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Extended shareholder liability as a means to constrain moral hazard in insured banks

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ABSTRACT

Extended liability for bank shareholders offers a possible method for mitigating moral hazard in insured banks. The dominant approach to maintaining financial stability seeks to constrain banks' profit-maximizing responses to distorted incentives by means of ad hoc restrictions. By contrast, extended liability seeks to create healthier incentives. We examine how a variety of extended liability regimes worked historically, and consider leading concerns about their potential disadvantages. We conclude by discussing how extended liability avoids the difficulties of both 'microprudential' and 'macroprudential' approaches to systemic stability.

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1. Introduction

It has long been understood that deposit guarantees and “too big to fail” policies create a moral hazard problem – that they incentivize banks to take on too much risk by shielding depositors and shareholders from left-tail outcomes – in American banking (Kane, 1985; Stern & Feldman, 2004). Congress passed the Federal Deposit Insurance Corporation Improvement Act (FDICIA) in 1991 to try to mitigate the moral hazard problem by restricting forbearance and implicit subsidies for undercapitalized banks. But the mandates of the Act (particularly early intervention to reorganize undercapitalized banks) were ignored when they might have made a difference just before and during the recent financial crisis. Common recommendations for mitigating moral hazard would have the FDIC adopt the techniques that private insurance companies use (deductibles, coinsurance, lower effective limits on coverage), but these have not been adopted, in part because (as

seen in the UK case of Northern Rock) they give ordinary depositors reasons to run on suspect banks.

Today the principal methods by which regulators try to control excessive bank risk-taking are capital requirements and supervision, both of which large banks may learn to game in ways that make them ineffective in risk control. So long as creative risk-taking allows a bank to better exploit the option value of guarantees, attempts to reduce risk-taking by restricting particular activities and balance sheet entries would seem to be like squeezing a balloon to reduce its size. As Edward Kane (Kane, 2009, pp. 1–2) puts it, an optimizing US bank today seeks to “expand its access to implicit safety net subsidies” through “loophole mining” that uses “financial engineering techniques to exploit defects in government and counterparty supervision.”

Here we consider a different method for mitigating moral hazard: extended liability for bank shareholders. This reform does not seek to put additional legal *restrictions* on bank activities, but instead seeks to reduce banks' *incentives* to take excessive risks by at least partially neutralizing current safety-net subsidies to risk-taking. It shifts the risk of left-tail events, bank losses in excess of equity, from deposit-guarantee agencies to equity-holders as a means to reduce the moral hazard that promotes inefficient risk-taking. Given that the root of the current incentive

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distortion lies in deposit and TBTF guarantees, a more straightforward approach would be simply to remove the guarantees, shifting risk from guarantee agencies to depositors and giving them an incentive to monitor and reward safe banking. Portfolio, activity, and capital restrictions might also then be removed, and liability arrangements allowed to be freely chosen by banks, ushering in a free banking regime (Beckworth, 2012; Salter, 2014a, 2014b; Selgin, 1988; White, 1989; White, 1999). While such a move might be first-best, here we take for granted here that the guarantees will not be removed. The question to be addressed is whether adding extended liability would be an improvement over today's status quo.

Assuming that deposit guarantees remain in place, the potential gain from introducing extended liability is not as a substitute for deposit guarantees, but as a cost-effective way of reducing moral-hazard distortions. In putting this case on the table our argument supports other suggestions made in recent years for the (re-)introduction of extended liability into banking (Admati & Martin, 2013; Cowen, 2012; Grossman & Imai, 2010; Hill & Painter, 2010; Hendrickson, 2014; Leijonhufvud, 2010; Peirce, 2012; Ridyard, 2013; Turner, 2014).

In what follows we review the theoretical and historical literature on the consequences of extended liability in banking, consider its potential drawbacks, and make a case for extending shareholder liability in publicly guaranteed banks today.

2. What is extended liability?

Under today's standard arrangement of *single liability*, when a bank (or any corporation) is declared insolvent and closed with negative net worth, the value of shares goes to zero, but shareholders have no obligation to repay the remaining debts to creditors. Under extended liability – an arrangement common in banking history – they do have an obligation to repay. Shareholders are called upon to cover (in proportion to their shareholdings) some or all of the unpaid debts. Under double liability, the holder of a share with \$100 face value may be called upon to chip in up to \$100 more; under triple liability up to \$200. Under unlimited liability, shareholders are obliged to cover the entire amount of unpaid debt. Their liability can be joint and several as it was in the UK (if some shareholders go bankrupt before paying in full, their unmet burdens fall to the others) or pro rata as in California (each is liable only for his initial share of the unpaid debt). For clarity, note that single, double, and triple liability are all forms of *limited* liability, but double and triple are *extended* by comparison to single liability. Unlimited liability is the limiting case of extended liability.

The same degree of shareholder liability need not apply to all bank debts. Some historical banks' shareholders have retained unlimited liability for banknotes but single liability for deposits. All bank shares need not carry the same degree of exposure: non-voting shares might have single liability, while voting shares have extended liability. And finally, where banks are free to choose the division of default risk between shareholders and creditors, all banks need not adopt the same liability arrangements. Goldman Sachs retained unlimited shareholder liability until 1999, long after other investment banks had switched to single liability. Brown Brothers Harriman today provides “private banking” and other financial services while retaining unlimited liability for its general partners (Economist, 2011).

In a banking system without deposit guarantees, bank shareholders might voluntarily adopt extended liability to provide solvency assurance to depositors and other creditors. By standing more fully behind its debts the bank reduces default risk to depositors and thereby can attract deposits at lower interest rates. A note-issuing bank can likewise attract a larger note-holding

clientele. In the presence of deposit guarantees – especially absent deductible, coinsurance, and coverage limits – this motive disappears. If the bank does not repay, the deposit guarantee agency will. Riskier banks no longer have to pay higher rates to attract deposits (below the insured limit). This is of course the core of the moral hazard problem already mentioned.

3. Historical experiences with extended liability

3.1. The United States

Extended liability was common in the US before federal deposit guarantees arrived in 1933. Many states imposed double or greater liability as a feature of their bank charters. All federal charters, offered after 1863 under the National Banking system, specified double liability. Vincents (1957) reports that as of 1932 “about two-thirds of the states . . . [were] imposing double, triple or even unlimited liability on bank shareholders.” Cross-sectional studies indicated that extended liability made banks safer for depositors, inducing banks to hold more liquidity and safer assets.

The American colonies under British rule, and following independence the thirteen state governments, inherited the English legal system under which a bank (or any other business firm) seeking incorporation had to go to the legislature for a special chartering act.¹ Such charters routinely limited the shareholders' liability for the corporation's debts to the par value of their shares, a system of single liability. In 1837 the chartering rules began to change as a few and then an increasing number of states adopted “free banking” laws under which any applicant who agreed to standardized terms could obtain a bank charter. The charter terms varied from state to state, but some states required bank shareholders to accept extended liability, including double, triple and even unlimited liability. In a few states, a bank could choose its own shareholders' level of liability, a system known as “voluntary liability” (Grossman, 2001). By 1860 more than half the states in the US had “free banking” laws (Rolnick & Weber, 1985). The National Banking Acts passed during the Civil War created federal charters with double liability. Overall (Grossman, 2007, p. 61), the number of chartering authorities requiring double liability rose from fewer than 10 states in 1851, to the federal government plus 18 states in 1875, to federal plus 34 states in 1930.

In the early 20th century the US as a result had two classes of banks: federally chartered National Banks, subject to double liability, and state-chartered banks that operated under various liability rules. Ten states had single liability, Colorado had triple liability, and California had unlimited liability. Most other states had double liability (Etsy, 1998, p. 191; Macey & Miller, 1993). Between the Civil War and the Great Depression, in brief, most depositors and all noteholders were cushioned from losses in bank failures by shareholders who absorbed some risk beyond the value of their shares.²

This set of arrangements, having taken nearly a century to evolve, was reversed in less than a decade. Having apparently proven ineffective at protecting depositors from the huge banking losses of the early Great Depression, extended liability was considered redundant with the creation of federal deposit insurance. In 1933 the Congress “amended the National Bank Act and the

¹ Scottish banking operated under a distinct legal system. Unlike Scotland, many state governments passed “restraining acts” that made it illegal to operate a bank without a charter.

² This is not to suggest that government regulatory authorities played no role in early American banking. As Mitchener and Jaremski (2014) note, government regulation did exist, but was light. Early regulators were less interested in system-stability and more in the behavior of individual banks.

Federal Reserve Act to remove double liability from national bank shares issued after June 16, 1933” (Vincens, 1956, p. 276). In 1935 an amendment was passed allowing National Banks to terminate double liability after 1 July 1937 on all shares regardless of when they were issued. State governments followed the federal government and similarly removed requirements for extended liability. By the end of World War II, thirty one states had done so (Grossman, 2001). In 1956 Arizona became the last state to do so. A handful of banks continued to operate under extended liability though they were no longer required to do so by law. These arrangements however meant little. The FDIC Act includes a provision which stated that upon paying for insured deposits of a failed member bank, the FDIC waives any and all claims on shareholders if such claims arise from state laws.

3.2. *Some international experience*

Apart from three chartered banks with single liability, free entry with unlimited liability was the norm in Scottish banking until the late 19th century. After 1810, the largest of the banks with unlimited liability (the Commercial Bank of Scotland, the National Bank of Scotland, the Union Bank of Scotland, the Western Bank, the Clydesdale Banking Company, and the City of Glasgow Bank) were as large as the old chartered banks (Evans & Quiggley, 1995; White, 1995). Goodspeed (2015, p. 13) finds that “the relative competitiveness of the Scottish financial system . . . along with the unlimited legal liability of shareholders in Scottish private banks, were sources of considerable financial stability, both in [the Ayr Bank crisis of] 1772 and previously.” Unlimited liability helped to make the system non-panic-prone and remarkably resilient when a poorly managed major bank failed.

Events elsewhere in the United Kingdom were perhaps less illustrative than in Scotland, but still are worth mentioning. In England, banks were permitted to organize on a joint-stock unlimited liability basis after the passage of the Banking Copartnership Act of 1826. In Ireland, the Banking Copartnership Regulation Act of 1825 ended the monopoly status of the Bank of Ireland. Now banks were allowed to form freely on a joint-stock unlimited liability basis, so long as they did not issue notes within 65 miles of Dublin (Turner, 2014, p. 36–37). Although the Companies Act of 1862 extended previously-granted limited liability status to banks, “[t]he large, unlimited liability joint stock banks. . . adopted multiple rather than limited shareholder liability after the passage of the Companies Act of 1879” (Evans & Quiggley, 1995, p. 499). This is explicable by the effects on depositor confidence of extended liability. The prevalence of extended liability partly explains why, prior to the 2007–2008 crisis, the last major banking crisis in the United Kingdom was in 1825 (Turner, 2014).

The historical success of the Canadian banking system in the 19th century is also due, in part, due to the liability requirements governing banks. In the early 19th century, all banks were required to obtain a charter to operate. In 1836, the Gore Bank obtained a charter on the requirement that it adopt double liability (Calomiris & Haber, 2014, p. 301). The Dominion Notes Acts of 1870 and 1871 provided for a uniform system for bank chartering. Charters were granted for ten years, on the condition that banks submitted monthly financial statements to the government, maintained a minimum amount of capital independent of size, and adopted double liability. These requirements shed light on the structure of the Canadian banking industry, which contained a relatively small number of large, well-diversified, and branched banks (Calomiris & Haber, 2014, pp. 304–305).

Lastly, In Sweden, a wave of failure of private commercial bank failures, some mitigated by expenditure of public funds, led the Crown to proclaim in 1824 that henceforth shareholders in private banks must accept unlimited liability with no expectation of public

funds in case of insolvency. The result was a period of remarkable bank stability from 1830 to 1903 with zero losses to depositors (Jonung, 1984; Lakomaa, 2007).

4. **Extended liability in practice**

4.1. *Performance of extended liability*

There are a variety of ways to measure the riskiness of a banking system, including the rate of bank failures, asset volatility, the composition of a bank asset portfolios, equity ratios, and losses to depositors. Empirical studies from the era of extended liability banking are necessarily non-exhaustive for lack of data, but do suggest that extended liability worked to reduce bank risk-taking by contrast to single liability systems.

Grossman (2001) studies bank failures for the period 1892–1930 in the US. He regresses the proportion of state-chartered banks that failed in a given state during a given year on lagged failures, the proportion of national banks that failed that year, and a dummy variable that takes on value 0 if the state had single liability and 1 if a state has extended liability. Grossman finds that the dummy variable takes on a negative value in all subperiods before the crisis year of 1930, meaning that extended liability reduced the risk of bank failure.

Between 1909 and 1915, twenty-seven California banks switched from unlimited liability to double liability. Etsy (1998, p. 189) finds “that banks subject to stricter liability rules have lower [on-balance-sheet] equity and asset volatility, hold a lower proportion of risky assets, and are less likely to increase their investment in risky assets when their net worth declines, consistent with the hypothesis that stricter liability discourages commercial bank risk-taking.” The banks that switched increased their risky-asset ratio by 10% more than the banks that did not switch. This result appears robust across time. For example, Mitchener and Richardson (2013, p. 508), in their empirical study of US banking in the New Deal era, find that in “states with contingent liability, banks used less leverage and converted each dollar of capital into fewer loans, and thus could survive larger loan losses (as a fraction of their portfolio) than banks in limited liability states”.

Evans and Quiggley (1995) study the capital ratios of a set of Scottish banks after the free banking period. The banks’ subscribed capital and retained earnings represented the cushion available to absorb asset losses and still repay liabilities. In 1885, the four largest unlimited-liability banks had book capital averaging 50.25% of liabilities, whereas limited liability banks on average had a ratio of 16.43%, about one-third as large. It is difficult to say that these numbers are conclusive. For one, it is unknown what capital ratios were held by smaller extended liability banks. Nonetheless, they do indicate that the large unlimited liability banks responded strongly to the incentive created by to obligation to cover liabilities fully in case of a bank failure.

4.2. *Robustness of historical extended liability systems*

A banking system may be more or less robust with regards to internal and external factors. The robustness of a system with respect to external factors refers to how well the system does in absorbing large external shocks, such as shocks to asset values or to demand or supply for reserve money. The robustness of a system with respect to internal factors refers to whether individual banks have incentives and abilities to engage in activities that threaten the whole system, and the degree to which the whole system is impaired if some banks default. There is little theoretical or empirical work studying the robustness of extended liability banking to

external factors, but there is some work studying the robustness of the system with respect to internal factors.

Etsy (1998) and Macey and Miller (1993) study voluntary versus involuntary liquidations of banks in the US from 1865 to 1933. By closing an unprofitable bank voluntarily, shareholders with extended liability avoid wealth depletion from future negative profits. They do not face the same incentive to “gamble for resurrection” that faces shareholders under single liability, an incentive that grows as net worth approaches zero (and *a fortiori* as it declines below zero, the “zombie bank” problem). Consequently we should expect the ratio of voluntary to involuntary liquidation to be greater in a system with extended liability. Both studies find that the ratio was indeed higher under extended liability. Etsy (1998, p. 34) finds that between 1865 and 1933 “voluntary liquidations accounted for 70% of the 8302 national-bank liquidations” and between 1865 and 1912 they accounted for over 80% of the liquidations in the US. The evidence is not conclusive, however, because it is difficult to compare the pre-Depression system to the post-Depression system. With federal deposit insurance and other regulatory interventions, fewer banks closed either voluntarily or involuntarily. Nonetheless, the above studies do indicate that voluntarily closures were relatively common under extended liability, limiting depositor losses and thereby avoiding possible negative spillovers to the rest of the system.

There is also some evidence to suggest that regulators are aware of this phenomena. After widespread bank failures in Texas in 1980s, regulators become increasingly concerned with the relationship between banks and bank holding companies (BHC). The BHC corporate structure allowed a BHC to reap the upside of bank investments while the FDIC carried the downside. The moral hazard threatened the FDIC and in turn the other banks through higher FDIC premiums. Regulators responded with provisions in the Financial Institutions Reforms, Recovery and Enforcement Act (FIRREA) of 1989 that require a BHC to use net worth of its solvent banks to reimburse the FDIC for the expenses it incurs resolving an insolvent sibling bank (Keeton, 1990). Knopf and Teal (1996) find evidence to support the hypothesis that FIRREA lead to a decrease in the risk profile of bank assets.

4.3. Protection of depositors

In an 1879 article published in *The Economist* Walter Bagehot postulated that shares of unlimited liability companies will come to be owned by the poor for no sane wealthy individual would be willing to carry such risks. And unlimited liability of poor shareholders is no use. Market exchange in shares would convert a system of unlimited liability into one of *de facto* limited liability (Grundfest, 1992). There is however little empirical evidence to the Bagehot Hypothesis. Rather empirical evidence seems to suggest that the Bagehot Hypothesis is not true.

When the City of Glasgow Bank failed in October 1878 its assets covered only 56% of its liabilities. However depositors were paid in full (Evans & Quiggley, 1995). This despite the fact that the City of Glasgow Bank had dispersed stock ownership. Why is it that the shares were not traded into the hands of the poor? The reason is that potential shareholders were vetted before they were allowed to share. In this way, the existing shareholders did not allow new shareholders to impose negative externalities on them. The City of Glasgow bank was no exception. For instance, the Irish Banking Copartnership Regulation Act specified that transfer of shares shall not be considered legally valid unless authorized by the directors of the company. The English Banking Copartnership Act did have a provision like the Irish Act, however the “bank promoters voluntarily inserted such clauses into their bank’s deeds” (Hickson & Turner, 2003a, p. 934). In many cases, former owners were held liable for a pre-defined number of years after the sale of shares.

This meant that wealthy owners and directors could not exploit the bank’s assets, sell their shares and escape future consequences. The City of Glasgow Bank’s wealthy owners could not avoid liability by selling their shares after its collapse (Acheson & Turner, 2008).

Hickson and Turner (2003a) study the Ulster Banking Company (UBC) of Ireland to test the Bagehot Hypothesis. They find that the average wealth of the individuals who owned UBC shares in 1868 to 1879 period was £5334. Nearly two-thirds of the owners had wealth greater than £1000 and more than ten percent had a wealth greater than £10,000. The wealthy owners carried greater risk than less wealthy owners. They were compensated for this with important positions in the bank’s management. Also, the bank’s constitutions stated that the sellers of shares must offer their shares to directors at the price at which they intended to sell to anyone else. This meant that directors could either reject a proposal or buy it themselves. Interestingly, the failure of the City of Glasgow Bank appears to have had no negative impact of the quality of share owners of UBC. In fact, the average wealth of the owners of UBC rose during the period (Hickson & Turner, 2003a).

In September 1883 UBC was converted from an unlimited liability company to a multiple liability company, with a multiple of four. There was a diffusion of share ownership after this change. Between 1816 and 1877, both the number of shares and number of shareholders increased by 50%. In contrast, between 1877 and 1914, the number of shares increased by less than 70% but the number of shareholders increased by nearly five folds (Acheson and Turner, 2006). The directors of UBC, who were often wealthy shareholders, were more willing to allow for diffusion under a multiple liability regime than under an unlimited liability regime.

The US experience appears to be very similar. From 1865 to 1934, the “average annual loss to depositors of failed national banks was a mere forty-four cents per thousand dollars of deposits” (Macey & Miller, 1993, p. 34). These are losses as a percent of deposits in all commercial banks. The losses were much greater during the Great Depression, ranging from fifty cents to more than two dollars per hundred dollars of deposits (Jackson, 1993). The losses borne by depositors of suspended banks average around 20% for the period 1930–1933. The question where the pre-Depression era or the Great Depression itself is a better picture of the extended liability system is a difficult one. On the one hand, the Great Depression was an extra-ordinary period when many arrangements failed, and does not therefore reflect the working on the extended liability system. On the other hand, the question remains as to why extended liability did not prevent large scale banking collapses during the Great Depression.

Many explanations have been put forth for the severity of the Great Depression. First, according to Friedman and Schwartz (1963), the Great Depression occurred because of an excess demand for money that was not met by the banking system. It is well known that the Fed incorrectly inferred from low market interest rates that money was excessively loose, when in fact low rates were a signal that money was excessively tight. In addition, global rising demand for monetary gold, then the unit of account and medium of redemption in many countries, by both central banks and private individuals, contributed to a compounding negative monetary shock (e.g., Sumner, 2015). The presence of extended liability could not have done much in the event of the rapidly shrinking money supply. Second, a number of policies on the supply side contributed to the severity of the Depression. These include (informal) fixing of nominal wages, the Smoot-Hawley tariff, and sharp increases in marginal tax rates under the Hoover Administration. Later, under the Roosevelt Administration, New Deal cartelization policies (e.g., Cole & Ohanian, 2004) had similar adverse effects. Extended liability, while it can improve financial stability, is unable to offset these kinds of structural factors.

In summary, the severity of the Great Depression was due to a variety of monetary, financial, and real shocks. Extended liability helps in producing more prudent behavior on part of banks. But it cannot prevent shocks that originate outside the banking system, nor can it eliminate the mechanism through which the shocks propagate through the economy. What the extended liability can do is reduce the likelihood of shocks that arise from unwise behavior by banks in the management of reserves and the risk-profile of their assets.

5. Historical evidence on potential drawbacks of extended liability in banking

The incentive-aligning features of extended-liability banking, noted above, call into question the desirability of mandatory single liability for banking, and perhaps for financial intermediaries more generally. Extended liability has its own potential drawbacks, however. The same incentive-alignment mechanisms that reduce moral hazard under extended liability might, on other margins, incentivize socially costly behavior. Extended liability might conflict in important ways with preferable contractual arrangements.

A long-standing concern is that extended liability for bank shares would mean significantly higher transaction costs and therefore *reduced liquidity* for such shares, by comparison with single-liability shares. With joint and several liability, any given shareholder's expected cost of being called upon to repay depositors and other debt-holders in the event of the bank's insolvency depends on the wealth of other shareholders: the smaller the amount that other shareholders can chip in before going personally bankrupt, the greater the amount that wealthier shareholders will have to pay. For a shareholder to appraise the expected cost accurately requires costly monitoring of the loss-absorbing capacity of other shareholders (Evans & Quiggley, 1995, p. 497–498). Either each shareholder monitors for himself or herself, or (more common in practice) the bank's directors adopt a costly procedure for screening share purchases and transfers, rejecting impecunious would-be owners in order to restrict shareholding to individuals of sufficient net worth. Such monitoring or screening costs are avoided under single liability.

The hypothesis of significantly higher transaction costs implies less trading and lower prices (an illiquidity premium) for bank shares with extended liability. But these implications find surprisingly little support in regime-change “natural experiments” that have been studied. Hickson, Turner, and Claire (2005) examine the effects of the Ulster Banking Company's conversion from unlimited to limited liability in 1883 after new legislation required all banks to convert. Contrary to the expectation that conversion to limited liability would give shares significantly greater liquidity, they observe (p. 469) that “the move to limited liability does not appear to result in any apparent increase in market activity. If anything, the upward trend in market activity slows somewhat just after the conversion to limited liability.” Neither share prices nor returns to holding shares changed significantly, although they were lower for the five-year period following the liability regime change than before, which the authors attribute to the reduced risk premium of holding limited-liability shares (p. 471). In sum there is “a striking lack of evidence that the introduction of limited liability had a substantial impact upon our measures of the liquidity of Ulster Banking Company shares. This is all the more remarkable as shareholder numbers trebled from 1879 to 1894 and share ownership became more widely diffused” (p. 472).

Acheson, Hickson, & Turner (2010) broaden the sample to nine separate unlimited-liability banks before and after they were compelled to convert to limited liability. The conclusions are similar (p. 269):

Our findings suggest that the stock of limited banks was no more liquid than that of unlimited banks, and that stock did not become more liquid after banks limited their liability. Overall, the evidence presented above points to the conclusion that enforcement mechanisms [to police share transfers] did not impinge on the tradability and liquidity of shares carrying unlimited liability, lending support to our argument that the above mechanisms acted to substantially reduce share transfer costs.

A second long-standing concern is that wealthy individuals will avoid owning bank shares with unlimited liability in order to avoid the risk of being disproportionately called to repay an insolvent bank's debts. This is called the *Bagehot Hypothesis* after Walter Bagehot's statement of it: when “every person joining a bank shall be liable for every sixpence contained in it, to his last acre and shilling [...] . . . [t]he consequence is, that persons who join banks have very commonly but few acres and few shillings” (quoted in Hickson & Turner, 2003b, p. 932; see also Turner, 2009). Low-wealth shareholders (more colorfully called “hobo shareholders”) will predominate. If wealthy investors are less eager to own bank shares (at any given rate of return), bank capital will be more costly to raise, and the banking system will be less well capitalized.

The Bagehot Hypothesis has been tested using data from the UK in the 19th-century, when shares of limited and extended liability banks were traded, and the US between 1865 and 1935, when federal law mandated double liability. Hickson and Turner (2003b) examine trading data from the Ulster Banking Company (UBC) from December 1868 to January 1879. Their data allows them to observe the personal characteristics, including wealth and occupation, of those who acquired shares, as well as the procedures internal to UBC that governed the transfer of shares. From occupational data they infer (Hickson & Turner, 2003b, p. 947) that “very few shares were sold to individuals from the lower middle classes or below.”³

Regarding personal wealth, they show using data on wills that UBC shareholders had double the wealth of the average of the will-leaving population. They note that bank's directors screened share transfers, and (p. 956) that “transfers to impecunious individuals were particularly prevented in times of increased bank distress.”⁴ Bank directors denied permission for share sales to the impecunious so as to block potential negative spillover effects on other shareholders. In addition, Hickson and Turner note that the 1825 Banking Copartnership Regulation Act worked against the Bagehot Hypothesis by making sellers of bank shares retain liability for the bank's debts if the buyer had insufficient wealth to answer a call. To the extent that this law was enforced, it countered the potential incentive for the wealthy to sell their shares to the non-wealthy.⁵

Bagehot's Hypothesis – shareholders without sufficient wealth to repay a bank's residual debts in the event of insolvency would predominate, so that *de jure* extended liability would amount *de facto* to single liability – is thus not borne out by the balance of historical experience. The effects of extended liability are not commonly undone by trading of shares to impecunious holders.

³ In fact, Acheson and Turner (2006) find that, after the bank's transition to limited liability in 1883, share ownership becomes dispersed among a larger range of socioeconomic indicators.

⁴ Their data set contains the City of Glasgow bank failure in 1878. Acheson and Turner (2008) argue that, contrary to the narrative that prevailed at the time, there is no link between the City of Glasgow failure and the Bagehot Hypothesis. On screening of share transfers see also Alborn (1998).

⁵ See also Hickson and Turner (2004).

A common third concern is related to the first two: If extended liability makes bank shares less liquid or more dangerous to own than single-liability shares, does this not hamper the initial sale of bank shares, and thereby impede the banking system from achieving the efficient number of banks or banks of optimal scale?⁶

Historically, [Bodenhorn \(2014\)](#) finds that US banks with double liability did have fewer shareholders than banks with single liability, controlling for other factors. In a study comparing unlimited-liability banks to limited-liability banks in late 19th-century England and Wales, by contrast, [Hickson and Turner \(2003a, p. 108\)](#) find that the number of shareholders did not differ significantly across the two kinds of banks.⁷ Whichever is the impact of extended liability on the number of shareholders, we note that a bank might have extended liability for *enough* shares (enough to provide appropriate prudential incentives) without *every* share carrying it. For example, some investors (e.g. institutional investors) might be allowed to hold non-voting single-liability shares while voting shares carry extended liability. The ownership of Brown Brothers Harriman is currently divided in much this way between unlimited and limited partners. In this way the bank could raise additional capital beyond the sale of extended-liability shares. Such an arrangement would of course increase the loss per extended-liability share in the event of insolvency, compared to all shares carrying extended liability.

To summarize the historical studies just surveyed, the detrimental effects of extended-liability regimes for banking appear to be minor. Time-series studies of UK experience complement more familiar cross-sectional studies of US experience (e.g. [Etsy, 1998](#); [Grossman, 2001](#)), and report largely similar results.

In addition to studies that treat legislative changes or differences in liability regimes as parametric variations, we need to consider political economy models that seek to explain the changes. [Carr and Mathewson \(1988\)](#) suggest that unlimited liability may have been used by governments to protect rents accruing to favored recipients. They offer a model showing that unlimited liability may result in higher capital acquisition costs, implicitly endorsing the hypothesis of significantly high transactions costs. Under certain parameterizations of the model, unlimited liability can be used to protect rents. However, given the results discussed above, along with the theoretical insight that extended-liability regimes can be efficient when creditors are willing to compensate shareholders for monitoring and bearing risk (e.g. [Evans & Quiggley, 1995](#)), it is likely that the balance of political economy considerations tilts the other way. That is, *limited* liability for shareholders in financial intermediaries may have spread as part of a rent-seeking effort by shareholders who sought to raise share prices by shifting potential default costs onto bank creditors ([Blankenburg, Plesch, & Wilkinson, 2010](#); [Ireland, 2010](#)). Even if that is true, it does not show the inappropriateness of limited liability. But it does underscore the need to reexamine the desirability of single-liability banking going forward, especially in the presence of deposit guarantees and “too big to fail” policies that generate moral hazard.

⁶ We thank an anonymous referee for raising this issue. The referee also raised two more concerns about extended liability in today’s context, which we address very briefly here. First, wouldn’t the effectiveness of double or triple liability be eroded over time by inflation? It seems to us straightforward that this concern could be addressed by indexing the nominal share price for inflation. Second, would not extended liability restrict bank scale by disqualifying institutional investors from owning bank stock? We see no reason to rule out bank share ownership by stock mutual funds, which could sell other securities to meet a bank share call.

⁷ In fact, the raw data shows unlimited banks to have many more shareholders than limited banks. Only after the largest London banks are omitted from the sample does the difference become negligible.

6. Conclusion: The merits and feasibility of introducing extended bank shareholder liability today

The incentive-aligning effects of extended liability have the potential to reduce moral hazard and thereby the inefficiency of excessively risky bank portfolios and the frequency of (and damage done by) large bank failures. Short of eradicating moral hazard by removing all guarantees and restrictions from the banking system, the more limited change of imposing extended liability on shareholders in banks with guaranteed deposits could be a move in the right direction.⁸

To restate the problem with the current system, single liability combined with federal deposit guarantees (FDIC and TBTF) makes shareholders indifferent to the left-hand tail of the probability distribution over asset losses. Once net worth reaches zero, single-liability shareholders are wiped out, and it doesn’t matter to them how much farther below zero net worth goes. This creates the moral hazard of incentivizing “gamble for resurrection” high-risk strategies by “zombie” and near-zombie institutions. Heads the shareholders gain, tails Uncle Sam loses. Put differently, with single liability, equity becomes a call option once share prices are sufficiently low. The shareholders no longer bear the downside of the risks the bank takes. And unlike usual call options, there is no private counterparty that bears the downside risk either, because the vast majority of creditors (depositors) are guaranteed by the government. In a TBTF bank even the legally uninsured creditors are covered. The downside risk is externalized to taxpayers. All this means that the shareholders and the managements of banks under single liability, when backed by government insurance, have too little incentive to act prudently (from the point of view of taxpayers), especially as net worth approaches zero. Extended liability mitigates the problem (unlimited liability nearly eliminates it) by giving shareholders something to lose from a gambling strategy even when the bank’s visible net worth is zero.

While the effects of extended liability on bank shareholder and depositor incentives is a powerful argument in its favor, as always, the introduction of political considerations complicates matters. For example, there may be a ‘time inconsistency’ problem associated with extended liability, in that facing the possibility of a crisis, governments step in to protect depositors rather than relying on the existing extended liability regime, perhaps due to worries that the potential additional wealth liquidation induces a credit crunch. In the language of [Calomiris and Haber \(2014\)](#), the ‘game of bank bargains’ between political and financial elites suggests the existence of a time inconsistency problem, even in the institutional environment of extended liability. However, since time inconsistency problems are observed in TBTF situations under the status quo liability system (e.g., [Salter, 2015](#)), these problems are not a strike against extended liability any more than against the status quo. On the contrary, we expect extended liability to lessen time inconsistency problems by making discretionary bailouts more costly for authorities, simply because these policy responses would be a more visibly flagrant violation of existing legal rules, shifting obligations *ex post facto* from shareholders to taxpayers. It is more obvious that favoritism is superseding the ‘rules of the game’ when shareholder

⁸ Retaining deposit insurance while introducing extended liability primarily improves financial outcomes by operating on bank shareholders’ incentives. With this adjustment at the margin, depositors are still protected—thus assuaging the distributional concerns associated with financial instability—while incentivizing banks to behave in a manner more conducive to the health of the financial system as a whole. Of course, there is no need to couple deposit insurance with extended liability in the abstract; in fact, removing deposit insurance, at the margin, would incentivize depositors to monitor banks more closely. Nonetheless we contend, purely focusing on banks’ current asymmetric incentives for risk, the introduction of extended liability would still be an improvement.

wealth is known *ex ante* to be subject to extended liability calls, than when a discretionary bailout is the only established recourse for uninsured depositors in crises.

Proposals to apply extended liability to insured banks can be contrasted with proposals for “microprudential” and “macroprudential” policies to combat financial crises (Bernanke, 2011; Clement, 2010; De la Torre & Ize, 2013; Galati & Moessner, 2013; Hanson, Kashyap, & Stein, 2011). Both microprudential and macroprudential policies are regulatory solutions aimed at preventing financial instability from instigating crises. Microprudential policy, which focused on direct supervision and portfolio restrictions on individual financial organizations, was obviously unsuccessful at preventing the crisis. Macroprudential policy, in contrast, aims at regulatory approaches that stabilize the financial system as a whole, paying more attention to factors directly related to systemic risk. Bernanke (2011, p. 3) summarizes the distinction between microprudential and macroprudential policy: “Ultimately, the goal of macroprudential supervision and regulation is to minimize the risk of financial disruptions that are sufficiently severe to inflict significant damage on the broader economy. The systemic orientation of the macroprudential approach may be contrasted with that of the traditional, or ‘microprudential,’ approach to regulation and supervision, which is concerned primarily with the safety and soundness of individual institutions, markets, or infrastructures. . . .” Given the failures of microprudential policy, it is unsurprising that macroprudential policy is the subject of a vibrant post-crisis literature.

Extended liability for banks addresses the concerns of macroprudential policy advocates using arguably more effective means. Both macroprudential policy and extended liability aim to prevent of financial crises. But an analysis of the macroprudential ‘toolkit’ shows it is unlikely to deliver such results (Salter, 2014a). As a top-down approach it faces significant knowledge problems: regulators are unable to measure systemic risk, let alone find a stable functional relationship between it and their policy instruments. Advocates of macroprudential policy have, as yet, put forth no reason why their efforts will not be thwarted by Goodhart’s Law (Goodhart, 1975), the generalization that once policy-makers begin to use a statistical aggregate as a policy instrument they alter the functional regularities they were hoping to exploit.

Knowledge problems are not the only obstacle: regulators’ incentives are also a concern. The organizations responsible for implementing macroprudential policy are executive-branch agencies and central banks – the very organizations that have been unable to resist bailing out failed financial firms in the past. Given the failed record of previous regulatory attempts to rein in financial excess, it is hard to believe that macroprudential regulation will somehow align regulators’ incentives with their mandate in a way never before achieved.

Extended liability, in contrast, is an *institutional* approach to financial stability. By changing the underlying rules governing bank structure, the desired result – preventing crises – is achieved by aligning information and incentives that banks confront, which are a product of underlying institutions, with those that are conducive to social welfare. Financial instability is not something that ‘just happens,’ as is assumed by much of the macroprudential literature. Instead, financial instability is a result of a particular framework of rules that incentivizes banks to behave irresponsibly. As Calomiris and Gorton (1991, p. 110) note, “panics are not inherent in banking contracts – institutional structure matters. . . .” Rather than taking on the significant information and incentive burdens associated with regulatory solutions to financial instability, extended liability incentivizes banks to discover and undertake voluntarily the sort of practices that promote bank and system stability. For the above reasons, extended liability is a better means for achieving the desired end of macroprudential policy advocates.

A small first step toward reviving extended liability in some form as a way to control moral hazard would be to make double or greater liability mandatory for banks that have been named Strategically Important Financial Institutions, a designation that amounts to a declaration by regulators that even these banks’ uninsured creditors will lose nothing in an insolvency. A larger step would be to mandate extended liability for all banks with FDIC-insured deposits.

Public choice considerations, it must be conceded, suggest a low likelihood of Congress imposing extended liability on any set of banks in the near future. John Turner (2014, p. 243) rightly observes that “politics is the ultimate determinant of banking stability.” Legislation to change banking liability rules in the past has moved in the other direction, replacing extended liability rules by single liability, particularly in the United States as FDIC guarantees and other programs assumed the role of protecting depositors. The banking industry is a well-organized lobby, and would presumably object to legislation requiring bank shareholders to more fully fund their own safety nets. Bank depositors and general taxpayers, who stand to gain from a fundamentally more stable banking system, are a diffuse and poorly organized interest. Nonetheless, following the FSLIC crisis of the late 1980s and the financial crisis of 2007–2009, a popular demand for moral hazard mitigation gave rise to legislative acts – the FDIC Improvement Act of 1991 and the Dodd–Frank Act of 2010 – that did at least purport to impose tougher capital requirements on banks. Just as the crisis of 2007–2009 showed the ineffectiveness of FDICIA, the next crisis may show Dodd–Frank’s inadequacy and re-open the window for reforms that are currently not politically feasible. At that point there may be a practical payoff to having proposals for extended liability, improved by criticism and debate, already available for legislators’ consideration.

References

- Acheson, G. G., & Turner, J. D. (2006). The impact of limited liability on ownership and control: Irish banking, 1877–1914. *Economic History Review*, 59(2), 320–346.
- Acheson, G. G., & Turner, J. D. (2008). The death blow to unlimited liability in Victorian Britain: The City of Glasgow. *Failure Explorations in Economic History*, 45(3), 235–253.
- Acheson, G. G., Hickson, C. R., & Turner, J. D. (2010). Does limited liability matter? Evidence from 19th-Century British Banking. *Review of Law and Economics*, 6(2), 247–273.
- Admati, A., & Martin, H. (2013). *The bankers’ new clothes: What’s wrong with banking and what to do about it*. Princeton: Princeton University Press.
- Alborn, T. L. (1998). *Conceiving companies: Joint-stock politics in Victorian England*. London: Routledge.
- Beckworth, D. (Ed.). (2012). *Boom and bust banking*. Oakland: The Independent Institute.
- Bernanke, B. (2011). Implementing a macroprudential approach to supervision and regulation. In *Speech at the forty-seventh annual conference on bank structure and competition*.
- Blankenburg, S., Plesch, D., & Wilkinson, F. (2010). Limited liability and the modern corporation in theory and in practice. *Cambridge Journal of Economics*, 34(5), 821–836.
- Bodenhorn, H. (2014, August). *Extended liability at early American banks*. Clemson University and NBER working paper.
- Calomiris, C. W., & Gorton, G. (1991). The Origins of Banking Panics: Models, Facts, and Bank Regulation. In R. G. Hubbard (Ed.), *Financial Markets and Financial Crises*. Chicago: University of Chicago Press.
- Calomiris, C. W., & Haber, S. H. (2014). *Fragile by design: The political origins of banking crises and scarce credit*. New Haven: Princeton University Press.
- Carr, J. L., & Mathewson, F. G. (1988). Unlimited liability as a barrier to entry. *Journal of Political Economy*, 96(4), 766–784.
- Clement, P. (2010, March). The term “Macroprudential”: Origins and evolutions. *BIS Q. Rev.*, 59–67.
- Cole, H. L., & Ohanian, L. E. (2004). New deal policies and the persistence of the great depression: A general equilibrium analysis. *Journal of Political Economy*, 112(4), 779–816.
- Cowen, T. (2012, February). Break up the Banks? Here’s an alternative. In *New York Times Economic View blog*. <http://www.nytimes.com/2012/02/12/business/making-shareholders-liable-for-big-banks-economic-view.html?ref=business>
- De la Torre, A., & Ize, A. (2013). *The foundations of macroprudential regulation: A conceptual roadmap*. Washington, D.C.: World Bank Policy Research Working Paper no. 6575, World Bank.
- Economist. (2011, June). *Brown-blooded holdouts*.

- Etsy, B. C. (1998). The impact of contingent liability on commercial bank risk taking. *Journal of Financial Economics*, 47(2), 189–218.
- Evans, L. T., & Quiggley, N. C. (1995). Shareholder liability regimes, principal-agent relationships and banking industry performance. *Journal of Law and Economics*, 38(October), 497–520.
- Friedman, M., & Schwartz, A. J. (1963). *A monetary history of the United States*. Princeton: Princeton University Press.
- Galati, G., & Moessner, R. (2013). Macroprudential policy: A literature review. *Journal of Economic Surveys*, 27(5), 846–878.
- Goodhart, C. A. E. (1975). *Monetary relationships: A view from threadneedle street*. pp. 1–27. *Papers in Monetary Economics* (Vol. 1) Sydney: Reserve Bank of Australia.
- Goodspeed, T. B. (2015). *Legislating Instability: Adam Smith, Free Banking, and the Financial Crisis of 1772*. Working paper.
- Grossman, R. (2001). Double liability and bank risk taking. *Journal of Money, Credit and Banking*, 33(2), 143–159.
- Grossman, R. (2007). Fear and greed: The evolution of double liability in American Banking, 1865–1930. *Explorations in Economic History*, 44(1), 59–80.
- Grossman, R., & Imai, M. (2010, September). *Contingent capital and risk-taking: Evidence from Britain's banks 1878–1912*. Voxeu.org.
- Grundfest, J. A. (1992). The limited future of unlimited liability: A capital markets perspective. *Yale Law Journal*, 102(2), 387–425.
- Hendrickson, J. R. (2014). Contingent liability, capital requirements, and financial reform. *Cato Journal*, 34(Winter), 129–144.
- Hanson, S., Kashyap, A., & Stein, J. (2011). A macroprudential approach to financial regulation. *Journal of Economic Perspectives*, 25(1), 3–28.
- Hickson, C. R., & Turner, J. D. (2003a). The trading of unlimited liability bank shares in Nineteenth-Century Ireland: The Bagehot hypothesis. *Journal of Economic History*, 63(4), 931–958.
- Hickson, C. R., & Turner, J. D. (2003b). Shareholder liability regimes in Nineteenth-Century English Banking: The impact upon the market for shares. *European Review of Economic History*, 7(1), 99–125.
- Hickson, C. R., & Turner, J. D. (2004). Free banking and the stability of early joint-stock banking. *Cambridge Journal of Economics*, 28(6), 903–919.
- Hickson, C. R., Turner, J. D., & Claire, M. (2005). Much ado about nothing: The limitation of liability and the market for 19th Century Irish Bank Stock. *Explorations in Economic History*, 42(3), 459–476.
- Hill, C., & Painter, R. (2010). Berle's vision beyond shareholder interests: Why investment bankers should have (Some) personal liability. *Seattle University Law Review*, 33(4), 1173–1199.
- Ireland, P. (2010). Limited liability, shareholder rights and the problem of corporate irresponsibility. *Cambridge Journal of Economics*, 34(5), 837–856.
- Jackson, H. E. (1993). Losses from National Bank failures during the great depression: A response to Professors Macey and Miller. *Wake Forest Law Review*, 28, 919.
- Jonung, L. (1984). Swedish experience under the classical gold standard, 1873–1914. In M. D. Bordo, & A. J. Schwartz (Eds.), *A retrospective on the classical gold standard, 1821–1931* (pp. 361–404). Chicago: University of Chicago Press.
- Kane, E. J. (1985). *The gathering crisis in federal deposit insurance*. Cambridge: MIT Press.
- Kane, E. J. (2009). Extracting nontransparent safety net subsidies by strategically expanding and contracting and financial institution's accounting balance sheet. *Journal of Financial Services Research*, 35(December), 1–31.
- Keeton, W. R. (1990). Bank holding companies, cross-bank guarantees, and source of strength. *Economic Review*, 75(3).
- Knopf, J. D., & Teall, J. L. (1996). Risk-taking behavior in the US thrift industry: Ownership structure and regulatory changes. *Journal of Banking & Finance*, 20(8), 1329–1350.
- Lakomaa, E. (2007). Free banking in Sweden 1830–1903: Experience and debate. *Quarterly Journal of Austrian Economics*, 10(Summer), 25–44.
- Leijonhufvud, A. (2010, January). A modest proposal. In *Vox EU blog*. <http://www.voxeu.org/article/modest-proposal-double-liability-bankers>
- Macey, J. R., & Miller, G. P. (1993). Double liability of bank shareholders: A look at the new data. *Wake Forest Law Review*, 28, 933.
- Mitchener, K. J., & Richardson, G. (2013). Does "skin in the game" reduce risk taking? Leverage, liability and the long-run consequences of new deal banking reforms. *Explorations in Economic History*, 50(4), 508–525.
- Mitchener, K. J., & Jaremski, M. (2014). *The evolution of bank supervision: Evidence from US States*. National Bureau of Economic Research Working Paper No. 20603.
- Pearce, Hester. (2012, May). Double liability a better response to J.P. Morgan Mess. In *U.S. news and world report: Economic Intelligence blog*. <http://www.usnews.com/opinion/blogs/economic-intelligence/2012/05/22/double-liability-a-better-response-to-jp-morgan-mess>
- Ridyard, R. M. (2013, December). *Corporate governance and double liability: Toward a bank shareholder-orientated model*. University of Oxford working paper. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2371088
- Rolnick, A. J., & Weber, W. E. (1985). Banking instability and regulation in the US free banking era. *Federal Reserve Bank of Minneapolis Quarterly Review*, 9, 2–9.
- Salter, A. W. (2015). Robust political economy and the lender of last resort. *Journal of Financial Services Research* (in press), http://link.springer.com/article/10.1007/s10693-015-0219-9?sa_campaign=email%2Fevent%2FarticleAuthor%2FonlineFirst.
- Salter, A. W. (2014a). The imprudence of macroprudential policy. *Independent Review*, 19(1), 5–17.
- Salter, A. W. (2014b). Is there a self-enforcing monetary constitution? *Constitutional Political Economy*, 25(3), 280–300.
- Selgin, G. A. (1988). *The theory of free banking*. Totowa, NJ: Rowman and Littlefield.
- Stern, G. H., & Feldman, R. J. (2004). *Too big to fail: The hazards of bank bailouts*. Washington, DC: Brookings Institution Press.
- Sumner, S. (2015). *The Midas paradox: Financial markets, government policy shocks, and the great depression*. Oakland: Independent Institute.
- Turner, J. D. (2009). "The Last Acre and Sixpence": Views on bank liability regimes in 19th-century Britain. *Financial History Review*, 19(2), 111–127.
- Turner, J. D. (2014). *Banking in crisis: The rise and fall of British banking stability, 1800 to the present*. Cambridge: Cambridge University Press.
- Vincent, J. R. (1957). On The Demise of Double Liability of Bank Shareholders. *Business Law*, 12(3), 275–279.
- Vincent, J. R. (1956). On the demise of double liability of bank shareholders. *Business Law*, 12, 275.
- White, L. H. (1989). *Competition and currency*. New York: New York University Press.
- White, L. H. (1999). *The Theory of Monetary Institutions*. Malden: Blackwell.
- White, L. H. (1995). *Free Banking in Britain: Theory, Experience, and Debate, 1800–1845*. London: Institute for Economic Affairs.