

Unlimiting Unlimited Liability: Legal Equality for Swedish Banks with Alternative Shareholder Liability Regimes, 1897–1903

This article examines the aftermath of the 1897 Riksbank Act in Swedish banking. The act placed banks with unlimited liability and those with limited liability on equal footing, removing the note-issuing privileges of the former. We consider whether changes in risk preferences occurred subsequent to the act, or whether extended liability was a sufficient deterrent. We conclude that when legal differences were removed, lower transaction costs for unlimited liability banks (ULBs) spurred aggressive competition, reflected in narrower interest spreads relative to limited liability banks (LLBs). ULBs also took on greater leverage and held less liquidity, which supports the Coasean interpretation that the shareholder liability regime mattered little. After 1897, ULB shareholders continued to receive higher dividends, enjoyed substantially superior returns on equity, and maintained an array of corporate governance controls to shield themselves against their additional risk.

Keywords: Extended shareholder liability, corporate governance, asset and liability management, banking stability, note issuance, Sweden

JEL: E42, E50, F33, N13, N23

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In the decade following the Great Financial Crisis of 2008, a wealth of literature has emerged on how to foster financial stability. In one strand of this literature, commentators have questioned the reliability of capital ratios as a means of restraining excessive risk-taking in banking.¹ As an alternative, others have suggested revisiting the concept of extended liability to shareholders, in order to incentivize better monitoring of management. This would arise, it is argued, from owners having more “skin in the game.”² Many surveys of older banking systems have yielded the result that unlimited liability banking was associated with comparative stability and resilience.³ However, an alternative strand of research finds a less definitive role.⁴ The crossroads in the literature offers an ideal motivation to revisit the case of Sweden, which typically features among the more successful examples of unlimited liability banking.⁵

In this article, we contribute to the debate on extended liability in banking by tracking the parallel evolution of unlimited liability banks (ULBs) and limited liability banks (LLBs) in Sweden. Specifically, we focus on a regulatory change that occurred in 1897 and effectively placed both categories of bank on an equal legal footing; this was later formalized in legislation, in 1903.⁶ The 1897 act gave a monopoly on note issuance to the central bank, Sveriges Riksbank, removing the

¹ For a post-crisis survey, see Mathias Dewatripont, Jean Charles Rochet, and Jean Tirole, *Balancing the Banks: Global Lessons from the Financial Crisis* (Oxford, 2010); and Charles Goodhart, *The Regulatory Response to the Financial Crisis* (London, 2008).

² For a summary, see John D. Turner, *Banking in Crisis: The Rise and Fall of British Banking Stability, 1800 to the Present* (Cambridge, U.K., 2014), 199–201. On the extension of shareholder liability into macroprudential regulation, see Alexander W. Salter, Vipin Veetil, and Lawrence H. White, “Extended Shareholder Liability as a Means to Constrain Moral Hazard in Insured Banks,” *Quarterly Review of Economics and Finance* 63 (2017): 153–60; and also a post-crisis recommendation to this effect in Axel Leijonhufvud, “A Modest Proposal,” *Vox EU*, 23 Jan. 2010, <https://voxeu.org/article/modest-proposal-double-liability-bankers>.

³ See Peter Koudijs, Laura Salisbury, and Gurpal Sran, “For Richer for Poorer: Bankers’ Liability and Bank Risk in New England, 1867–1880” (NBER Working Paper No. 24998, Sept. 2018). See also Ignacio Briones and Hugh Rockoff, “Do Economists Reach a Conclusion on Free Banking Episodes?,” *Econ Journal Watch* 2, no. 2 (2005): 279–324; and C. R. Hickson and J. D. Turner, “Free Banking and the Stability of Early Joint-Stock Banking,” *Cambridge Journal of Economics* 28, no. 6 (2004): 903–19.

⁴ On the Netherlands, see C. Colvin, A. de Jong, and P. T. Fliers, “Predicting the Past: Understanding the Causes of Bank Distress in the Netherlands in the 1920s,” *Explorations in Economic History* 55 (2015): 97–121; and Christopher L. Colvin, “Organisational Determinants of Bank Resilience: Explaining the Performance of SME Banks in the Dutch Financial Crisis of the 1920s,” *Business History Review* 92, no. 4 (2018): 661–90. On Sweden, see Anna Grodecka-Messi, Seán Kenny, and Anders Ögren, “Predictors of Bank Distress: The 1907 Crisis in Sweden,” *Explorations in Economic History* 80 (2021): article 101380.

⁵ Hickson and Turner, “Free Banking.”

⁶ Svensk Författningssamling [Swedish Code of Statutes] (hereafter SFS), 1903:101, 1–29, 30–55.

note-issuing privileges previously accorded exclusively to ULBs.⁷ While the withdrawal of such a privilege appears *prima facie* as some form of penalty, we argue that this “privilege” had effectively “limited” or constrained the balance-sheet operations of ULBs prior to 1897.

During the nineteenth century, persistent skepticism regarding private banknotes resulted in a disproportionate volume of regulation falling on ULBs, compared with their non-note-issuing LLB competitors.⁸ ULBs had been legally obliged to back their notes with cash and illiquid securities that formed part of their equity capital (see below). In this sense, the removal of their note-issuing “privileges” could alternatively be interpreted as a removal of transaction costs. In contrast to notes, deposits met with no legal requirements until 1911. Prior to 1897, legislative differences prevailed between ULBs and LLBs, while after the 1897 act both bank types operated under identical operating conditions. This offers a promising case through which to revisit some outstanding questions in the literature.

In a recent history of British banking stability, it was noted that a “bank’s propensity to risk shift is aggravated when its owners enjoy limited liability.”⁹ In this vein, the first question this article tackles is that of risk preferences between the two liability regimes in Swedish banking. In her exposition of the tradeoffs facing unlimited and limited liability regimes, Susan E. Woodward describes how “limiting liability increases the equity interests’ motivation to manage assets in a more risky fashion, simply because creditors assume the burden of a larger share of the losses.”¹⁰ This assertion has received support in one strand of the literature, where LLBs are viewed as operating with both higher leverage ratios and lower liquid reserves than their more risk-averse competitors, the ULBs.¹¹ Another school of thought posits that balance-sheet composition is the only thing that matters and draws on

⁷ SFS, 1897:27, *Lag den 12 maj för Sveriges Riksbank*. See also Anders Ögren, “From Parliamentary Institution to a Modern Central Bank: The Bank of Sweden,” in *The Central Bank and the Nation-States*, ed. Olivier Feiertag and Michel Margairaz (Paris, 2016), 49–72; and Ögren, “Central Banking and Monetary Policy in Sweden during the Long Nineteenth Century,” in *The Gold Standard Peripheries: Monetary Policy, Adjustment and Flexibility in a Global Setting*, ed. Anders Ögren and Lars Fredrik (London 2012), 17–36. The Riksbank remains the Central Bank of Sweden today.

⁸ Anders Ögren, “The Political Economy of Banking Regulation: Interest Groups and Rational Choice in the Forming of the Swedish Banking System, 1822–1921,” *Business History* 63, no. 2 (2021): 271–91.

⁹ Turner, *Banking in Crisis*, 28.

¹⁰ Susan E. Woodward, “Limited Liability in the Theory of the Firm,” *Journal of Institutional and Theoretical Economics* 141, no. 4 (1985): 601–11.

¹¹ Koudijs, Salisbury, and Sran, “For Richer for Poorer”; Benjamin C. Esty, “The Impact of Contingent Liability on Commercial Bank Risk Taking,” *Journal of Financial Economics* 47, no. 2 (1998): 189–218; Richard S. Grossman, “Double Liability and Bank Risk Taking,” *Journal of Money, Credit and Banking* 33, no. 2 (2001): 143–59.

Stigler's Coase theorem, which informs us that in the absence of transaction costs, liability rules are irrelevant.¹² This reasoning has gained support from other studies that have identified no role for increased portfolio risk based on choice of shareholder liability.¹³

In this article, we collect individual banks' balance-sheet data for the period and construct leverage and liquidity ratios to tackle this question for the case of Sweden using the Bank Act of 1897 as the catalyst that leveled the playing field, making "liability rules" irrelevant. We find that, after the legislative change, ULBs lowered their broad cash ratios considerably compared with LLBs. At the same time, ULBs increased their leverage by more than one order of magnitude (assets/equity) compared with LLBs. This observation may have its roots in the nature of their capital structures. ULBs operated with larger shares of paid-up capital than LLBs (of the total authorized share issue). Richard Grossman and Masami Imai offer a potential explanation of the risk shifting observed among Swedish ULB banks. Their study of British banks shows that higher levels of contingent capital, which we observe among Swedish LLBs, restrained relative risk-taking.¹⁴ Recent research has gone as far as to suggest that ULBs can exploit their more risk-averse reputations and create a moral-hazard problem by lulling depositors into a false sense of security.¹⁵

Our second question relates to transaction costs. Because ULBs were obliged to hold reserves against their note issue before 1897, their asset portfolios were comparatively constrained or "limited" in comparison to those of LLBs. Less funds and capital were available to deploy as profitable investments. This may have affected shareholder returns. Holding depositor (or note holders') funds in the form of reserves incurs substantial opportunity costs, "which are ultimately borne by depositors. . . . [S]uch a bank regulation would increase the transaction costs of intermediation making credit more costly."¹⁶ In addition, Sweden's ULBs were

¹² George J. Stigler, *The Theory of Price* (New York, 1966). See also Ronald H. Coase, "The Problem of Social Cost," *Journal of Law and Economics* 3 (1960): 1–44; and Jack L. Carr and G. Frank Mathewson, "Unlimited Liability as a Barrier to Entry," *Journal of Political Economy* 96, no. 4 (1988): 766–84.

¹³ Graeme G. Acheson and John D. Turner, "The Impact of Limited Liability on Ownership and Control: Irish Banking, 1877–1914," *Economic History Review* 59, no. 2 (2006): 320–46; Grodecka, Kenny, and Ögren, "Predictors of Bank Distress"; Colvin, "Organisational Determinants"; Haelim Park Anderson and Sumudu W. Watugala, "The Impact of Extended Liability on Bank Runs: Evidence from the Panic of 1893" (working paper, March 2017); Koudijs, Salisbury, and Sran, "For Richer for Poorer."

¹⁴ Richard S. Grossman and Masami Imai, "Contingent Capital and Bank Risk-Taking among British Banks before the First World War," *Economic History Review* 66, no. 1 (2013): 132–55.

¹⁵ Anderson and Watugala, "Impact of Extended Liability."

¹⁶ Turner, *Banking in Crisis*, 25.

taxed for issuing notes, offered payments to note distributors, and coordinated the exchange of notes between other commercial banks. In other words, note issuance was a “costly effort.”¹⁷ We collect data on investor returns and bank-level interest rates with a view to analyzing any behavioral change subsequent to the removal of these transaction costs. Specifically, we would like to know whether the 1897 act led to higher ULB shareholder returns and whether ULB depositors had indeed incurred a penalty prior to 1897. We find that in contrast to the pre-1897 era, ULBs generated significantly superior returns on equity following the legislative change. In addition, they narrowed their interest spreads in relation to LLBs as they engaged in aggressive competition for deposits.

Our final question addresses the incentives facing ULB shareholders. Why did the majority of ULB shareholders remain as ULB owners when the legal “playing field” was effectively leveled after 1897? They remained exposed to risks on their private wealth, while their LLB counterparts avoided this “skin in the game” concern. We suggest that the answer rests upon three considerations. In the first place, ULB shareholders were compensated with higher dividend payments than their LLB counterparts, and after 1897 they achieved markedly greater capital gains on their investments (return on equity). This can be explained by the removal of the balance-sheet limitations that were imposed upon them prior to 1897, regarding the deployment of their assets. Before the act, a part of their equity had been locked into note issuance, whereas afterwards this binding constraint ceased to exist. Second, ULB shareholders shielded themselves via a range of internal corporate governance controls. Nominal share prices among ULBs were typically seven times higher than those of LLBs, forming a barrier to entry for investors with insufficient wealth to cover potential losses. Moreover, ULBs tended to concentrate their borrowing in long-term-liability time deposits, which decreased the maturity mismatch in their profile and sheltered their liabilities from sudden runs, which was an important stabilizing factor through the crisis of 1907. In terms of management, we find that a large minority of ULBs imposed controls on boards and management such as local residence requirements, in an effort to ensure lending decisions were made with competent knowledge of local business conditions. This too was an important determinant of bank survival in the crisis of 1907.¹⁸ The third and final reason, as

¹⁷ Anders Ögren, “Free or Central Banking? Liquidity and Financial Deepening in Sweden, 1834–1913,” *Explorations in Economic History* 43, no. 1 (2006): 64–93. For a more complete history of the ULBs in Sweden, see also Ögren, *Empirical Studies in Money, Credit and Banking: The Swedish Credit Market in Transition under the Silver and the Gold Standards, 1834–1913* (Stockholm, 2003).

¹⁸ Grodecka, Kenny, and Ögren, “Predictors of Bank Distress.”

observed in Britain, was that ULBs were allowed to operate with lower capital ratios (even controlling for their larger size) than their LLB competitors. In Grossman's terminology, the "market capital requirement" was higher for LLBs than ULBs.¹⁹

Our findings shed light on some of the many facets of the extended liability debate. In terms of balance-sheet behavior, we suggest that Coasean mechanisms predominated after the 1897 legislation, as ULBs expanded their leverage and reduced their broad cash ratios substantially, even controlling for concurrent LLB declines. Further, previously safe securities, which were legally tied to the volume of note issuance, could, after the 1897 act, be replaced with investments that were more profitable, if riskier. This Coasean interpretation chimes with recent research on banking in the Netherlands and Ireland, where choice of shareholder liability mattered little in determining portfolio risk.²⁰

However, these "risk-neutral" interpretations, with respect to shareholder liability, should be tempered by the significant controls uniquely imposed by ULB shareholders. In this respect, our evidence from the Swedish case is similar to the United Kingdom's experience over the same period, where like-minded income-level "barriers to entry" were imposed on prospective shareholders. Specifically, the wealth of investors was the primary consideration of existing shareholders as they filtered out those without the means to withstand wealth shocks.²¹ Swedish legislation had prevented "share dumping" that might have allowed less-scrupulous stockholders to pass their liability off to an unsuspecting buyer in the event of imminent bank trouble.²² ULBs were not only compensated for this extra risk with higher dividends but, in the period following the legislative changes, rewarded with handsome capital gains as the portfolio composition of their balance sheets became relatively "unlimited." This cannot be separated from the fact that they were allowed to operate with lower capital ratios than LLBs by their depositors. The latter reaped the benefits of the removal of transactions costs that the 1897 act engendered, via narrower spreads

¹⁹ Richard S. Grossman, *Unsettled Account: The Evolution of Banking in the Industrialized World since 1800* (Princeton, 2010), 147.

²⁰ Acheson and Turner, "Impact of Limited Liability"; Colvin, "Organisational Determinants."

²¹ See Charles R. Hickson and John D. Turner, "The Trading of Unlimited Liability Bank Shares in Nineteenth-Century Ireland: The Bagehot Hypothesis," *Journal of Economic History* 63, no. 4 (2003): 931–58. The authors briefly address how the personal wealth of shareholders "inspired unlimited confidence" (according to contemporaries) in depositors at unlimited liability banks.

²² SFS, 1903:1010 §20:6; LLBs did not have a similar constraint to the right to transfer shares; §17:34.

between their (lower) borrowing rates and (higher) deposit rates, compared with their LLB competitors.

Oscar Wilde once said that “one can live down anything, except a good reputation.” The long history of ULBs in Sweden echoes this message. Despite shifting risk in a more aggressive manner than LLBs after 1897, ULBs “could not live down” their good reputations, as Haelim Anderson and Sumudu Watugala suggest.²³ However, stricter internal controls were maintained by ULBs after 1897 to shield shareholder wealth. Portfolio differences between LLBs and ULBs were largely removed, as Coasean theory would have predicted.

The Swedish Banking System, 1824–1911

The shape of commercial banking in Sweden during the nineteenth century can trace its origins to the royal proclamation of January 14, 1824. As with all businesses at the time, banks had to operate under the principle of solidarity where shareholders were jointly responsible for the liabilities of the bank and other shareholders (*solidariskt ansvar*)—that is, joint and several unlimited liability. The royal proclamation of 1824 included the possibility of issuing what were referred to as *kredit-notor* (credit-notes). This was a result of the reluctant acceptance among the public and authorities that domestic deposits were insufficient to sustain a tolerable level of bank lending. All Swedish commercial banks operated with unlimited shareholder liability until the 1860s, when the first limited liability banks appeared.²⁴

From their inception, LLBs were never authorized to issue notes. This effectively enabled them to avoid the bulk of legislation, which fell disproportionately on their ULB note-issuing competitors (Table 1). Until 1846, banks in some cases counted the notes of other ULBs as part of their reserves (bankers’ balances).²⁵ The bank law of 1846 included a clause stipulating the legal basis for note issuance, which had previously been included in all bank charters.²⁶ Mirroring developments in the United Kingdom (the Bank Act of 1844), note issuance became the primary target of the major banking legislation. While the U.K. legislation focused on cash reserve requirements against notes, in Sweden the principal basis for note issuance was the ULBs’ equity capital.

²³ Anderson and Watugala, “Impact of Extended Liability.”

²⁴ Ögren, “Political Economy.”

²⁵ Ögren, “Free or Central Banking?,” 75n38. See also, *Post and Inrikes tidningar* [Gazette of the Swedish State], 1835–1847 (especially 21 Mar. and 29 Apr. 1835, 9 Mar. and 26 Apr. 1836, 2 Feb. and 9 May 1843).

²⁶ SFS, 1846:1 §11.

Table 1
 Legislation of the Demand Liabilities per Bank Category, 1846–1911.

<i>Unlimited Liability Banks</i>			<i>Limited Liability Banks</i>
1846 Act	Reserve requirement Notes to be backed by the sum of: (1) the securities held as part of the bank's equity capital, (2) the legal tender held by the bank, either at its exchange office or with the Riksbank, (3) the silver held by the bank, and (4) collateral for the bank's loans up to an amount not to exceed 50% of the bank's equity capital.	Other Banks were not obliged to redeem their notes upon demand. High barriers to entry with minimum share-price	Not applicable
1855 Act	No Change	Minimum note denomination of SEK 5	No Reserve requirement
1864 Act	No Change	Lowered barriers to entry. Banks' obliged to redeem their notes but an option clause was introduced with 5% interest penalty in 6 month delay of redemption of notes.	
1874 Act	Notes to be backed by the sum of: (1) the securities (bond certificates) portion of the bank's equity capital, (2) the reserve fund (asset) of the bank, (3) the claims of the bank, not to exceed 50% of the bank's equity, on the condition that the bank's main office hold gold coin equal to at least 10% of the bank's equity, and (4) any gold holdings in excess of 10% of the equity capital.	Prepared to revoke the smallest denomination notes (5 and 10 SEK). 5 SEK notes were banned from 1880 (SFS 1879:27)	
1897 Riks-bank Act	Riksbank granted note issuing monopoly	Private Bank Note issuing rights to be withdrawn by 1903	
1903 Act	No Reserve requirement	Note issuing rights formally withdrawn 1903	

Sources: A. Ögren, *Empirical Studies in Money, Credit and Banking* (2003); A. Ögren, "Free or Central Banking?" (2006); A. Ögren, "The Political Economy of banking Regulation" (2021); Royal Decree concerning the establishment of private banks or discount companies 14 January 1824; SFS [Swedish Code of Statutes] 1846:1, 1855:86, 1861:34, 1863:59, 1864:31, 1874:44, 1879:27, 1886:84, 1897:27

The equity capital pertaining to note issuance was divided into two parts.²⁷ The first component, comprising 60 to 75 percent, was to be invested in what were classified as “high-quality bonds.” These appeared on the asset side of the balance sheet as *grundfondshypotek* (mortgage certificates) and were effectively locked away, in case of the bank winding up.²⁸ The remainder was to be held in assets as legal-tender cash (*kassa*). As Table 1 shows, the law of 1846 stipulated that the total amounts of notes issued had to be fully covered by the sum of (1) these “high-quality” bonds and (2) the legal tender in cash held by the bank, or at its exchange office or with the Riksbank, plus (3) any silver held by the bank, plus (4) all collateral put up for bank lending with the condition that it would not exceed 50 percent of the bank’s total equity capital. In practice, ULBs did not hold silver, and the legal-tender reserves consisting of Riksbank notes or deposits at the Riksbank tended to cover around 40 percent of note issuance.²⁹ These reserve requirements effectively reduced available working capital and limited the “natural” share of investment assets for ULBs from the outset.

Sweden adopted the classical gold standard in 1873.³⁰ Legislation was introduced the following year to update the legal reserve requirements for the ULBs’ note issuance allowances. The mechanics of the note issuance ceiling are best illustrated by way of the following equation:

$$N_t \leq B_{gh} + RF_a + C_{loan} + G_{exc}$$

$$D_t = N/A$$

$$EQC(0.6) \leq B_{gh} \leq EQC(0.75)$$

$$EQC(0) \leq C_{loan} \leq EQC(0.5) \text{ if } G_c \geq EQC(0.1)$$

where N_t is the total note issuance allowed, B_{gh} is the high-quality bond certificates (*grundfondshypotek*), RF_a is a legal requirement of a reserve fund locked in assets, C_{loan} is collateral the bank held against its customer lending and G_{exc} is gold coin in excess of 10 percent of equity capital EQC . The law placed further limitations on the portfolios of

²⁷ SFS, 1846:1 §§8, 11, 13.

²⁸ The collateral was to be deposited in a safe with a special lock requiring two keys, one held by the bank, the other by a representative of the Crown. The bank was not allowed to reduce the collateral as long as it was carrying out business. In the case that the bank was dissolved, the collateral was first to be used to cover the liabilities. See also Lars Jonung, “The Economics of Private Money: Private Bank Notes in Sweden 1831–1902” (working paper, 2000).

²⁹ Ögren, “Free or Central Banking?” 75–77.

³⁰ Lars Jonung, “Swedish Experience under the Classical Gold Standard, 1873–1914,” in *A Retrospective on the Classical Gold Standard, 1821–1931*, ed. Michael D. Bordo and Anna J. Schwartz (Chicago 1984), 361–404.

note-issuing ULBs as more layers of conditionality were introduced.³¹ The previous flexibility offered by the use of loan collateral as part of the note reserve was now strictly conditional upon ULBs holding gold coins (G_c) in cash to the value of at least 10 percent of equity EQC . If we were to replace the left-hand side of the equation with a total deposit allowance D_t , no legally binding conditions would appear on the right-hand side. This was the position of ULBs after 1897. Both the *grundfondshypotek* and *reservfond* began declining following the act of 1897 and no longer appeared as a balance-sheet item for the ULBs after 1903.

In essence, prior to 1897 the ULBs were legally obliged to sit on a significant amount of gold coins that were never a component of monetary circulation in Sweden during the nineteenth century. Indeed, the public tended to demand Riksbank notes in place of gold. These preferences are visible in the fact that the ULBs continued to hold large reserves of Riksbank notes, even though they were not legally recognized as such. The 1874 act had effectively compelled ULBs to hold (nonlegal) reserves to the extent demanded by the public *in addition to* reserves in the form of gold coins demanded by the law. The importance of this clause for restraining the ULBs' portfolios is also illustrated by the fact that the ULBs held, more or less, no specie before the 1874 law. After the legislation was passed, ULBs promptly acquired sufficient gold reserves to meet the new minimum legal requirement. These were held at a consistent level until the enactment of the Riksbank law in 1897, which phased out the note-issuing "privileges" of ULBs over the period from 1897 to 1903. Their gold reserves fell from a total of 9.5 MSEK in 1898 to 0.25 MSEK in 1903.³² Without the extra reserve requirements that came with the right to issue notes, ULBs were effectively placed on an equal legal footing with LLBs. While this became the *de facto* setting from 1897, it was formally codified into law in the Banking Act of 1903, at the end of the banknote withdrawal phase.

As Table 1 shows, LLBs effectively avoided legislation on demand liabilities, as banknotes, which they were forbidden to issue, continued to be perceived as a riskier liability than deposits. In Sweden, as observed elsewhere in northern Europe, when notes were constrained by legislation, deposits increasingly replaced the former through the growth in circulation of checks.³³ As deposits were not regulated, they had exceeded

³¹ SFS, 1874:44 §§26–28.

³² Ögren, "Free or Central Banking?," 75–76; SFS, 1874:44 §§26–28.

³³ Forrest Capie and Alan Webber, *A Monetary History of the United Kingdom, 1870–1982: Data, Sources, Methods* (London, 1985); Seán Kenny and Jason Lennard, "Monetary Aggregates for Ireland, 1840–1921," *Economic History Review* 71, no. 4 (2018): 1249–69; Anders Ögren, "The Modernization of the Bank of Sweden – The Riksbank," in *The Swedish*

the volume of outstanding notes, even by ULB banks, as early as the 1860s.³⁴

The 1860s saw the first wave of limited liability banking in Sweden. The first legal proclamation establishing such a bank, in 1863, concerned the opening of Skandinaviska Kreditaktiebolaget in Gothenburg.³⁵ This bank opened in 1864 and quickly became one of the most prominent Swedish commercial banks. It was not until 1886 that the first legislation pertaining to LLBs was passed. As with the previous legislation for ULBs (1846), this represented no more than a formal codification of the existing LLB charters into standard law.³⁶ Despite the rapid growth of LLBs through the 1870s, in the wake of banking crisis of 1878 and the poor economic conditions of the 1880s bank formation stalled. It was in the 1890s that the number of LLBs began rapidly increasing (Figure 1).

In the United Kingdom, the adoption of limited liability banking slowed as extended liability on banknotes remained, regardless of conversion to the new corporate form.³⁷ In Sweden, however, LLBs were never authorized to issue notes and the new form of ownership was accepted early on. Apart from the prohibition from issuing banknotes, LLBs' liabilities remained largely free from scrutiny, and deposit regulation only became a feature of the system from 1911.³⁸

The 1897 Riksbank Act

As mentioned above, the 1897 Riksbank Act was the deathblow to private banknotes in Sweden. Indeed, following the legislation, the total number of LLBs exceeded ULBs for the first time (Figure 1). The act primarily concerned the Riksbank, but its importance stems from its declaration that ULBs were to withdraw all of their notes by the end of 1903. The Riksbank henceforth was granted a monopoly on issuing banknotes.³⁹

However, while this may be interpreted as a negative constraint upon ULBs, evidence suggests that note issuing was not a very profitable business. The income arising from notes came from the seigniorage paid by the noteholders by foregoing interest income on deposits. By 1897,

Financial Revolution, ed. Anders Ögren (Basingstoke, 2010), 79–94; Ögren, “Financial Revolution and Economic Modernisation in Sweden,” *Financial History Review* 16, no. 1 (2009): 47–71.

³⁴ Ögren, “Free or Central Banking?,” 87–88.

³⁵ SFS, 1863:59.

³⁶ Ögren, “Political Economy.”

³⁷ Turner, *Banking in Crisis*, 124.

³⁸ K. Lilja, “The Deposit Market Revolution in Sweden” in Ögren, *Swedish Financial Revolution*, 56.

³⁹ SFS, 1897:27; Ögren, “Political Economy.”

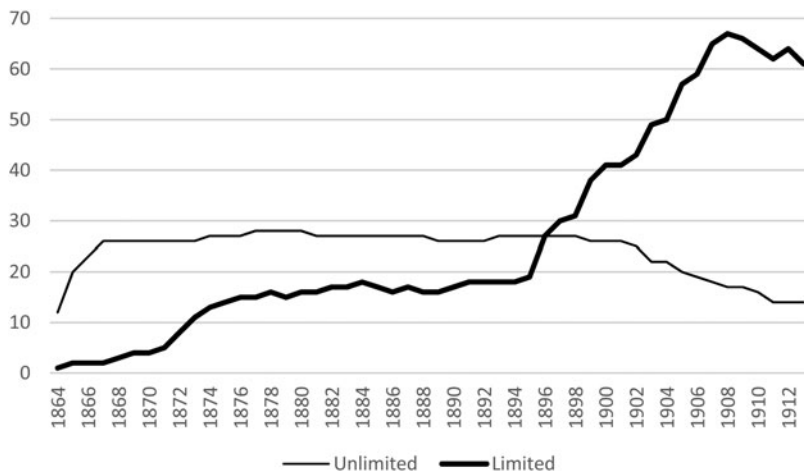


Figure 1. Number of commercial banks in Sweden by liability type, 1864–1912
(Source: *Sammandrag af Bankernas Uppgifter* [Summary of the Banks' Reports], 1866–1911.)

banknotes accounted for 13 percent of total ULB demand liabilities.⁴⁰ Following the act, the market situation for ULBs and LLBs became identical. At that stage, taxes on banknotes had been increased to 1 percent and notes could no longer be issued in denominations smaller than 10 SEK from 1889 (prior to this it had been 5 SEK).⁴¹ In addition, the printing, handling, and distribution of notes, as well as participation in bank exchanges, presented logistical as well as financial costs. Holding large liquid reserves both to satisfy legal demands and to redeem notes incurred heavy opportunity costs. Table 2 contrasts the pre-1897 balance-sheet constraints of ULBs (stemming from the acts of 1846 and 1874) with the situation after the 1897 act.

The incentive to issue notes was questionable at the end of the nineteenth century. While the volume of notes issued continued to increase until 1900, its share of ULB liabilities fell back to 10 percent.⁴² Some assert that “the note issue was determined by the public’s demand for notes as a medium of exchange and their willingness to hold private rather than Riksbank notes.”⁴³ Despite this temporary growth in the volume of notes issued, ULBs began shedding cash reserves (especially gold coins) from 1897, suggesting that the note supply arose from

⁴⁰ Average calculated from *Sammandrag af Bankernas uppgifter*, Dec. 1896.

⁴¹ Ögren, “Political Economy.”

⁴² Average calculated from *Sammandrag af Bankernas uppgifter*, Dec. 1900.

⁴³ Jonung, “Economics of Private Money.”

Table 2
A Stylized Balance Sheet of a Note Issuing Bank (ULB)

Pre 1897		Post 1897	
Assets	Liabilities	Assets	Liabilities
Loans	Notes*	Loans	Deposits
Commercial Bills	Deposits	Commercial Bills	Other Borrowing
Riksbank Notes	Other borrowing	Riksbank Notes	Working capital (paid up)
Gold Coins*	Working capital (paid up)		
Reserve Fund*	Reserve and Certificates*		
Bond Certificates*			
Total	Total	Total	Total

Note: Authors' interpretation. Asterisks applied to balance sheet items that are bound to note issuing. While Riksbank notes remained the principal reserve after 1897, other marginal reserves of specie remained.

customer demand rather than the eagerness of banks to supply them. If the opportunity arose to replace N_t with D_t , the banks could free up legally binding reserves and redeploy them toward other investments. The Bank Act of 1897 imposed this opportunity upon them exogenously. It effectively outsourced a potentially customer-sensitive, firm-level decision to the realm of public policy.

The discussion presented here should cast significant doubt on any “free banking” interpretation of Sweden’s commercial banks in the nineteenth century.⁴⁴ From 1824 until 1897 the majority of extant banks were subject to legislation forcing them to retire a significant portion of capital, and they could not “freely” sell their ownership interest, which remained in law after 1903. Further, legislation compelled banks to hold reserves that were not desired by the public in the form of gold coins in addition to the accepted medium of exchange. In other words, the share of assets that were retired for the note issuance legally constrained the composition of their assets. Finally, a reserve fund was exogenously imposed on ULBs in the form of retired cash reserves as long as they remained note-issuing entities. This reserve fund was separate from the cash containing the gold coins required by legislation. In summary,

⁴⁴ K. Schuler, “The World History of Free Banking,” in *The Experience of Free Banking*, ed. Kevin Dowd (London, 1992), 31–32; George A. Selgin, *The Theory of Free Banking: Money Supply under Competitive Note Issue* (Totowa, NJ, 1988), 7.

after 1897 ULBs were actually “freer” than had ever been the case previously.

The final legislation of this transition period was the 1903 Banking Law.⁴⁵ While it does not materially affect our remit, it effectively formalized what had existed in the previous charters of ULBs and LLBs. The 1903 law consisted of two sections, the first concerning ULBs (pp. 1–29) and the second concerning LLBs (pp. 30–55). The difference in the number of pages and paragraphs is explained by the more complicated rules concerning the ULB shares.⁴⁶ ULB shareholders faced more scrutiny and their shares could not be transferred without the consent of all existing shareholders.⁴⁷ In contrast, LLB shares could be bought and sold on the market without limitations, as was the case with standard publicly listed shares.⁴⁸ A minimum of thirty shareholders was maintained for ULBs, while twenty shareholders could form an LLB.⁴⁹

In marked contrast to the LLBs, the number of ULBs began a distinct decline from the end of the nineteenth century that corresponds to the act of 1897. Similarly, after 1903 the total volume of LLB assets overtook the ULB equivalent for the first time. Between the act of 1903 and the year 1906, six ULBs chose to merge with LLBs and the process continued through the difficulties of the 1907 crisis and its aftermath. Indeed, the only reason for the decline in the number of ULBs was the wave of mergers and acquisitions that took place among Swedish commercial banks, as none was liquidated in 1907.⁵⁰ No acquisitions of ULBs occurred during the note-issuing period. Beginning in 1899, ten

⁴⁵ SFS, 1903:101. The act principally concerned the large number of small limited liability *Folkbanks* that had been established between 1896 and 1902. The law demanded a minimum paid-up capital base of SEK 1 million (§8 for ULBs and §10 for LLBs) and restricted the use of the word “bank” to the *Solidariska (Enskilda) banks (ULBs)*, the *Aktiebolagsbanker (LLBs)*, and the savings banks. The act stipulated that banks “who did not aim for more than limited local business require 0,2 MSEK” (1903:101 §8, 3 for ULBs; §10, 32–33 for LLBs). Many of them had not reached the minimum capital size as late as 1905, which underlines the lack of investor appetite in the potential from the increased scale of their business in their localities. The lower capital requirement for smaller entities may explain part of the growth of LLBs between 1903 and 1907 (Figure 1). However, these operations do not impact our simple form difference in difference analysis. Their establishment in the mid-1890s was not linked to, and was not affected by, the Bank Act of 1897. While there was a quite large number of such banks, their combined assets were less than 5 percent of total bank assets.

⁴⁶ SFS, 1903:101 §97 for ULBs and §90 for LLBs.

⁴⁷ SFS, 1903:101 §20, 6.

⁴⁸ SFS, 1903:101 §17, 34.

⁴⁹ SFS, 1903:101 §9, 3–4 for ULBs; 32 for LLBs.

⁵⁰ Grodecka, Kenny, and Ögren, “Predictors of Bank Distress”; Mats Larsson, “The State and the Financial System: Regulation and Regime Change around 1900,” in Ögren, *Swedish Financial Revolution*, 175; Ögren, “Political Economy,” 283. Concerning the M&A wave, see S. Jungerhem and M. Larsson, “Bank Mergers in Sweden: The Interplay between Bank Owners, Bank management and the State, 1910–2009” in *Mergers and Acquisitions: The Critical Role of Stakeholders*, ed. Helén Anderson, Virpi Havila, and Fredrik Nilsson (London, 2013), 224–246; and Lars Karlsson, Henric Häggqvist, and Peter Hedberg, “Market Structure

acquisitions took place prior to the crisis of April 1907.⁵¹ While this trend is a reflection of an expansive period, some of the shareholders of these banks no doubt wished to take advantage of the limitation of personal liability. Nonetheless, the majority of ULBs remained. Indeed, the original ULBs maintained their position as the most significant type of banks into the early part of the twentieth century, despite their lower numbers. The median ULB was fifteen times larger than the median of their LLB competitor and as much as six times older at the end of our period.⁵²

Unlimited and Limited Liability Banks Compared

In what follows, we compare the aggregate balance sheets of ULBs and LLBs with a focus on risk-taking. We do this to make broad observations of both categories of bank before delving further into the response of banks to the environmental change ushered in by the Bank Act of 1897. To guide us in our questions, we compare cash reserves and the structure of both categories' assets.

Our first measure of risk concerns the cash reserve management of the ULBs and LLBs, focusing on the most secure part of the reserves: legal-tender cash or deposits at the Riksbank (or "base money"). [Figure 2](#) displays the reserve holdings of both categories of banks. Indeed, for much of the period ULBs tended to hold higher reserves than LLBs, in line with Grossman's findings.⁵³ However, a distinctive downward trend can be observed around the time of the 1897 act in the ULBs' cash reserves, where a decline of one percentage point (or a fall of 25 percent) can be observed in that year alone. The trend continues to such an extent that by the end of 1903, ULBs held less cash reserves than LLBs. Indeed, using a simple Bai-Perron test, we find a statistically significant structural break in the ULB series in March 1898.

In order to provide some indication of risk in the portfolio, we track the overall share that lending occupies as a percentage of assets. [Figure 3](#) shows a broad trend of convergence in risk between the two categories of bank over the period from 1897 to 1903. Initially, ULBs had engaged in less lending and held more financial assets than the LLBs, until they converged to similar shares after 1903. This initial difference is attributable to the aforementioned legislation concerning private banknote issuance.

and Efficiency in Swedish Commercial Banking, 1912–1938," *Scandinavian Economic History Review* (2020): 1–21.

⁵¹ See Grodecka, Kenny, and Ögren, "Predictors of Bank Distress."

⁵² The median ULB's assets totaled 29 million SEK against the median LLB's 2 million SEK. The median age of the ULB bank was forty-three years against the equivalent of seven years for LLB banks. Cross section from 1904.

⁵³ Grossman, "Double Liability."

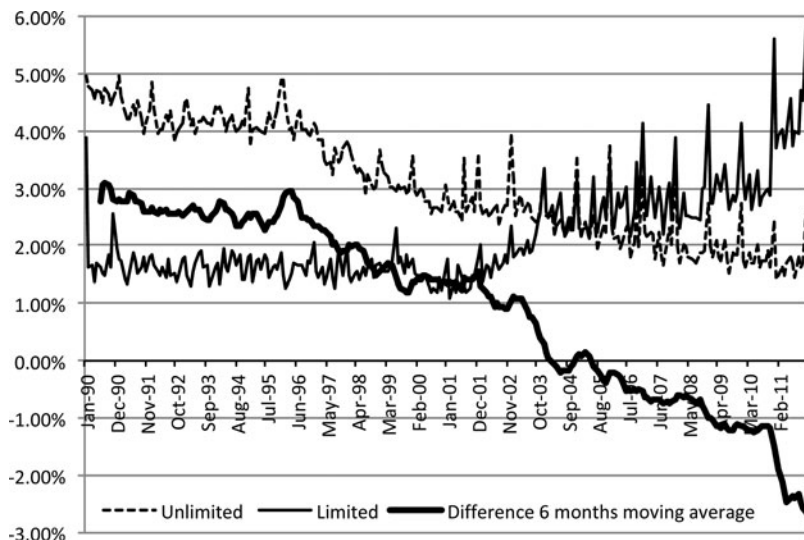


Figure 2. Cash reserves as percent of demand liabilities, for limited and unlimited liability banks, 1890–1911

Note: Authors' calculations. The difference is expressed in percentile unit. "Cash" refers to gold, silver, Riksbank notes, and balances at the Riskbank. (Source: *Sammandrag af Bankernas Uppgifter* [Summary of the Banks' Reports], 1890–1911.)

The law stipulated that the equity capital should be invested in at least 25 percent of legal-tender cash as reserves, with the remainder to be held in the form of "trustworthy bonds."⁵⁴ In other words, the convergence in portfolio risk occurred after the law obliging ULBs to hold financial assets had been removed. *Prima facie*, this may suggest Coasean dynamics at play, but up to this juncture we have only considered the aggregate picture with no controls.

As already noted, viewing trends at the aggregate level suffers from some important shortcomings. First, the aggregate volume of the comparative assets and liabilities is indifferent to the size of banks considered between the two groups. Second, we have no sense of whether there are any important changes specific to ULBs after the 1897 act that might distinguish them from LLBs. Finally, as many new LLBs came into existence from the mid-1890s, owing to their originally small size the LLB category as a whole is likely to appear to grow more rapidly.

One way of considering the comparative changes around the legislation between the two bank groups is a simple form difference-in-

⁵⁴ SFS, 1846:1 §§ 8, 11; Ögren, "Free or Central Banking?," 75.

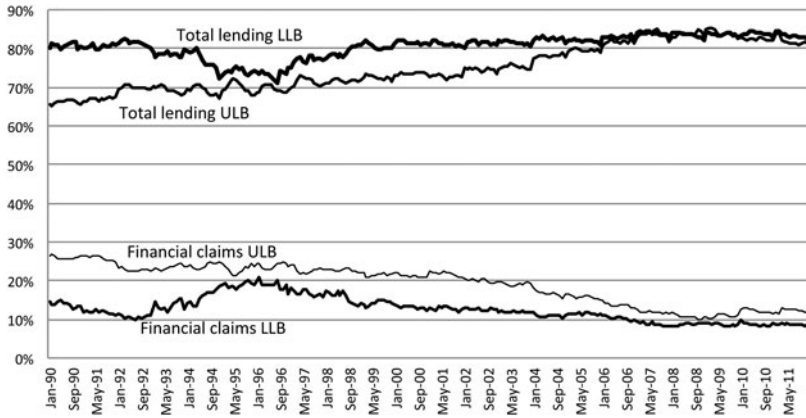


Figure 3. Lending and financial claims (as percentage of assets), 1890–1911
 Note: Authors’ calculations. “Lending” refers to loans plus commercial bills. “Financial claims” refers to cash plus balances at other banks (plus *reservfond* and *grundfondshypotek*). (Source: *Sammandrag af Bankernas Uppgifter* [Summary of the Banks’ Reports], 1890–1911.)

difference (DD) approach:

$$\delta DD = (UL_{post1897} - UL_{1896}) - (LL_{post1897} - LL_{1896})$$

Comparing changes instead of levels adjusts for the fact that in the pre-treatment period (1896), the two categories of bank had existing differences across the variables to be examined. In essence, the equation above produces the difference in the change observed between the two groups after the treatment period of 1897. In addition, when using this method it is possible to control for size, which all of the results in our basic testing are subjected to.

We draw on the theories outlined above to guide us in our choice of variables. We remove any takeovers/acquisitions and conversions from the sample. We also require that the banks compared must have existed for at least six years prior to 1897 (so, since 1891) and must have remained in operation at 1900 and at 1903 for the two time horizons we consider. This we view as necessary to reduce any potential size/age bias that could affect the magnitudes in change. We collected bank-level data on the appropriate variables for December 1896, December 1900, and December 1903. When our filters are applied, the population included is forty banks for the period from 1896 to 1900 and thirty-four banks for the period from 1896 to 1903.

Under the heading of “Risk” in Table 3, we observe that relative to LLBs, ULBs increased their leverage (assets/equity) considerably.

Table 3
Changes in Selected Variables (ULBs post 1897): Differences in Differences

	1900	1903
Risk (percentage points)		
Leverage	49	138
Cash	-0.4	-0.4
Cash and Bankers' Balances	0.8	-1.9
Transaction Costs (Basis points)		
Lending Interest	-11	-4
Deposit Interest	31	2
Reduction in Spread	42	6
Shareholder Measures (percentage points)		
ROE	0.31	2.01
Dividends to Shareholders	-0.61	-0.26

Source: Sammandrag av Bankernas uppgifter (1896, 1900, 1903) and Bokslut (1896, 1900, 1903). Note: All differences control for size and the control groups is Limited Liability banks. The sample of banks includes only those banks that had been extant in 1891 (43 obs.).

Indeed, at the end of 1903 their leverage had grown by a magnitude of almost one and a half units more than LLBs. While relative cash ratio declines from ULBs may appear trivial at 0.4 percentage points, considering that their cash ratios stood at 3.6 percent in 1896, the fall represents a relative decline of more than 10 percent compared with LLBs.⁵⁵

Nonetheless, if any note-issuing bank's ("A's") notes accumulated at any other bank's ("B's") tills, such a contingent claim could conceivably pressure bank A to keep balances at bank B, in order to offset B's claim against it (A). We therefore include bankers' balances held at other banks as part of a broad cash ratio. When this is undertaken, the relative decline over the whole period of note withdrawal is almost 2 percent, which represents a substantial reduction in ULB liquidity after 1897. ULBs no longer needed to hold reserves at other banks as the banknote exchanges disappeared. In addition to this, the disappearance of the dual requirement of the *reservfond* and *grundfondshypotek* enabled ULBs to convert large immobile reserves into assets that did not require reserves or capital to be deployed.

The removal of transaction costs associated with notes, outlined above, should have allowed ULBs to become more competitive with LLBs. We collected interest rate data on loans and deposits at bank level to consider

⁵⁵ This cash reserve does not include the Reserve Fund. This is omitted, as it never applied to LLBs.

whether the ULBs altered their pricing structure relative to LLBs. In the short run, we observe a rise in ULB deposit rates and a fall in lending rates consistent with that hypothesis (narrower spreads). However, by the second period, most of the change had already materialized.

Finally, while ULB shareholders' dividend receipts did not grow as fast as LLBs' over the period, the level of ULB dividend payments remained consistently higher. The release of ULBs from the reserve fund requirement as a basis for note issuance led to a fall in precautionary reserve holdings. This was reflected in considerable growth in leverage and in superior capital gains earned by ULB shareholders. Earmarked liquid reserves and retired "trustworthy bonds" were off-loaded to increase leverage and other more potentially lucrative/risky investments. The effect of this redeployment is most notable in the case of leverage. Once legal constraints were removed, ULBs generally operated according to a Coasean interpretation.

Corporate Governance and Capital Structures

After 1897, there remained little incentive to establish ULBs. Why then did the majority of ULBs remain with extended shareholder liability after that landmark legislation? As we have seen, when legislative differences were removed, both ULBs and LLBs tended to converge in their balance-sheet ratios, despite the considerably larger exposure to personal ruin for ULB shareholders. We now examine whether differences in corporate governance, investor returns, and capital structures hold some clues as to why this convergence was acceptable to ULB shareholders.

It is not surprising that ULBs had considerably larger nominal capital sizes than LLBs, given the difference in sizes already discussed as well as their older age profile. In an almost identical manner to the United Kingdom, the majority of all Swedish banks operated with considerably higher authorized share capital than issued/paid-up/called capital. We refer to the difference as "uncalled capital."⁵⁶ This contingent capital represented a reserve that could be called upon from shareholders in the event of a bank experiencing pressure or winding up. The difference between the two types of bank, in terms of capital, is shown in [Table 4](#).

In disaggregating the nature of the capital of both bank types, a number of observations can be gleaned from the data as is visible in [Table 5](#). ULBs were able to operate with considerably lower ratios of paid-up capital, reserve capital, and shareholder resources as a

⁵⁶Turner, *Banking in Crisis*, 199–201.

Table 4
The Capital Structures of Swedish Commercial Banks, 1896

	<i>ULB</i>	<i>LLB</i>
<i>Paid up Capital/Liabilities to Public</i>		
Mean	17.8	25.0 (41.6)
Median	12.8	17.1 (22.6)
Standard Deviation	5	12.1 (42.4)
<i>Uncalled Capital/Liabilities to Public</i>		
Mean	35.1	39.1 (152.0)
Median	32.0	34.9 (42)
Standard Deviation	11.6	19.6 (257.0)
<i>Paid up capital + shareholder res/Liabilities to Public</i>		
Mean	21.1	29.0 (44.5)
Median	16.5	24.7 (26.9)
Standard Deviation	5.3	12.2 (41.1)
<i>Total Shareholder Resources/Liabilities to the Public</i>		
Mean	51.2	64.5 (193.6)
Median	44.8	53.6 (70)
Standard Deviation	18.9	25.9 (294)

Source: *Sammandrag af bankernas Uppgifter and Bankmatrikeln*. Note: Refers to 1896. Authors' calculations. Paid up capital is taken as the issued capital, uncalled capital is the difference between authorised share capital and paid up capital, paid up capital and shareholder reserves is calculated as the reserved profits plus paid up capital and total shareholder resources is fully authorised capital. The size of banks is controlled for in the mean. Entire sample of Limited Liability banks without controls in bracket.

Table 5
Investor and Efficiency Ratios, percent.

	<i>Unlimited Liability</i>	<i>Limited Liability</i>
Dividend paid (avg)		
1896	8.3	7.3
1903	9.6	9.4
Return on Equity (avg)		
1896	8.0	9.1
1903	8.4	7.7
Obs.	20	14

Sources: *Sammandrag and Bokslut* (1896; 1903) Note: Includes all banks which had existed six years prior to legislative change and excludes mergers and acquisitions. Authors' Calculations.

percentage of public liabilities. Conversely, LLBs typically exhibited higher ratios of all capital as a share of public liabilities. Moreover, they tended to offer depositors larger shareholder resources than their

ULB competitors. They also operated with bigger shares of uncalled capital, should circumstances require it. A higher “market capital requirement” may have been at work for LLBs.⁵⁷ This result is remarkably similar to ratios reported for the dual-liability British banking system. Higher paid-up capital ratios of U.K. LLBs were a means of “assuring depositors of the security of their deposits.”⁵⁸

However, our capital data may hold some additional answers with regard to greater risk-shifting among ULBs after 1897. ULBs had less uncalled (contingent) shareholder capital than LLBs. The former’s move into riskier portfolios after 1897 might be linked to the strand of literature that finds that banks with lower levels of contingent capital increased relative risk-taking.⁵⁹ According to this interpretation, Stigler’s Coase theorem dominates as it is the composition of the balance sheet alone that matters after 1897 when largely illiquid reserves are no longer required.

It appears that, in terms of both cash reserves and capital resources, LLBs paid some premium to depositors. Despite the change in structure of the Swedish banking system, the perception of “cumulative stability” reflected by the comparatively low failure rate for established ULBs allowed them to operate with higher leverage; they may have traded on reputational capital. All else being equal, as ULBs operated with lower capital ratios, a better return on investment should have been available to ULB shareholders. Indeed, ULB shareholders drew direct compensation for their greater personal exposure in the form of higher dividend payments than the LLBs. While the difference in the difference after 1897 in dividends is minimal, the average level of ULB dividend payments remained higher.

However, following the disappearance of the obligation to back notes with extensive resources, leverage was also allowed to rise, increasing the capital gains enjoyed by ULB investors (return on equity) relative to LLB shareholders.

Nonetheless, these explanations do not fully account for ULB shareholder willingness to accept unlimited personal liability for a greater amount of leverage, capital gains, and higher dividends than their LLB counterparts. An assessment of corporate governance cultures might yield further clues. With this in mind, we collected data on company boards, shareholder requirements, and internal controls that may identify differences in risk management between ULBs and LLBs from the first available source after the 1903 act (Table 6).

⁵⁷ Grossman, *Unsettled Account*, 147.

⁵⁸ Turner, *Banking in Crisis*, 125.

⁵⁹ Grossman and Imai, “Contingent Capital.”

Table 6
External and Internal Controls

	<i>Unlimited Liability</i>	<i>Limited Liability</i>	<i>UL/ LL</i>
<i>No. Of Board Members</i>			
Mean	8.8	8.5	
Median	7.5	7.0	
Standard Deviation	2.9	3.5	
<i>Price of Share Lot at Issuance (SEK)</i>			
Mean	730.6	207.2	3.53
Median	675.0	100.0	6.75
Standard Deviation	255.6	183.3	
<i>Local Board member requirement</i>			
Number of banks	7	2	3.5
Per cent of Group	37%	3%	
<i>Lending (SEK)</i>			
Average Loan	11,208	7,369	1.52
Average Discount	1,169	908	1.29
<i>Deposits (SEK)</i>			
Time Deposits/Total Deposits (ratio)	0.76	0.56	
Average Deposit (SEK)	1,521	1,222	1.24

Source: Bankmatrikeln, Sammandrag af bankernas uppgifter. Note: Authors' Calculations. Financial Ratios are taken for April 1907. Bankmatrikeln 1906 and 1911 for corporate governance data.

While similar board sizes are observed in both categories of bank, key differences are visible. In the case of ULBs, potential investors faced considerably higher nominal share prices at subscription. In fact, the median share price of ULBs was seven times that of the LLBs. Proponents of ULBs in Parliament also fought for high minimum share denominations, as “the principle of solidarity otherwise would be useless if a hundred paupers united to start a bank.”⁶⁰ While this was a legacy of the early banking acts, it remained as an external control of the ULB system, which prevented poorer classes of investors from gaining ownership and shielded existing investors from having to cover the liabilities of owners with insufficient means, in the event of a failure. Banks with poorer classes of investors have been highly prone to failure.⁶¹ Subsequent bank historians noted that Swedish bank owners were indeed

⁶⁰ Ögren, “Political Economy,” 277.

⁶¹ Grodecka, Kenny, and Ögren, “Predictors of Bank Distress”; Charles R. Hickson and John D. Turner, “The Genesis of Corporate Governance: Nineteenth-Century Irish Joint Stock Banks,” *Business History* 47, no. 2 (2005): 174–89.

wealthy individuals.⁶² In reality, shareholder wealth was a de facto requirement, as investors needed to invest a substantial amount of paid-up capital, as well as accepting the opportunity cost associated with tying their capital up in the *grundfondshypotek* and *reserufond*.⁶³

The 1903 act maintained the status quo of the nineteenth-century ULB share-ownership constraints. ULB shareholders were bound to ownership throughout the entire charter period, unless a vote at a general meeting was taken giving consent, where the prospective buyer would also require board approval.⁶⁴ This was specifically designed to limit the risk of shareholders avoiding personal responsibility in the event of bank distress. According to Lars Jonung, this “induced a close monitoring of the management of the banks by the owners” and “bank shares were infrequently traded.”⁶⁵ No such restriction affected LLB’s ability to transfer shares.⁶⁶ This restriction mirrored the regulatory culture in U.K. legislation.⁶⁷ Elsewhere, it has been observed that such thin trading of bank shares resulted in better governance, as owner participation increases.⁶⁸

However, it was also a way of limiting competition by using individual share capital to increase the barriers to entry.⁶⁹ As shown in the United Kingdom, depositors and other shareholders concerned themselves primarily with the wealth of the owners of banks in the era of unlimited liability. Considering the opaqueness of banks’ asset profiles, this form of ownership was perceived “by the shareholders [as being] more conducive to profit, and by the depositors, more likely to give safety,” protecting them from expropriation and preventing the bank from excessive risk-shifting.⁷⁰ Yet, to date, no empirical evidence has been put forward to support this claim for Sweden. Indeed, restricted to the balance-sheet view alone, ULBs would appear to be “riskier” institutions, from the point of view of higher leverage and lower cash reserves, liquidity, and capital ratios outlined above. However, a number of other internal controls were uncovered in the archive material with regard to monitoring risk.

First, in their articles of association, many ULBs required that a given number of board members needed to come from the locality in which the

⁶² Sven Brisman, *Sveriges affärsbanker: Utvecklingstiden* (Stockholm, 1934), 229.

⁶³ Ögren, “Free or Central Banking?”; “Political Economy.”

⁶⁴ §20, 6.

⁶⁵ Jonung, “Economics of Private Money.”

⁶⁶ §17, 34.

⁶⁷ 6 Geo IV, c. 42, s. 22.

⁶⁸ Graeme G. Acheson and John D. Turner, “The Secondary Market for Bank Shares in Nineteenth-Century Britain,” *Financial History Review* 15, no. 2 (2008): 123–51.

⁶⁹ Ögren, “Political Economy.”

⁷⁰ A. Wilson quoted in John D. Turner, “‘The Last Acre and Sixpence’: Views on Bank Liability Regimes in Nineteenth-Century Britain,” *Financial History Review* 16, no. 2 (2009): 111–27; Turner, *Banking in Crisis*, 209.

bank was first established. This control may have improved lending decisions, with respect to local expertise and reduced absenteeism. Indeed, a key predictor of bank failure in the 1907 crisis in Sweden was a rapid extension of branching into unfamiliar regions, with smaller boards.⁷¹

Second, ULBs limited their exposure to short-term runs on their liabilities by holding a considerably higher share of deposits as time (long-term) deposits. Other studies have shown that poorer depositors are more likely to run a bank.⁷² Such income-constrained borrowers also represent a higher risk of defaulting. This is visible in the higher interest rates on (riskier) loans to borrowers with less wealth. With this in mind we gathered data on the number of deposits and loans in both categories of bank to estimate the average deposit and loan as a crude proxy for the income levels of customers (see Table 6).⁷³ Indeed, the average deposit at a ULB was 1.2 times larger than those at LLBs. Finally, the average loan granted from ULB banks was 1.5 times larger than the equivalent for LLBs. Taken together, these ratios may suggest that both borrowers from and lenders to ULBs were, on average, wealthier.

While the econometric evidence suggests no role for shareholder liability regimes in explaining bank distress in 1907, those factors that were statistically significant—poor cost efficiency, smaller size, smaller loans, and rapid growth in size into new regions—were predominant characteristics of LLBs, which comprised more than three-quarters of the subsequently distressed banks in 1907.⁷⁴

The choice of ULB shareholders to remain with extended shareholder liability after 1897, when transaction costs, associated with note issuance, were finally removed, is based on a confluence of factors. First, they subsequently enjoyed greater capital gains and an opportunity to converge toward the riskier, but more profitable, portfolio choices of LLBs. Second, the battery of internal and external controls protecting them provided some assurance that the risk to which they were exposed would be less likely to materialize. Finally, the long history, prestige, and reputation enjoyed by the ULBs, which had provided the “cumulative stability” of the nineteenth century, was something that they may have taken full advantage of after 1897. ULBs can exploit their more risk-averse reputations and create a moral-hazard problem

⁷¹ Grodecka, Kenny, and Ögren, “Predictors of Bank Distress.”

⁷² Cormac Ó Gráda and Eugene N. White, “Who Panics during Panics? Evidence from a Nineteenth Century Savings Bank” (NBER Working Paper No. 8856, Mar. 2002).

⁷³ As in Ó Gráda and White, “Who Panics during Panics?” See also Robert Cull, Asli Demirgüç-Kunt, and Jonathan Morduch, “The Microfinance Business Model: Enduring Subsidy and Modest Profit,” *World Bank Economic Review* 32, no. 2 (2018): 221–44. This paper shows that “poorer customers tend to take smaller loans,” 223.

⁷⁴ Grodecka, Kenny, and Ögren, “Predictors of Bank Distress.”

by lulling depositors into a false sense of security.⁷⁵ The ULBs, in this interpretation, could not live down their good reputations.

Conclusion

In this article, we revisit the case of Swedish commercial banking, often cited as a model case of success and stability, at the turn of the last century. Specifically, we use legislative changes over the period from 1897 to 1903, which placed ULBs and LLBs on a level playing field, as a prism to address some outstanding questions in the literature. Before 1897, significant legal differences existed between ULBs and LLBs that affected their asset and liability structures and growth. Indeed, for most of the nineteenth century the majority of Swedish commercial banks were heavily regulated concerning their note issuance, capital requirements, asset composition, and shareholder operations. The arrival of LLBs in the second half of the nineteenth century was not accompanied by significant legislation, as they were not allowed to issue notes. In 1897, this privilege was withdrawn from ULBs and legislative differences effectively disappeared, leaving only the shareholder liability form as the key distinguishing feature between the two groups.

We exploit this interval to assess whether the initial risk aversion shown by ULBs was driven purely by legislation or whether this corporate form was likely to hold more liquid reserves and operate with less leverage as a result of unlimited shareholder exposure. In the first case, Coasean mechanisms would predominate as liability is irrelevant when all else is equal.⁷⁶ In the second case, the “skin in the game” argument prevails.⁷⁷

In this article, we suggest that liability form mattered little after 1897. The portfolios of ULBs quickly converged on those of LLBs as their assets were suddenly “unlimited” following the removal of their note-issuing “privileges.” We argue that note issuance was a costly form of liability that was a response to customer demand rather than any willingness on the part of ULBs to supply it. When the act of 1897 removed this liability form from ULBs, it represented a substantial decline in transaction costs in retired capital, fixed reserves, and gold coin holdings that the public did not demand.⁷⁸ This was matched by pronounced growth in leverage by the ULBs (controlling for LLB growth) and a concurrent decline in liquidity reserves.

The fall in transaction costs also manifested in stronger growth in capital gains for ULB investors after 1897, and their dividends remained

⁷⁵ Anderson and Watugala, “Impact of Extended Liability.”

⁷⁶ Acheson and Turner, “Impact of Limited Liability”; Colvin, “Organisational Determinants.”

⁷⁷ Grossman and Imai, “Contingent Capital.”

⁷⁸ Jonung, “Swedish Experience.”

higher than their counterpart LLB owners. The competitive positions of ULBs were also improved, as they were enabled to narrow their interest spreads to attract more depositors and borrowers. In essence, we argue that the act of 1897 released ULBs from a number of balance-sheet restrictions that applied throughout the nineteenth century. The experience hardly squares with what some have interpreted as a free banking period, as even while ULBs were “free” to issue notes, the opportunity cost foregone and regulatory attention it attracted was extensive and directly affected or limited the composition of portfolios.⁷⁹

However, the question remained after 1897 as to why ULB shareholders tolerated and controlled this exposure, given that their private wealth was at risk in the event of a failure. ULBs were allowed to operate with lower capital ratios, in large part because of their size. They had less uncalled capital remaining than their LLB competitors. Indeed, we find that an external control in the form of comparatively prohibitive share prices, typically seven times those of LLB prices, would have permitted only the wealthiest of prospective buyers into ownership positions. Further, regulations regarding board approval of new shareholders reinforced this protection. Both measures shielded existing shareholders from covering the debts of other owners with insufficient means to pay off bank debts in the event of failure.

Moreover, we try to gage the clientele of each bank category by collecting data on the typical loan and deposit sizes. ULB customers tended to deposit and borrow larger amounts, which may reflect a wealthier clientele who were less likely to panic. Finally, we find that additional controls such as local residence for managers existed among a sizable minority of ULBs, to ensure local knowledge and expertise on potential borrowers. In sum, while ULBs ostensibly operated with greater balance-sheet risk after 1897, internal and external controls remained a dominant feature of their corporate governance relative to LLBs.

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⁷⁹ Schuler, “World History,” 31–32; Selgin, *Theory of Free Banking*, 7.