increase in rates paid to depositors. On the other hand, if the MC curve is inelastic, most of the subsidy will flow to depositors.

Banking observers have long noted that small business borrowers may have few substitutes for bank loans. For this reason small business borrowers are sometimes called "bank-dependent." As such, the demand curve for small business loans might be expected to be fairly inelastic. Other borrowers and most depositors are likely to have more elastic curves given the presence of wide nonbank deposit substitutes. Consequently, banks may distribute subsidies more than proportionally toward their small business loan customers.[26]

[26] A greater-than-proportional share of the subsidy can flow to a class of borrowers only if banks are able to segment their borrowers and charge different rates to each group.

6. CONCLUSION

Restrictions on intracompany transactions and requirements that limit nonbanking activities solely to holding company subsidiaries may effectively prevent a bank safety net subsidy from leaking to affiliates and subsidiaries. Nevertheless, banks operating in competitive markets may have little choice but to shift a subsidy to individual or business borrowers and depositors. So, if containing a subsidy is inherently difficult, it is particularly important that regulators limit the amount of any subsidy initially granted to banks. In practice, a bank safety net subsidy would go primarily to poorly capitalized banks. The best way to limit a subsidy is to subject the lending activities of poorly capitalized banks to close supervision and regulation. Unfortunately, it is more difficult and costly to closely supervise undercapitalized banks than to restrict certain types of transactions or affiliations. Still, a subsidy may be necessary to guard against systemic risk in banking. If so, then we should understand that the subsidy cannot be contained in the bank.

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