# Kansas' Experiment with Private Deposit Insurance

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## Abstract

Between 1909 and 1922 a private deposit insurance company coexisted with the state-sponsored deposit insurance program in Kansas. This paper documents its development using primary sources. In addition, it examines if affiliation with the private deposit insurance (i) had an effect on risk-taking and the probability of failure; (ii) increased confidence among depositors, and (iii) was influenced by a neighboring bank's membership in the state's deposit insurance. We find that affiliation with the private deposit insurance did not affect a bank's likelihood of failure, although smaller national bank members did increase risk-taking. The evidence does not support the hypothesis that the company enhanced depositor confidence. Lastly, we do find strong evidence that a bank's decision to join the private deposit insurance was influenced by neighboring banks' affiliation with the Kansas deposit insurance program.

## I.        *Introduction*

With the objective of arresting banking panics and restoring depositor confidence in the banking system, eight states in the U.S. adopted some form of deposit insurance between 1907 and the early 1920s (White, 1983). Numerous papers have pointed out that these deposit insurance schemes incentivized banks to amplify risk (moral hazard), contributing to the high rate of failure of primarily small banks in agricultural states during the early 1920s, and ultimately, to the demise of these state-sponsored programs. (Calomiris, 1992); Hooks and Robinson, 2002; Wheelock, 1992; Wheelock and Kumbhakar, 1994, 1995; White, 1983). Some of these studies have focused on the Kansas deposit insurance program because its voluntary feature permits an examination of the causes and consequences of deposit insurance affiliation at the bank level. The literature has generally found that both adverse selection and moral hazard were present in the Kansas voluntary deposit insurance scheme.

It turns out, however, that between 1909 and 1922 a private deposit insurance company, the Bankers Deposit Guaranty and Surety Company (BDGSC), coexisted with the Kansas deposit insurance program (KDI). This private insurance catered primarily to national banks, which were disallowed from participating in the Kansas deposit insurance program. As we document in more detail further below, this company was popular among national banks, with a participation rate peaking at around 50 percent. Surprisingly, there is no modern literature that mentions, let alone analyzes, Kansas' experiment with private deposit insurance. The purpose of this paper is to fill that gap in the literature.

Specifically, we focus on three questions: (1) Given that numerous studies find that the KDI led to moral hazard among its participants (Wheelock, 1992; Wheelock and Kumbhakar, 1995), we ask if affiliation to the private deposit insurance had similar implications; (2) Given that

some studies find that the state-sponsored deposit insurance programs generated deposits because of their  confidence-enhancing feature (Aldunate 2019; Calomiris and Jaremski, 2019; Ramirez, 2009), we ask if the BDGSC was also successful in that regard.; and (3) Given that contemporary accounts suggest that national bankers formed this company because they feared competition from the KDI, we investigate whether competition from the KDI actually did influence the decision to join the private deposit insurance company.

Using data from the 1919 BDGSC's annual report, we are able to identify the list of member banks for that year. The list enables us to address the questions raised above. Summarizing our main results, we have four key findings.

First, BDGSC affiliation is not associated with a rise in the probability of failure in future years. This result stands in contrast with the literature, which on the whole, has found that deposit insurance affiliation elevated the risk of failure. As we explain in more detail below, this finding cannot be interpreted as an indication that the private deposit insurance scheme was somehow "superior" to the state-sponsored alternatives because the BDGSC phased out its deposit guaranty component in 1922, before the most severe phase of the agricultural crisis of the 1920s. Hence, it is difficult to determine what the failure rate among member banks would have been in subsequent years as the agricultural crisis worsened.

Second, we find that private deposit insurance did encourage risk taking, particularly among smaller institutions. Specifically, we find that the capital-to-asset ratio (a standard measure of bank risk) declines by 12 to 18 percent for smaller national banks. The nonlinear specification, however, implies that the private deposit insurance effects on risk tapers off at about the 60th percentile in bank size.

To further investigate the effect of the BDGSC on the capital-to-asset ratio, we also test whether this ratio declines for national banks in Kansas during the 1909–22 period using annual, state-level data. Since the national bank participation rate in the BDGSC was substantial, peaking at about 50 percent, it is not unreasonable to expect to detect an effect at the aggregate level. However, our aggregate level results do not suggest an overall decline in the capital-to-asset ratio among national banks. This combination of findings (risk taking among some institutions, but not at the aggregate level) suggests that the risk-shifting effects of the BDGSC may not have been substantial, and was limited to the smaller institutions.

Third, we find that private deposit insurance was not successful in generating deposits among its member participants. Specifically, we find zero correlation between BDGSC membership and the bank's subsequent deposit-to-asset ratio. Instead, we find that the bank's deposit-to-asset ratio was higher for relatively safer institutions: those with a high cash-to-asset ratio, and/or relatively lower loan-to-asset ratio. From this standpoint, it appears that the old adage "Cash is King" was the mantra guiding depositor choices, not membership in the BDGSC. Thus, it appears that the private deposit insurance company was not successful in fostering confidence among depositors.

We are able to corroborate this third finding using aggregate, annual data. Specifically, we test whether the deposit-to-asset ratio rises for all national banks during the 1909–22 period. The aggregate-level results do not show such an increase. Thus, our state-level results confirm what we observed using bank-level data: the private deposit insurance company did not appear to have been successful at stimulating depositor confidence.

Finally, we are able to confirm from an empirical standpoint that competition from the Kansas deposit insurance program did influence the decision to join the private insurance company.

This paper contributes to the literature in at least two ways. First, we provide the first extensive modern historical account of the existence of a private deposit insurance scheme in Kansas during the 1910s and early 1920s. This scheme has escaped the notice of recent economic research on both the state-sponsored deposit insurance systems of the early twentieth century and of private deposit insurance in the United States, with work on the latter having been confined to systems dating from the 1930s and later.[1]

Second, given the fact the Kansas private deposit insurance was quite popular particularly among national banks, it stands to reason that the numerous papers that use national banks as a "control sample" against which to measure implications of deposit insurance affiliation among state banks may need to be revised.

Third, it contributes to the long and still ongoing debate on the relative merits of private deposit insurance (vis-à-vis government-sponsored deposit insurance schemes). Briefly, the debate revolves around the issue of whether deposit insurance could be provided more efficiently by private companies (Ely, 1985; England, 1985; O'Driscoll and Short, 1984; Wells and Scruggs, 1986).[2] While this debate became less prominent after the passage of FDICIA in 1991, it remains ongoing.[3]

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[1] English (1993) provides the most comprehensive overview of private deposit insurance companies in the U.S. Table 1 lists 31 companies and their year of incorporation. Of those, only two were incorporated in the early 1930s. None is reported to have existed before then.

[2] The debate on the relative merits of private deposit insurance goes back well before the 1980s. See for instance, Cooke (1910), 370-373.

[3] See for instance, Bradley and Craig (2007a, 2007b), and more recently Danisewicz, Lee, and Schaeck (2020).

The rest of this paper proceeds as follows. The next section provides some historical and institutional background for the BDGSC. Following that section, we discuss the data used in our analysis. The empirical tests are then reported and discussed in the section after that. We complete the paper with some concluding remarks.

## II. *Historical and Institutional Background*

This section first examines attempts by the Kansas state government to include national banks in the state scheme, then discusses the creation of the BDGSC and provides information on the bankers associated with the company. It then looks at political and legal conflicts that needed to be resolved before the BDGSC could begin full operations, and concludes with a brief discussion of the company's market significance and its reorganization.[4]

### II.1 *Failed Attempts to Include National Banks in the Kansas Guaranty Scheme.*

The passage of the Kansas state deposit guaranty scheme (KDI) concerned the state's national bankers, who worried that state bankers would gain a significant competitive advantage over them by offering depositors greater safety. Although many Kansas national bankers did not favor the KDI, some of them at least contemplated joining it if possible, and Kansas state authorities went to significant lengths to try to make that happen. The Office of the Comptroller of the Currency (OCC) had in 1908 ruled that national banks could not join Oklahoma's deposit guaranty program, and this had been confirmed by the U.S. Attorney General, but Kansas legislators had tried to craft a law that would allow national banks to participate. Shortly after the

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[4] Some discussion of these events can be found in Cooke (1910), 348–52.

Kansas law was passed in March 1909 (to take effect on June 30) national bankers and the Kansas Bankers Association (KBA) asked the OCC if national banks could join: the answer was no.[5]

This led to Kansas Governor Walter R. Stubbs appealing directly to President Taft (who met to discuss the matter with both Kansas senators—Charles Curtis and Joseph Bristow), asking that the OCC ruling be reversed. On April 1, 1909 Stubbs, Kansas Attorney General Fred Jackson and most of Kansas congressional delegation led a much-publicized mission to Washington, meeting with U.S. Attorney General George Wickersham and the Comptroller Lawrence Murray to argue that national banks should be allowed into the KDI.[6] About a week later, Wickersham ruled that national banks could not participate unless Congress amended the National Bank Act, meaning that there was nothing Kansas officials or legislators could do on their own to include national banks.[7]

### II.2    The Creation of the BDGSC and its Organizers

As the back and forth over potential national bank participation in the KDI went on, Kansas national bankers, who had expected that they would not be permitted to join, were considering their path forward. There were a number of possibilities discussed in the contemporary press, including forming a currency association as provided for in the 1908 Aldrich-Vreeland Act.[8] Through the auspices of the KBA, a meeting of the Kansas national bankers was called for March 26 in Topeka. The meeting was well-attended and a number of plans were discussed, and it was

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[5] *The Evening Herald* [Ottawa, KS] (Mar. 15, 1909), 6; *The Hutchinson News* (Mar. 17, 1909), 1.
[6] *The Hutchison News* (Mar. 18, 1909), 1; *Kansas City Globe* (Apr. 1, 1909), 1.
[7] *The Topeka State Journal* (Apr. 7, 1909), 10. Senator Curtis had apparently introduced a bill in Congress that would allow national banks to join state systems, but this did not become law. See *Arkansas City Daily Traveler* (Mar. 20, 1909), 1. For Wickersham's opinion, see "Opinions of the Attorney General of the United States and 'State guaranty' laws of Oklahoma, Texas, Nebraska, Kansas and South Dakota," (1909), 8–16. This publication also includes the opinion of Charles Bonaparte regarding national bank participation in the Oklahoma deposit guaranty scheme from 1908, see 4–7.
[8] *The Hutchison News* (Mar. 18, 1909), 1.

reported that "it was apparent that they [felt] that they must have some protection equal to that of state banks."[9] The idea which apparently had the most favor was for a mutual deposit insurance company.[10]

A committee of 25 bankers was created to draft a plan. Although the potential company was clearly designed to benefit national banks, the idea from the very start was to include state banks. Indeed, the KBA committee formed to draft plans for the new company had 3 bankers from each Kansas congressional district, one state banker and two national bankers, and it was claimed "thus the interests of both state and national banks are allied."[11] When later there was a tendency to equate the company with national banks, the company itself felt the need to refute that.[12]

Bankers believed the new company could be in place by the time the state guaranty was scheduled to begin operating in July, and by the end of April, the committee had formulated a detailed plan; moreover, they had consulted the Comptroller and the U.S. Attorney General, who did not object to the company being formed.[13] Just a few days later the State Charter Board granted the company's application for a charter, and the company issued a prospectus on May 5.

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[9] *The Topeka Daily Capital* (Mar. 26, 1909), 1. National bankers in Kansas thought there might be another way to level the playing field, and that was to have the Kansas state scheme ruled unconstitutional. See below.

[10] It was reported that a similar company had been discussed a year earlier, in 1908, as a response to a then-failed attempt to create a Kansas state guaranty scheme, but the plan was never carried out. *The Topeka Daily Capital* (Mar. 27, 1909), 1. The idea for a private company was at least present then, as Kansas Senator Balie P. Waggoner, president of the Exchange National Bank of Atchison, intended to introduce a bill to amend the Kansas corporation laws so as to authorize "the organization of bank deposit guaranty and insurance companies." (*Florence Bulletin*, [Jan. 28, 1908], 3). Although there is no indication that the Kansas bankers had heard of it, a similar company was envisioned by some New York bankers who announced the formation of the Hudson Surety Company in 1907, which was expected to insure bank deposits. There is no evidence that the company ever began operations. See *Times Union* [Brooklyn, NY] (Feb. 1, 1907), 10 and *The New York Times* (Feb. 2, 1907), 14.

[11] *The Topeka Daily Capital* (Mar. 27, 1909), 2. Joseph Dolley, the Banking Commissioner, although he said national banks would be welcome in the state scheme (this was before Wickersham's ruling), noted that the Kansas Banking Department had no objection to a private company and that he would assist them in every way possible. Of course, Dolley was also president of the Commercial National Bank of Alma, and being an advocate for deposit insurance, would himself benefit from the company. Dolley was reported to have been responsible for making sure state bankers were included in the process, stating that he favored the best insurance scheme possible, whatever that turned out to be. *Iola Daily Record* (Apr. 30, 1909), 1.

[12] See for example, *The Topeka State Journal* (Jan. 22, 1910), 5.

[13] It was reported that Senator Charles Curtis, ex-Senator Chester Long, and Kansas Congressman Ed Madison were engaged by the committee to lobby the Attorney General and Comptroller on their behalf, that they argued that national

Banks, upon a vote by their stockholders, would comprise the stockholders in the company.[14] The total capital of the company would be $500,000, divided into 10,000 shares of $50 each.[15] The company would pay a 6 percent dividend to stockholders.[16] Its funds would be invested in U.S. "and other standard high grade bonds" which could be readily converted into cash, should that be necessary. It was expected that over time, with additional premiums, the fund would grow to approximately $1,000,000.[17] It would guarantee deposits of national and state banks, and also issue depository bonds to protect municipal deposits.  It also proposed to act somewhat like a clearinghouse, helping banks over "embarrassments" providing a bank could "put up the proper showing." The company stated it was far better to rescue a going concern than have a bank fail and enter into a long liquidation. Deposit insurance pricing would be as follows: 50 cents per year per thousand dollars of deposits up to the amount of a bank's capital and surplus, and one dollar per thousand dollars per year for deposits in excess of capital and surplus. In other words, 5 basis points on deposits up to capital and surplus and 10 basis points for deposits over that amount.[18] No contract guaranteeing deposits would be written unless the bank or a bank's stockholder subscribed for stock in the BDGSC equal to 2.5 percent of the capital and surplus of the bank at the time the

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banks would lose business because of their inability to join the state system, and that their efforts were successful. *Abilene Daily Chronicle* (May 4, 1909), 1. Wickersham had been asked a month earlier about a national bank voluntary association for deposit insurance, and had been doubtful, saying that he did not see how it could be done without action by Congress, but did refuse to give a final opinion "offhand." *The Topeka State Journal* (Apr. 7, 1909), 10. For Wickersham's opinion that individual national banks could contract with a private company for deposit insurance, see *Opinions of the Attorney General* (1909), 3.

[14] It was not permitted for banks to subscribe for the stock.  The workaround was accomplished by having the bank's stockholders appoint an individual, usually the bank president, to hold the insurance stock as a trustee for the shareholders.  The shareholders would authorize a dividend payment to the trustee in order to pay for the stock. Premiums would similarly be paid through the issuance of special dividends (See Cooke [1910], 350).

[15] *The Wellington Journal* (May 7, 1909), 2.

[16] At some point in the company's history, this dividend was apparently increased to 8 percent, as in 1921 the BDGSC declared what was described as a regular quarterly dividend of 2 percent. *Manhattan Nationalist* (Apr. 21, 1921), 2.

[17] *The Daily Mail* (Wellington, KS), May 7, 1909, 1.

[18] *The Topeka Daily Capital* (May 5, 1909), 4. In comparison, the state scheme's assessment rate was 5 basis points on all deposits until the fund reached $500,000, but it also provided for up to four additional annual special assessments if the fund became depleted, so that the maximum annual assessment was 25 basis points. See Warburton (1959), II–5. The lack of certainty about the annual assessments was described by contemporaries as an advantage to the BDGSC's coverage. *Fort Scott Daily Tribune and Fort Scott Daily Monitor* (May 22, 1909), 7.

policy was issued.[19] The company was at pains to note that rigorous examinations would be made

of banks in order to qualify for insurance. They chose to hire examiners from the accounting firm

Arthur Young and Company to examine prospective members.[20] Perhaps not surprisingly, national

banks in neighboring states that had state deposit guaranty schemes, would soon ask the BDGSC

to allow them to become stockholders and take advantage of deposit insurance to compete with

their state banks, but the company refused, stating it would only insure banks in Kansas.[21]

Initially, only 24 banks (basically the company directors) became subscribers. By the end

of May 1909, however, already 60 bankers appear to have expressed interest in it.[22] By June of

that year, it was reported that 240 banks had joined.[23] Just one day after operations began, some

member banks began advertising their membership in local newspapers parading that they too,

would soon have deposit insurance.[24]

Although it was clear that Kansas national bankers supported the creation of the new

company, its credibility was enhanced by those who were chosen to incorporate it:[25] fully five of

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[19] See "Bank Depositors' Guaranty in Kansas," (1913), 13. This Senate publication contains the BDGSC's bylaws, which were presented to Congress by Senator Joseph Bristow.

[20] It was reported that the BDGSC had a contract with the firm for 15 of its accountants to examine banks that wanted to join the company. *The Salina Evening Journal* (Mar. 5, 1910), 1.

[21] See *The Daily Oklahoman* (May 16, 1909), 5. Although it was suggested that bankers in Nebraska and Oklahoma might try to set up similar private companies chartered either within or outside their state, we have discovered no evidence that this occurred. There was some discussion at the time of large surety companies coming to national banks' aid by providing them deposit insurance. A committee to study the idea was led by William Joyce, Chairman of the National Surety Company of New York. He noted that although the surety companies wanted to help the banks, because they did a significant amount of business with them, the surety companies would only provide deposit insurance if they could do so without undue risk, and called to attention to the fact that the events of 1907 had been quite costly. See *The New York Times* (May 23, 1909), 21. The committee was reportedly considering either a general guarantee, payable immediately upon a failure, covering an entire deposit, paying various percentages of a deposit over a series of set periods, guaranteeing payment of the deposit within a year, guaranteeing that the banker would "ultimately" get "100 [cents] on the dollar, or lastly that the surety company would guarantee to depositors an amount equal to the bank's capital and surplus. *The Guthrie Daily Leader* [Guthrie, OK)] (May 29, 1909), 3. Despite these reports, we have been unable to find evidence these surety firms elected to provide deposit insurance.

[22] *The Wichita Beacon* (May 25, 1909), 10. *The Wellington Journal* [Wellington, KS] (May 26, 1909), 1. *The Wichita Daily Eagle* (May 26, 1909), 5.

[23] *The Topeka Daily Capital* (Jun. 7, 1909), 6.

[24] See, for instance, the advertisement by the Commercial National Bank, Hutchinson, KS in *The Hutchinson Times* (Jul. 2, 1909), 4.

[25] Twenty of these bankers had been on the committee appointed by the KBA in March.

them—Elmer Ames, J.W. Berryman, C.Q. Chandler, Scott Hopkins, and Peter Goebel—had served or would serve as president of the KBA. Berryman, James Morrow and Latham Harrison had each been members of the Kansas legislature; Morrow had at one time been the Republican leader of the Kansas State Senate. Most were bankers of long standing and owned or were officers in multiple banks in Kansas—Berryman was described as having organized and operated about a hundred banks at different times. The company's chairman, Ames, had been the National Bank Examiner for Kansas and for Kansas City, Missouri from 1900 to 1906, and so not only would have been known by those operating Kansas national banks, but also would have had direct knowledge of those banks' operations as well as having connections to the OCC. When the company began actually operating, they added as one of their vice presidents a former Kansas Governor, Willis J. Bailey.[26] The company's connections would later become evident in their being able to take advantage of a significant increase in the pricing for depository bonds in 1909. The BDGSC proposed to the KBA that it take over writing fidelity and depository bonds in the state at the old rate. The KBA approved the proposal, noting that "this is a Kansas company which confines its risks to the banking risks in the state of Kansas, and its solvency can not be questioned."[27] The BDGSC therefore for a time became the approved agent for those bonds issued through the auspices of the KBA.

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[26] For biographies of many of these Kansas bankers, see Blackmar, ed. (1912). For the addition of Bailey, see *The Topeka Daily Capital* (Jan. 20, 1910), 10.

[27] Kansas Bankers Association, *Proceedings of the Annual Convention of the Kansas Bankers Association* (1910), 11. This also provided some benefit to the KBA. For example, in 1911, the BDGSC issued fidelity and depository bonds with premiums of about $12,500—the KBA received commissions of almost $1,600, but the banks reportedly saved $5,000 in premiums due to the BDGSC's lower rates. See *Proceedings* (1911), 98–99. The exclusive relationship between the KBA and BDGSC was no longer mentioned after 1913 in the KBA *Proceedings*—it is unclear if it terminated, or if by then it was standard practice and deemed not worthy of mention.

## II.3    Two Deposit Guaranty Schemes in Conflict

After what had seemed an amicable co-existence between the BDGSC and the state authorities, by June considerable friction had developed. The most contentious issue was the KDI limitation on deposit interest rates to 3 percent.[28] National banks faced no such limitation: the shoe was on the other foot, as now state banks feared that they would face a competitive disadvantage in comparison to insured national banks. One state banker told the governor that he had lost $16,000 in deposits from one of his best clients to a national bank across the street offering 4 percent interest.[29] The BDGSC maintained that they wanted to eschew politics and that they only wanted state and national banks to operate on an equal footing.  Nevertheless, despite reported negotiations over the matter, the national bankers did not want to change the BDGSC's rules to limit the rates their banks could provide, and the Kansas press reported that "war between the state administration and the new bank surety company … is inevitable."[30]  Ex-Governor Bailey gave voice to the national banker's view: he stated that BDGSC membership should be based on the bank's condition, and that if a bank paid a good dividend, and was being run in a safe manner, the deposit rate it provided was immaterial; moreover, local conditions tended to govern interest rates.[31]  In 1911, the interest rate limit on KDI-guaranteed deposits was changed: the amended law allowed the Kansas Bank Commissioner to set a maximum rate that was to apply to both KDI member banks and nonmember banks with the rate being uniform within a county.[32] The interest

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[28] The interest rate limit was, according to the Kansas Bank Commissioner, required to "prevent incompetent and unprincipled people from engaging in the business" of banking.  See *Biennial Report of the Kansas Bank Commissioner* (1908), xv-xvii.

[29] *The Kansas Weekly Capital* (Jul. 1, 1909), 3.

[30] *Chanute Weekly Tribune*, (Jul. 2, 1909), 3.

[31] *The Leavenworth Weekly Times* (Jul. 8, 1909), 6.

[32] See Warburton (1959), "Deposit Guaranty in Kansas", 3.

rate limit was described as a problem because, as Bailey had stated, regional variability in economic conditions in different parts of Kansas required greater interest rate flexibility.[33]

Nevertheless in 1909 how best to resolve the issue became a thorny political question for the Stubbs administration. There appeared to be essentially two ways to handle the interest rate problem. One was to call a special session of the Kansas legislature to pass a law that would forbid surety companies from insuring deposits that carried an interest rate higher than 3 percent, or, rather less likely, a law that would remove the limit on state banks. There was apparently little appetite for allowing state banks a higher rate, but there was also considerable antipathy to the special session, not least because of its expense, as well as a lack of confidence that it would deliver its intended goal.

The second method was administrative. Although the BDSGC had obtained a charter, the company still needed a license from the Superintendent of Insurance, Charles Barnes, to commence business. Kansas Attorney General Jackson announced that he believed the superintendent had significant discretionary powers to impose conditions in granting such licenses, and that he could point to the 3 percent limit, already enshrined in state law, as what constituted safe banking.[34] When the BDGSC applied for its license in late July, it was reported that Barnes had "instructions from the Governor and the Attorney General to refuse permission" unless the company agreed to a 3 percent interest rate limit.[35] On August 10, Barnes refused to grant the BDGSC an insurance license.

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[33] Robb (1921), 115. He notes that rates on guaranteed deposits ranged from three to five percent.
[34] *The Topeka State Journal* (Jul. 13, 1909), 1.
[35] *The Clay Center Dispatch* (Jul. 22, 1909), 1. At least one report later suggested that Stubbs, Jackson and Dolley feared the BDGSC would put the KDI out of business, which is why they told Barnes to refuse to issue the license. *Clay Center Dispatch* (Dec. 13, 1909), 1.

The BDGSC responded in the courts in two ways. The first was direct, taking the issue to the Kansas Supreme Court, demanding that Barnes demonstrate that he had the authority to refuse the license based on the reasons he had given, which included the interest rate limit. When Barnes filed his answer, he went well beyond the interest rate issue, stating that the charter board didn't have the authority to issue the BDGSC a charter, and so the company did not even really exist. But should the court rule that the charter was valid and the company did exist, he believed that he had the authority to regulate it, determine what risks it should take, and what types of deposits it could insure.[36] The BDGSC and Barnes were able to agree that the case should be held expeditiously, rather than in the normal timeframe which could have been as late as the autumn of 1910.[37]

The second legal response was to seek to invalidate the KDI as unconstitutional. Although the BDGSC did not sue under its own name, one of the plaintiffs was Frank S. Larabee, who sued as a stockholder in a state bank. It is possible that Larabee's involvement was solely driven by his ownership stake in the state bank. However, Larabee, also cashier of the Farmers National Bank of Stafford, just happened to serve on the KBA committee charged with investigating a private deposit guaranty company, was among the BDGSC's original incorporators, and was elected to serve on its Board of Directors. Moreover, the company apparently made an effort to solicit contributions in support of the lawsuit. It is at least plausible that Larabee's affiliation with the BDGSC had something to do with his participation in the lawsuit. Although the motives and participation of the BDGSC cannot be ascertained with certainty, either a delay in the KDI being implemented, or it being invalidated, would have redounded to the company's benefit. Indeed, had

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[36] *The Kansas Weekly Capital* (October 21, 1909), 1. See also Bankers' Deposit Guaranty & Surety Co. v. Barnes, Superintendent of Insurance, 81. Kan. 422 (1909).
[37] *The Topeka State Journal* (Oct. 21, 1909), 7.

the suit ultimately been successful, such a result would have obviated the need for the BDGSC entirely. After initially obtaining an injunction against the Kansas state guaranty plan being put into operation, that ruling was subsequently overturned and the plaintiffs finally lost in the U.S. Supreme Court.[38]

As for the suit against Barnes, the Kansas Supreme Court ruled on December 11 that Barnes only had the authority to impose the rules on the BDGSC that were enumerated in Kansas law, and as the company had complied with them, he was ordered to issue the company its license, which he did. [39]


II.4     *The BDGSC's Operations and Place in the Market until Reorganization in 1922.*

The BDGSC was permitted to begin operations in full, held its first formal annual meeting in January 1910.  Upon this success, Elmer Ames emphasized that both state and national banks were welcome, and that nearly every member of its Board had equal interests in both state and national banks.  He said that bankers should be reassured that at least 25 percent of the company's capital would be held in cash at all times, and that the large cash reserve would permit the company to aid banks and prevent them from failing. He indicated that at this time, about $327,000 of capital had been paid up.[40] The company issued its first deposit guaranty policy on February 9.[41] Figure 1 provides an advertisement from May 1910 that features a reproduction of a bond that describes

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[38] See Larabee v. Dolley, 175 F.365 (1909).  Larabee was joined in the suit by the Abeline National Bank and the Assaria State Bank.  The injunction was reversed by Dolley v. Abilene Nat. Bank of Abilene, Kan., C.C.A.8 (Kan), May 20, 1910, and finally decided by the U.S. Supreme Court in Assaria State Bank v. Dolley, 219 U.S. (1911).

[39] See Bankers' Deposit Guaranty & Surety Co. v. Barnes, Superintendent of Insurance, 81. Kan. 422 (1909). The ruling was unanimous and also awarded the BDGSC its costs. See also *The Topeka Daily Capital* (Dec. 12, 1909), 15.

[40] *The Topeka State Journal* (Jan. 22, 1910), 5. The company does not seem to have ever reached its goal of $500,000 in paid up capital.  During much of its existence, the capital level remained just over $300,000.  See for example, *The Leader Courier* [Kingman, KS] (Nov. 27, 1913), 7; *Winfield Courier* (Jan. 29, 1914), 6; *Manhattan Nationalist* (Apr. 21, 1921), 2.

[41] *Fort Scott Tribune and Fort Scott Monitor* (Feb. 22, 1910), 5.

the terms of a bank's deposit guaranty. A month later it was reported that the company's executive committee was examining the applications of 166 state and national banks that had applied for coverage, and a year later that about half of the national banks in the state had deposits insured by the BDGSC.[42] The company continued to examine banks that chose to use its deposit guaranty policies, and apparently charged banks examination fees in addition to premiums.[43]

In June 1922, it was announced the company would be reorganized and sold. President Elmer Ames' illness appears to have been a significant reason for this decision, but the reorganization was to yield a significant to windfall to the stockholders, as it was to distribute $125,000 of its surplus as a special dividend.[44] When the company was sold, it would become The Kansas Bankers Surety Company, and no longer engaged in the guaranty of deposits.[45] It was reported, however, that even before the move to abandon deposit insurance, "enthusiasm" for deposit guaranty had "died out" and that the national banks had "long since ceased to fear any special competition from the guaranteed banks with the result that few of them feel the need of this insurance as an advertising feature, and many of those that insured their deposits ten years ago have permitted their policies to lapse," although apparently about two-thirds of the banks that originally joined the company still maintained their deposit insurance ten years later (Robb, 1921).[46]

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[42] *The Salina Evening Journal* (Mar. 5, 1910), 1*; McPherson Freeman* (Mar. 24, 1911), 1.

[43] National Archives RG34, FDIC Historical Files, 1934-1965, Box 2, Folder 2, Interview of Kansas Bankers by Mortimer Fox (October 23, 1934).

[44] *The Topeka State Journal* (Jun. 14, 1922), 6

[45] *The Topeka State Journal* (Sep. 14, 1922), 15. The executive committee of the KBA recommended that banks purchase the capital stock of the BDGSC so Kansas banks could continue to benefit from the low rates on insurance they had received in the past. *The Augusta Daily Gazette* (Oct. 18, 1922), 1.

[46] Robb stated that about 100 banks had become members, and that by 1920, about 25 percent of covered banks were state banks, see Robb, 116. The press also noted, about a year later at the company's reorganization, that the deposit guaranty feature had been "largely abandoned." See *The Topeka State Journal* (Jun. 1, 1922), 1.

Between 1909 and 1922, however, the BDGSC served as a private alternative to the Kansas deposit insurance program. Newspaper reports indicate that the BDGSC was popular among national banks, with participation rates around 50 percent at its height. To get a more accurate sense of the market significance of the BDGSC we present in Figure 2 two metrics: the premiums received by BDGSC (relative to KDI assessments) and the relative assets of BDGSC to KDI's bond and cash assets, from 1911 to 1921.[47] Both measures display a similar pattern—during the early years the BDGSC received over $1 in premiums for every dollar of KDI assessments. Likewise, the BDGSC had over a dollar of assets for every dollar in bond and cash assets of the KDI program. As participation in the KDI program grew over the decade, the relative size of the BDGSC declined. However, even during the last two years for which data exists, we still see that the BDGSC had approximately $0.50 in premiums and assets relative to KDI figures. Thus, throughout the period, BDGSC was a significant player in the deposit insurance market in Kansas.

The next section analyzes the sample of participating banks.

### III.    Data

To identify BDGSC banks, we rely on the list of banks that had a balance due to the insurance company, as reported in the December 31, 1919 BDGSC Annual Statement filed with the Kansas Superintendent of Insurance.[48] This year was chosen because it reflected the highpoint of the competing KDI system while the BDGSC still offered deposit insurance. To ensure that the list does indeed reflect membership, we also collected data for a sample of banks that reported

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[47] Premiums and assets data for BDGSC are from the Annual Reports of the Superintendent of Insurance of the State of Kansas (various years). It should be noted that these reports reflect total premiums received by the BDGSC, and that the company received premiums not just from its deposit guaranty business, but also from its surety and fidelity business. It is a limitation of the data that it is not always possible to determine the exact proportion of premiums received from each of the company's business lines. KDI assessments and bond and cash assets are from Warburton (1959).
[48] These manuscript statements are held by the Kansas Historical Society.

being members of the BDGSC in newspaper advertisements. We then conducted a logistic regression to evaluate how the odds of showing up in the newspapers would be affected by being listed in the BDGSC Annual Report. The logistic regression results indicated that those odds rose by nearly 400 percent—being in the annual report list increased the chances of showing up in the newspapers (advertising membership) by a factor of 4. The coefficient was statistically significant at the less than one percent level. This suggests that using this list we do capture the BDGSC membership as of year-end 1919.

Because the vast majority of BDGSC member banks were nationally chartered, our analysis will be confined to national bank members and we therefore also collected data at the bank level for national banks from the Office of the Comptroller of the Currency's 1922 *Annual Report*. In addition, we collected data at the bank level for state-chartered institutions from the 1920 Biennial Report of the Bank Commissioner in Kansas. For each bank, we recorded all balance sheet items, and whether they participated in the Kansas deposit guaranty program. We complemented our data by adding bank suspension figures from Davison and Ramirez (2014).

Table 1 reports summary statistics for national banks, split by BDGSC membership. The first observation worth making is the relatively high participation rate. Of the 267 national banks in the sample, nearly 40 percent were members of the private deposit insurance company. The 105 banks that participated in this program held approximately 47 percent of total national bank assets in Kansas. Thus, this private deposit insurance was quite popular.

Beyond ascertaining popularity in the program, however, the rest of the summary statistics do not reveal any clear-cut pattern. For instance, the first four rows, which report key bank statistics in levels (loans, assets, total capital, and deposits), do not indicate that participating banks were significantly different from those that did not. While the means for those variables appear higher

for the insured group, the standard deviations are high enough to make the t-tests of the difference in means statistically insignificant at the 5 percent level.

Among the remaining summary statistics—ratios typically used as measures of bank risk and performance—none of the pairs is statistically different (by a t-test) at the 5 percent level, except for the capital-to-asset ratio, which is lower for the insured banks. This finding suggests that insured banks appeared to be riskier. However, before making a more definitive conclusion we perform a more robust set of regressions in the following section.

## IV.    *Empirical Findings*

This section investigates how private deposit insurance affiliation may have affected deposit growth as well as other measures of bank performance for national banks. The first section of our analysis concentrates on results at the macro (state) level, investigating how national banks in Kansas fared in comparison with national banks elsewhere, over a span of more than two decades. The second section concentrates on results at the micro (bank) level, relying on the bank-level data discussed in Section III.

*IV.1 Macro analysis*

Our macro analysis seeks to evaluate how national banks in Kansas performed relative to national banks in other states. In particular, we focus on two aggregate (state-level) ratios for national banks for the period 1896–1929: the ratios of deposits to total assets and capital to total assets.[49] To isolate the BDGSC period (from 1909 to 1922), we first estimate the regressions in the pre-1922 sample. Specifically, our regression equation is:

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[49] The dataset used to conduct the analysis at the aggregate level is from Flood (1998).

$$\left(\frac{X}{A}\right)_{i,t} = \alpha_0 + \alpha_1(1909-22) + \alpha_2(Kansas) + \alpha_3(Kansas * 1909-22) + \varepsilon_{i,t} \qquad (1)$$

Where X is either Deposits or Capital (defined as capital plus surplus), A is total assets, and the subscripts i,t refer to the state i in year t.

We estimate equation (1) using OLS. Our coefficient of interest is a3, which captures the interaction of the Kansas dummy variable over the years 1909-22, the period that spans the existence of the BDGSC. Given that the BDGSC was quite popular among national banks in Kansas, any influence on deposits or capital should be detectable at the aggregate (state) level. For example, if 40 percent of the national banks chose private deposit insurance, and then decided to increase risk (i.e. lower their capital-to-asset ratio), we would expect to observe a decline at the aggregate level, driven by the action taken by 40 percent of the sample. Note that although it is a panel dataset for 48 states over the 1896 to 1922 period, we do not include state or year fixed effects, as their inclusion would not permit estimation of the coefficient of interest.

The regression results are presented in Table 2. That table presents two regressions, one for the deposit-to-asset ratio, and another one for the capital-to-asset ratio. Since both regressions share the same set of explanatory variables, they can be combined in one table. Note that the coefficient of interest, a3, is statistically insignificant in both specifications. Therefore, there is no evidence that the BDGSC exerted a significant effect on either ratio, at least at the aggregate level.

One potential concern that arises with the use of aggregate data is that the results could be masked with aggregation. We address this potential concern in three different ways. First, as mentioned above, the proportion of national banks that chose private deposit insurance was not insignificant. Indeed, by some contemporary accounts, membership peaked at nearly 50 percent during the sample period, a proportion sufficiently high to impart an effect at the aggregate level.

Second, we estimate a parallel regression (as in equation (1), but for state banks. Specifically, we perform the same regressions, but using aggregate data for state-chartered institutions. However, instead of "Kansas" and "1909-22" as the indicator variables, we replace them by "DI state" and "1907-22" dummies, since during this time period, eight states adopted some form of deposit insurance. The point of this second regression is to demonstrate that the effect of deposit insurance can be observed using aggregate (state-level) data.

Table 3 presents the results for the state banks. A glance at the "DI state*1907-22" interaction terms reveal that states that adopted deposit insurance saw a rise in the deposit-to-asset ratio, and a decline in the capital-to-asset ratio. These results are consistent with what other researchers have found, and more importantly, suggest that the effects of deposit insurance can be detectable with aggregate level data.

The third way of addressing the concern is by relying on more micro (bank-level) data. We do this in the next section.

Before moving on to the analysis at the bank level, however, we conclude the aggregate level analysis by looking at the same two ratios in the post-1922 period, namely the years from 1923 to 1929. The idea of looking at this subsample is to investigate the pattern of these ratios during the decline and downfall of the various deposit insurance schemes.[50]

The regression results for the post-1922 period are presented in Table 4. The table presents four columns: the first two focus on the capital-to-asset ratio, the last two on the deposit-to-asset ratio. These columns are further divided by bank charter type: either national or state. The coefficient of interest in these four regressions is the "Kansas" indicator variable. The results suggests that, for national banks, neither ratio seems to have significantly changed after the

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[50] After the agricultural crisis of the early 1920s, all of the state-sponsored deposit insurance schemes began to get into trouble. Indeed, by 1924 most of these deposit insurance schemes were essentially moribund.

disappearance of the BDGSC. This result complements the "non-result" observed over the pre-1922 period. If the BDGSC, in fact, did not impart a significant effect (at the aggregate level) during its "heyday", we would not expect to observe any adjustment in the ratios after its departure in 1922.

The results for state banks are, however, different. In particular, we observe that in the post- 1922 period state banks strengthened their risk profile by raising their capital-to-asset ratio. This result is consistent with straightforward intuition: as the state-sponsored program in Kansas weakened, state banks, expecting the impending disappearance of the program would have moved to strengthen their balance sheets.

Interestingly, the table also indicates that the deposit-to-asset ratio for state banks did not appear to have changed significantly in the post-1922 period. This result suggests that, while bankers may have been more realistic about the fate of the Kansas deposit insurance program, depositors could have been more optimistic, and perhaps did not expect the complete demise of the program, at least during the sample period.[51]

*IV.2. Micro analysis*

In this section we examine the impact of the BDGSC using micro (bank level) data for national banks. We first focus on estimating probability of failure models as this is a well-established metric of performance.

*IV.2.1. Probability of failure regressions*

One of the most common ways of estimating failure models is to fit probit regressions where the dependent variable is dichotomous: 1 if the bank fails by year-end 1929, 0 otherwise; and the independent variables include those commonly believed to impart an effect, such as

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[51] Indeed, the Kansas state deposit insurance program was not discontinued until 1929 (Warburton, 1959).

measures of risk, asset quality, etc. Following that tradition, we also estimate probit regressions in our sample of national banks.

Table 5 presents the probit regression results. Besides the private DI indicator variable, the independent variables included were: (Surplus/Assets), (Bonds/Assets), (Loans/Assets), (Cash/Deposits), (Deposits/Assets), (Payable/Assets), (Cash/Assets), and (Capital/Assets). These ratios are generally taken to be reasonable measures of bank risk and asset quality.

The inclusion of the DI variable captures any influence on risk not already controlled for with the other ratios. Generally, this variable is expected to impart a positive influence on risk, as banks can engage in moral hazard in ways that are not completely captured by standard balance sheet ratios. We estimate a variety of specifications to examine the stability of the private DI coefficient under a different set of controls. However, regardless of the controls included, the private DI indicator variable is never statistically different from zero.[52] This result differs from the general finding in the literature, which typically report a positive and statistically significant coefficient for deposit insurance indicator variables.[53]

It may be tempting to claim that private deposit insurance was "superior" to the state-sponsored alternatives given that: (a) none of the probit regressions suggest it did, and (b) by year-end 1929 only 11 national banks failed, compared to the 194 state bank failures (or in terms of ratios, a failure rate of 4.2 percent for national banks vis-à-vis a failure rate of nearly 18 percent

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[52] In regression (5) (Table 2) the estimated effect of size (log(assets)) is positive and significant, which runs contrary to expectations. However, given that there are only 11 failures in the sample, and that particular specification includes 8 covariates, overfitting may be particularly more problematic in this specification. It is worth pointing out that in specifications (2) and (4), which include fewer covariates (and thus a bit less susceptible to overfitting), the size variable is statistically zero.

[53] Given that only 11 national banks failed in Kansas during the 1920s, including too many covariates may run the risk of overfitting the model, particularly when many of the independent variables may be correlated. It is worth mentioning that we also estimated the probit model without the inclusion of the DI indicator. On balance, we found that the probability of failure increases with the loans-to-asset ratio and declines with the cash-to-asset ratio, as well as the deposit-to-asset ratio.

for state banks). However, it would not be appropriate to make this conclusion. The reason is that, as mentioned above, the private company phased out its "deposit guaranty" feature in early 1922. Hence, we are unable to ascertain what the failure rate among member banks would have been in subsequent years as the agricultural crisis progressed.

Given the phase out of the deposit insurance feature, a more appropriate question to investigate is whether or not private DI-member banks shifted their portfolio towards higher risk. The following subsection investigates this issue empirically and discusses the results.

*IV.2.2. Risk-shifting regressions*

Since the bank failure probit regressions are not able to provide a clear indication as to whether the private deposit insurance elevated the risk of failure, we examine whether it nonetheless encouraged banks to pursue riskier strategies. To conduct this test we regress the 1922 banks' total capital-to-asset ratio (a standard measure of risk) on the private DI indicator variable. Since the private DI variable is from December 31, 1919, the two year time gap should have been sufficient to allow for any adjustment in the risk portfolio among the participating banks.

The regression results are presented in Table 6. The simplest specification, without any controls (specification (1)), indicates that the unconditional effect of private DI on the capital-to-asset ratio is negative and statistically significant. However, after conditioning for size (log of assets in specification (2)) the overall effect of private DI is statistically nil. Size, therefore, is absorbing the effect of the private DI, suggesting that the overall effect of private DI on the capital-to-asset ratio may actually be nonlinear, depending on bank size. Hence, we examine the effects allowing for interactions with bank size.

Specification (3) examines the impact of the interaction of private DI with size. The implied effect is:

$$\frac{\partial(C/A)}{\partial PDI} = -0.606 + 0.045 * \log(Assets)$$

Given that both estimated coefficients are statistically significant, we can infer that the effect is indeed nonlinear. A bank at the 25th percentile in terms of size that becomes a private deposit insurance member is expected to see a reduction in the capital-to asset ratio of about 29 percent. At the median, the effect is -13.5%. At the 75th percentile, the effect becomes positive but relatively small, about 4.7%. Thus, private deposit insurance affiliation appears to have increased risk among the smaller institutions.

The nonlinear effects, therefore, tell us that it was primarily the smaller institutions that took on additional risk, as they saw the largest declines in their capital-to-asset ratios. Thus, moral hazard appears to have been an issue, but among the smaller national banks.

*IV.2.3. Evaluating Deposit to Asset Ratios*

In general, one of the advantages of deposit insurance is that it enhances confidence among depositors, thereby making it easier (and cheaper) for banks to obtain deposits. Holding all else constant, banks with deposit insurance should see an increase in their deposit-to-asset ratio. In this subsection we investigate whether private deposit insurance was successful in that regard. To do so, we regress the 1922 deposit-to-asset ratio on the private DI indicator variable. As mentioned in the previous subsection, the two year gap between the private DI affiliation date and the balance sheet year should be sufficiently long to observe an effect.

Table 7 presents five specifications of the deposit-to-asset regression in order to examine the effect of private DI robustly. The specifications differ by the set of controls included. The simplest specification (with no controls) can be seen as the benchmark case (specification (1)),

while other specifications control for asset quality and size. Nonetheless, regardless of the specification considered, the private DI indicator variable is never statistically different from zero. Hence, the regressions indicate that private deposit insurance does not appear to have been successful at attracting deposits. Instead, banks were able to attract deposits the old-fashioned way—through conservative banking practices associated with lower risk: a higher cash-to asset ratio and a lower loan-to-asset ratio.[54] Thus, the old adage "Cash is King" seems to have been the mantra guiding depositor behavior, not private deposit insurance. Although previous research has found that the state-sponsored deposit insurance programs were successful at generating deposits, it appears that private deposit insurance did not foster the same level of confidence that the state-sponsored program did.

### IV.2.4. Determinants of Private DI membership

As noted in the introduction and in the institutional background section, the primary reason the BDGSC was formed was that national banks were disallowed from participating in the Kansas deposit guaranty program, giving state banks a competitive edge over deposit acquisition costs. This observation implies that a national bank's decision to join the BDGSC should have been influenced by whether or not neighboring state-chartered banks were members of the Kansas program. This section examines whether that was indeed the case.

To that end, we estimate probit regressions whether the dependent variable equals 1 if the bank was a BDGSC member, 0 otherwise. The independent variables include:[55] the proportion of state banks that were KDI members in the county, the log of total assets for all state banks in the county (included to examine whether the size of the market was relevant), the ratio of cash to assets

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[54] Specifications (3), (4), and (5) indicate that the deposit to asset ratio is negatively associated with bank size. This is not surprising as the largest national banks deal less on individual deposits, and more on interbank reserves.
[55] The independent variables were computed at the county level using data from the 1920 Kansas Bank Commissioner Annual Report.

and loans to assets for all state banks in the county (included to examine whether the portfolio composition of neighboring state banks were important), and the ratio of deposits to assets for all state banks in the county (included to control for the relative importance of the deposit market in the county).

The results for the probit regressions are reported in Table 8. The table presents five specifications that vary by the set of covariates included, starting from the simplest one which includes the proportion of state banks that were KDI members, to the most complete one (regression 5), which includes all covariates. All specifications, and regardless of the set of covariates included, robustly indicate that a national bank's decision to be a member of the private deposit insurance company was influenced by the proportion of state banks that were members of the KDI. None of the other covariates is significant. Perhaps more importantly, their inclusion does not affect the magnitude and significance of the KDI proportion variable. We are therefore able to confirm the contemporary accounts as for the reason national banks joined the BDGSC.

We complement these results using illustrative evidence from newspaper ads. The idea was to ascertain the extent to which bank advertisements mentioned whether the banks were members of the KDI or the BDGSC. Thus, for a random sample of banks, we tracked advertisements in local newspapers. The observed advertisements suggest a pattern: national bank's ads were typically displayed side-by-side the state bank's ads, and whenever the state bank ads report KDI membership, the national bank ads report BDGSC membership. A representative example is displayed in Figure 3. In that figure, the State Bank of Winfield advertises membership in the KDI, while the Winfield National Bank advertises membership in the BDGSC.

## V. *Concluding Remarks*

Between 1909 and 1922 the Bankers Deposit Guaranty and Surety Company (BDGSC) coexisted with the Kansas deposit insurance program (KDI). The existing literature finds that the KDI was associated with higher risk-taking and a higher incidence of failures. Using aggregate (state) level data covering the period from 1896 to 1929, the evidence does not suggest that the BDGSC had any significant impact on either the capital-to-asset ratio or the deposit-to-asset ratio. However, using bank-level data, we find that, while private deposit insurance membership was not associated with a subsequent increase in bank failures, the BDGSC encouraged risk-taking as member banks were observed to have decreased their capital-to-assets ratio, at least among the smaller institutions. It is unclear whether the private deposit insurance would have survived the failure of a member bank because the company phased out its deposit insurance component in early 1922, just as the agricultural crisis was unfolding in Kansas.

Existing literature also finds that banks that participated in the state deposit insurance programs of the 1920s experienced higher deposit growth (Calomiris (1992), Calomiris and Jaremski, Ramirez, Adulnate, and Wheelock, 1992). In contrast to those papers, we do not find that membership in private deposit insurance was associated with a higher deposit-to-asset ratio, despite the fact that many BDGSC-member banks heavily advertised their membership in local newspapers. This finding suggests that the private deposit insurance company did not generate the level of confidence among depositors that the state-sponsored programs did.

Contemporary accounts suggest that owners of national banks formed the BDGSC because they feared competition from state banks using the state deposit insurance system. Our empirical analysis indicates that indeed the Kansas state system influenced the decision to join the private company, supporting the contemporary accounts.

Our research has implications for the literature on private deposit insurance. Specifically, some papers contend that, from an economic efficiency perspective, private deposit insurance may be more desirable than a government-sponsored alternative as presumably private deposit insurance fosters depositor confidence while preserving market discipline (Ely, 1985; England, 1985; O'Driscoll, 1988; Demirguc-Kunt and Huizinga, 2004). The findings in this paper cast some doubts on those efficiency claims. In fact, in some respects, it may be argued that the private deposit insurance experiment led to an undesirable outcome by having encouraged risk-taking, particularly for the smaller institutions, while failing to foster overall depositor confidence.

As a final remark, we note that some papers in the literature use national banks as a control group when analyzing particular features of the Kansas state deposit insurance program. The fact that a significant portion of national banks participated in the private deposit insurance scheme suggests that using national banks as the control group may not be entirely appropriate. It is unclear, however, whether correcting for private deposit insurance participation would end up altering any results. We plan on investigating this issue in more detail in future research.

**Figure 1**
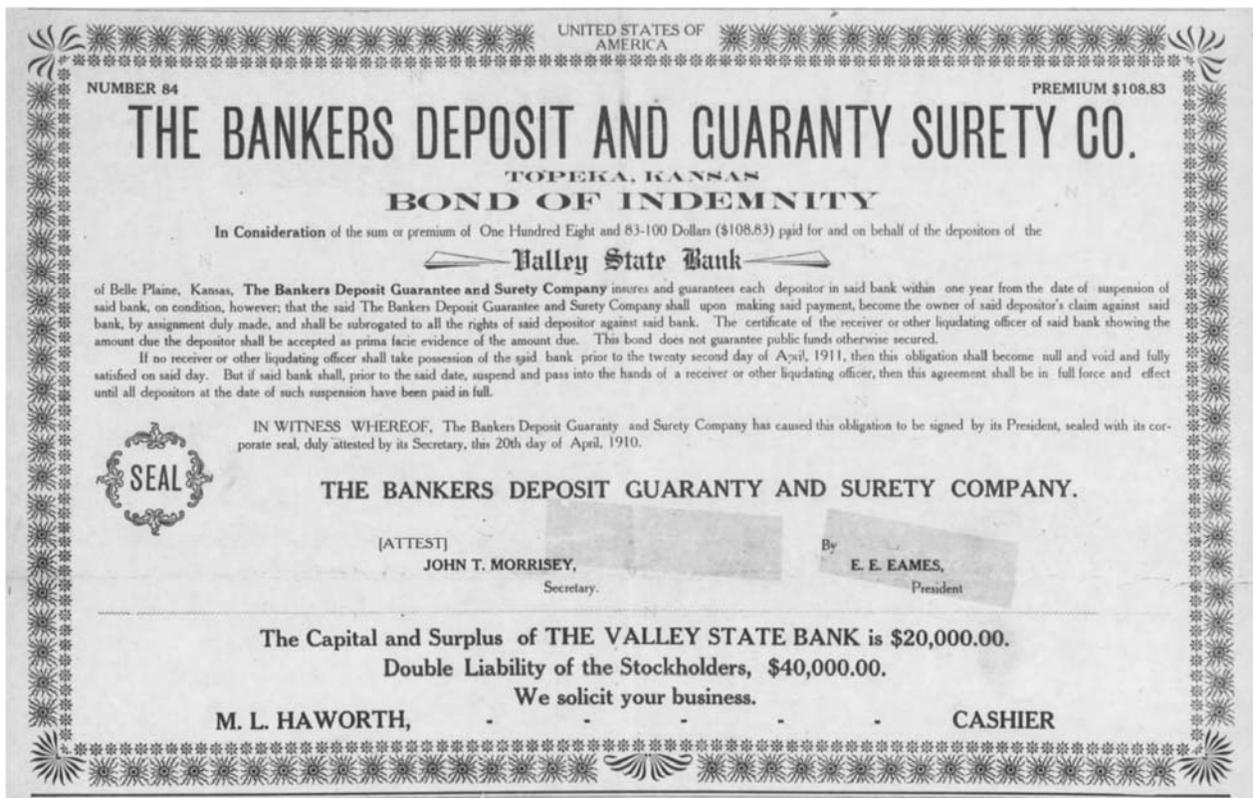


Source: *The Belle Plaine News*, Belle Plaine, Kansas (May 5, 1910), 1.

**Figure 2**
**Bankers Deposit Guarantee and Surety Co. relative to the Kansas Deposit Guarantee program**
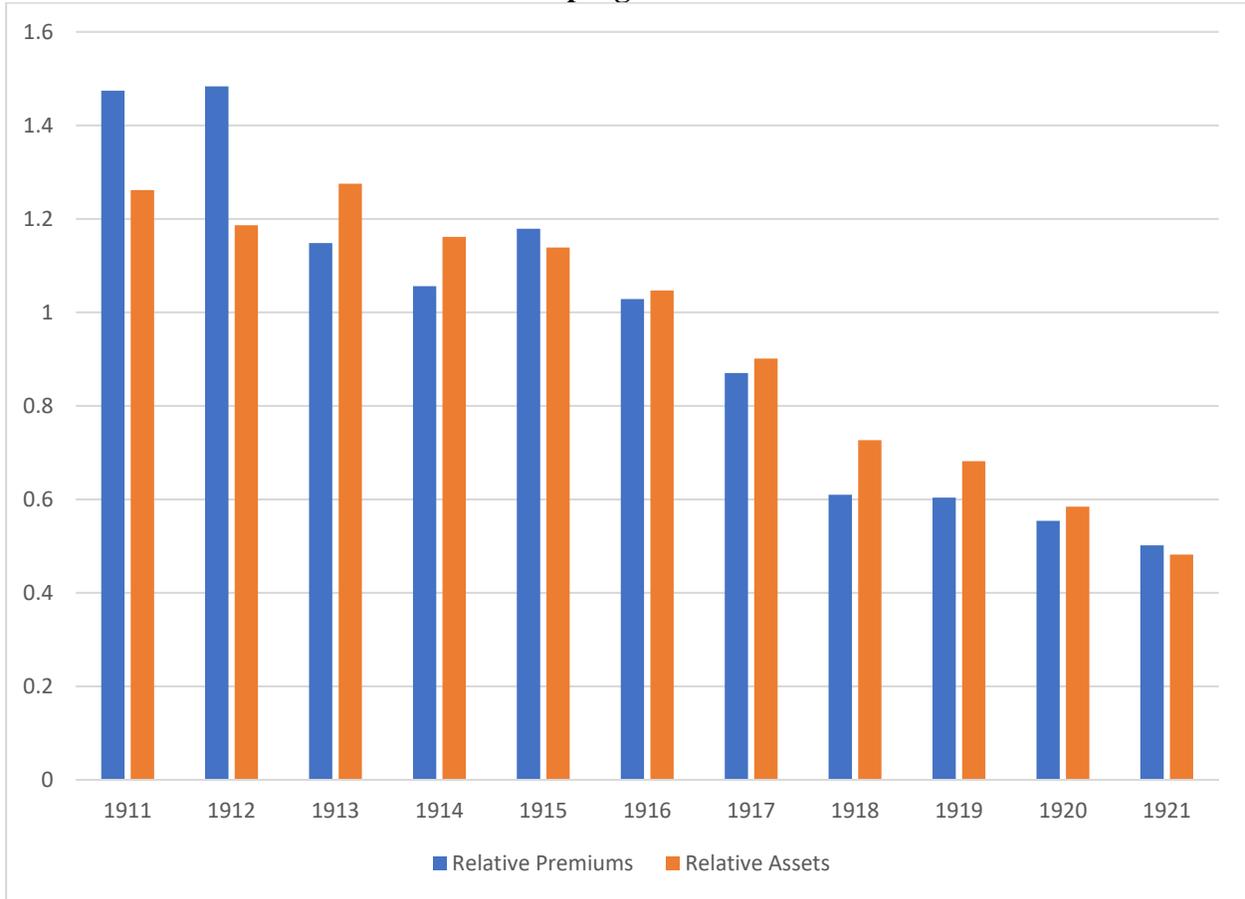


Notes: This figure display the size of the Bankers Deposit Guarantee and Surety Company (BDGSC) relative to the Kansas Deposit Guarantee (KDI) program using two metrics: premiums and assets. Specifically, "Relative Premiums" is the ratio of premiums received by BDGSC divided by KDI assessments for the same year. "Relative Assets" is the ratio of the BDGSC assets divided by KDI Bond and Cash Assets. BDGSC data are from the Annual Report of the Superintendent of Insurance of the State of Kansas (various years). KDI data are from Warburton (1959).

**Table 1**
**Summary Statistics**

|  | Insured N=105 | | Not Insured N=162 | |
|---|---|---|---|---|
|  | Mean | Std. Dev. | Mean | Std. Dev. |
| Loans | $ 614,874 | $ 811,426 | $ 424,931 | $ 938,278 |
| Assets | $ 1,034,732 | $ 1,599,926 | $ 742,406 | $ 1,700,942 |
| Total Capital | $ 136,558 | $ 189,556 | $ 106,762 | $ 171,653 |
| Deposits | $ 700,726 | $ 897,008 | $ 498,157 | $ 1,040,275 |
| Surplus/Loans | 0.113 | 0.238 | 0.117 | 0.052 |
| Capital/Assets | 0.155 | 0.127 | 0.191 | 0.042 |
| Bonds/Assets | 0.097 | 0.062 | 0.097 | 0.054 |
| Cash/Deposits | 0.354 | 0.128 | 0.197 | 1.525 |
| Loans/Assets | 0.641 | 0.130 | 0.639 | 0.105 |
| Deposits/Assets | 0.700 | 0.172 | 0.690 | 0.143 |
| Payable/Assets | 0.048 | 0.084 | 0.050 | 0.064 |

Notes: This table presents basic summary statistics for national banks in Kansas in 1922, split by private deposit insurance membership. The first four rows report figures in levels, while the last seven rows report ratios based on balance sheet figures. Source: *Annual Report of the Office of the Comptroller of the Currency*, 1922.

Table 2:

Deposit and Capital to Asset Ratios for National Banks using State Level Data: Pre 1922 Period

| VARIABLES | (1) Dep/Assets | (2) Cap/Assets |
|---|---|---|
| 1909-22 period | 0.0476*** | -0.0708*** |
| | (0.000) | (0.000) |
| Kansas | 0.0131 | -0.0108 |
| | (0.574) | (0.528) |
| Kansas*1909-22 | 0.0185 | -0.00422 |
| | (0.567) | (0.859) |
| Constant | 0.673*** | 0.241*** |
| | (0.000) | (0.000) |
| | | |
| Observations | 1,296 | 1,296 |
| R-squared | 0.079 | 0.253 |

Notes: This table reports regression results of the ratios of deposits to total assets (Dep/Assets) and capital to total assets (Cap/Assets) for national banks in the pre-1922 period (to focus on the "heyday" period of the state deposit insurance schemes)."1909-22 period" is an indicator variable equal to 1 for the 1909-1922 period, when the BDGSC was in effect. "Kansas" is the indicator variable for Kansas, 0 otherwise. "Kansas*1909-22" is the interaction term. Data is annual, from 1896 to 1922. Pval in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 3:

Deposit and Capital to Asset Ratios for State Banks using State Level Data: Pre 1922 Period

| VARIABLES | (1)<br>Dep/Assets | (2)<br>Cap/Assets |
|---|---|---|
| 1907-22 period | 0.0456*** | -0.0280*** |
| | (0.000) | (0.000) |
| DI state | -0.0984*** | 0.0173*** |
| | (0.000) | (0.00116) |
| DI state*1907-22 | 0.0653*** | -0.0151** |
| | (0.000) | (0.041) |
| Constant | 0.603*** | 0.160*** |
| | (0.000) | (0.000) |
| | | |
| Observations | 1,296 | 1,296 |
| R-squared | 0.098 | 0.094 |

Notes: This table reports regression results of the ratios of deposits to total assets (Dep/Assets) and capital to total assets (Cap/Assets) for state-chartered banks in the pre-1922 period (to focus on the "heyday" period of the state deposit insurance schemes)."1907-22" is an indicator variable equal to 1 for the 1907-1922 period, which spans the period of highest confidence on deposit insurance. "DI state" is the indicator variable for the eight states that adopted deposit insurance. "DI state*1907-22" is the interaction term. Data is annual, from 1896 to 1922. Pval in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table 4:

Capital to Asset Ratios for National and State Banks using State Level Data: Post 1922 Period

| VARIABLES | (1) Cap/Assets-National | (2) Cap/Assets-State | (3) Dep/Assets-National | (4) Dep/Assets-State |
|---|---|---|---|---|
| Kansas | -0.0074 | 0.022** | 0.0188 | -0.00674 |
| | (0.010) | (0.010) | (0.302) | (0.851) |
| Constant | 0.127*** | 0.109*** | 0.803*** | 0.708*** |
| | (0.000) | (0.001) | (0.000) | (0.000) |
| | | | | |
| Observations | 336 | 336 | 336 | 336 |
| R-squared | 0.001 | 0.020 | 0.003 | 0.000 |

Notes: This table reports OLS regression results of the ratio of capital to total assets (Cap/Assets) for national banks (Column 1) and state banks (Column 2), as well as the ratio of deposits to total assets (Dep/Assets) for national and state banks (columns 3 and 4) in the post-1922 period (after the "heyday" period of the state deposit insurance schemes). "Kansas" is the indicator variable for Kansas, 0 otherwise. Data is annual, from 1923 to 1929. Pval in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

**Table 5**
**Estimating Probability of Failure Including the Private Deposit Insurance Indicator**
**Variable**

|  | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Private DI | -0.0586 | -0.122 | 0.0164 | -0.116 | -0.709 |
|  | (0.837) | (0.677) | (0.965) | (0.697) | (0.165) |
| Surplus/Assets |  |  | 1.949 |  | 4.066* |
|  |  |  | (0.203) |  | (0.0542) |
| Bonds/Assets |  |  | 7.257 | -0.186 | 7.158 |
|  |  |  | (0.269) | (0.937) | (0.373) |
| Loans/Assets |  |  | 8.974 |  | 12.84* |
|  |  |  | (0.124) |  | (0.0652) |
| Cash/Deposits |  |  | -2.773 |  | -6.185 |
|  |  |  | (0.497) |  | (0.251) |
| Deposits/Assets |  |  | -2.577 |  | -5.102* |
|  |  |  | (0.187) |  | (0.0524) |
| Payable/Assets |  |  | -4.627 |  | -21.05** |
|  |  |  | (0.438) |  | (0.0297) |
| Log(assets) |  | 0.161 |  | 0.233 | 1.788*** |
|  |  | (0.293) |  | (0.217) | (0.00157) |
| Capital/Assets |  |  |  | 3.209 |  |
|  |  |  |  | (0.231) |  |
| Constant | -1.715*** | -3.815* | -6.588 | -5.279* | -30.42*** |
|  | (0) | (0.0589) | (0.263) | (0.0562) | (0.00387) |
| Observations | 267 | 267 | 197 | 249 | 197 |

Notes: This table reports failure probit regressions for national banks. The dependent variable equals to 1 if the bank failed on or before 1929, 0 otherwise. The set of control variables is: "Private DI" (an indicator variable equal to 1 if the national bank was a member of the private deposit insurance company, 0 otherwise); "Surplus/Loans" (Surplus and undivided profits relative to loans and discounts), "Bond/Assets" (U.S. government bonds relative to total assets), "Loans/Assets" (Loans and discounts relative to total assets); "Cash/Deposits" (Cash and exchange relative to total deposits); "Deposits/Assets" (the sum of demand deposits and time deposits relative to total assets); "Payable/Assets" ("Due to banks" payable figures relative to total assets); "Cash/Assets" (Cash and exchange relative to total assets); "Capital/Assets" (total bank capital (capital + surplus) relative to total assets), and "Log(assets)" (natural logarithm of total assets). P-values reported in parentheses under the coefficients. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

**Table 6**
**Capital to Assets Regressions**

| VARIABLES | (1) Capital/Assets | (2) Capital/Assets | (3) Capital/Assets |
|---|---|---|---|
| Private DI | -0.0356*** | -0.0113 | -0.606*** |
| | (0.00595) | (0.337) | (0.000455) |
| Log(assets) | | -0.0526*** | -0.0676*** |
| | | (0.000) | (0.000) |
| PDI*Log(assets) | | | 0.0450*** |
| | | | (0.000561) |
| Constant | 0.191*** | 0.871*** | 1.064*** |
| | (0.000) | (0.000) | (0.000) |
| | | | |
| Observations | 266 | 266 | 266 |
| R-squared | 0.028 | 0.238 | 0.272 |

Notes: This table reports OLS regressions of the bank's capital to assets ratio. The dependent variable is "capital/assets" (as defined in Tables 2 and 3). The independent variables are: "Private DI" (private deposit insurance membership indicator); "Log(assets) (natural logarithm of total assets); and "PDI*Log(assets)" (the interaction of "Private DI" and "Log(assets)"). P-values reported in parenthesis under the coefficients. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

**Table 7:**
**Deposit to Assets Regressions**

|  | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Private DI | 0.00988 | 0.00737 | 0.0218 | 0.0261 | -0.143 |
|  | (0.636) | (0.722) | (0.302) | (0.220) | (0.230) |
| Cash/Assets |  | 0.278** | 0.366*** |  |  |
|  |  | (0.0443) | (0.00910) |  |  |
| Loans/Assets |  |  |  | -0.197** | -0.272*** |
|  |  |  |  | (0.0234) | (0.00732) |
| PDI*(Loan/Assets) |  |  |  |  | 0.264 |
|  |  |  |  |  | (0.150) |
| Log(assets) |  |  | -0.0322*** | -0.0333*** | -0.0329*** |
|  |  |  | (0.00437) | (0.00393) | (0.00434) |
| Constant | 0.690*** | 0.654*** | 1.059*** | 1.247*** | 1.288*** |
|  | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Observations | 251 | 251 | 251 | 251 | 251 |
| R-squared | 0.001 | 0.017 | 0.049 | 0.043 | 0.051 |

Notes: This table reports OLS regressions of the bank's deposits to assets ratio. The dependent variable is "deposits/assets" (as defined in Tables 2 and 3). The independent variables are: "Private DI" (private deposit insurance membership indicator); "Cash/Assets" (Cash and exchange relative to total assets); "Loans/Assets" (Loans and discounts relative to total assets); "PDI*(Loan/Assets)" (the interaction of "Private DI" and "Loans/Assets"); and "Log(assets) (natural logarithm of total assets). P-values reported in parenthesis under the coefficients. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

<div align="center">

**Table 8:**
**Determinants of Private Deposit Insurance membership**

</div>

|  | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| K-DI | 0.955** | 0.984** | 0.983** | 1.003** | 1.141*** |
|  | (0.0104) | (0.0125) | (0.0125) | (0.0104) | (0.00869) |
| Log (assets) |  | -0.0504 | -0.0493 | -0.0328 | 0.0156 |
|  |  | (0.715) | (0.722) | (0.815) | (0.917) |
| Cash/Assets |  |  | -0.335 | 0.300 | 2.782 |
|  |  |  | (0.835) | (0.869) | (0.381) |
| Dep/Assets |  |  |  | -1.267 | -2.018 |
|  |  |  |  | (0.397) | (0.276) |
| Loan/Assets |  |  |  |  | 2.243 |
|  |  |  |  |  | (0.295) |
| Constant | -0.836*** | -0.0963 | -0.0500 | 0.637 | -1.660 |
|  | (0.000186) | (0.962) | (0.980) | (0.767) | (0.572) |
| Observations | 267 | 267 | 267 | 267 | 267 |

Notes: This table reports probit regressions of private deposit insurance membership on county-level characteristics. The dependent variable is one if the bank was identified as being a member of the private deposit insurance as of December 31, 1919. The independent variables are: K-DI—the proportion of state banks in the county that participated in the Kansas deposit insurance program in 1920. "Log(assets)" is the log of bank assets for all state banks in the county in 1920. "Cash/Assets" is the ratio of cash to total assets for all state banks in the county in 1920. "Dep/Assets" is the ratio of total deposits to total assets for all state banks in the county in 1920. "Loan/Assets" is the ratio of loans to total assets for all state banks in the county in 1920. P-values are reported in parenthesis under the estimated coefficients. Significance levels: $**p<|0.05|$, $***p<|0.01|$.

**Figure 3**



L. P. KING, PRESIDENT      T. E. HINSHAW, VICE-PRESIDENT
M. B. LIGHT, CASHIER      G. H. BUCKMAN, ATTORNEY

## The State Bank
810 MAIN STREET

*Capital and Surplus* : : : *$65000.00*

A Guaranteed Bank under the Kansas Law. A Savings Department for small accounts. A Bank for the people— old and young. Interest paid in time deposits.

The State Bank began business in August 1905---only five years ago, and has, by careful management, courteous treatment of its patrons and unlimited resources for business achieved a place close to the lead. It is the only Bank in Winfield that has stood out fair and square for the Depositors' Guaranty Law.

*Your business respectfully solicited.*

WILLIAM E. OTIS, President      HENRY E. KIBBE, Vice-President
JOHN L. PARSONS, Vice-President      JAMES LORTON, Cashier

## Winfield National Bank
Winfield, Kansas

STATEMENT AT CLOSE OF BUSINESS, MARCH 29, 1910

| RESOURCES | | LIABILITIES | |
|---|---|---|---|
| Loans and Discounts | $458036.32 | Capital | $50000.00 |
| Overdrafts | 2347.62 | Surplus | 50000.00 |
| Banking House Furniture and Fixtures | 23875.0q | Undivided Profits | 18230.60 |
| Other Real Estate | 1332.08 | Circulation | 50000.00 |
| Cash and Sight Exchange | 174744.90 | Deposits | 566415.31 |
| U. S. Bonds and Premium | 57510.00 | Total | 734545.92 |
| Other Bonds and Premium | 20300.00 | | |
| Due from U. S. Treasury | 2500.00 249054.90 | | |
| Total | $734645.92 | | |

This Bank was Established in January 1871
The First Bank Opened in Cowley County Kansas
Over Thirty-Nine Years Old

*The Deposits in this Bank are Guaranteed by the "Bankers' Deposit Guaranty and Surety Company"---Time Deposits and Savings Deposits Guaranteed the same as the Deposits subject to Check.*

Source: *The Winfield Daily Free Press*, Winfield, Kansas (July 1, 1910), 8.

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