Organization structure and credibility: Evidence from commercial bank securities activities before the Glass–Steagall Act

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Received June 1996; received in revised form March 1997

Abstract

We examine the two ways in which US commercial banks organized their investment banking operations before the 1933 Glass–Steagall Act forced the banks to leave the securities business: as an internal securities department within the bank and as a separately incorporated affiliate with its own board of directors. While departments underwrote seemingly higher quality firms and securities than did comparable affiliates, the departments obtained lower prices for the issues they underwrote. The higher risk premium associated with the internal department is consistent with investors discounting for the greater likelihood of conflicts of interest when lending and underwriting are within the same structure. As a result, commercial banks evolved toward choosing the separate affiliate structure. Our results suggest that internal structure is an effective commitment mechanism, and absent other distortions, market pressures would propel banks to adopt an internal structure that would address regulators' concerns about conflicts of interest.

Keywords: Glass–Steagall Act; Firewalls; Universal banking; Credibility; Firm organization

JEL classification: G21; G24; L22; N22

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Thanks to George Benston, Eugene Fama, Robert Gertner, Charlie Himmelberg, George Kaufman, Geoffrey Miller, Mitchell Petersen, Manju Puri, Andrei Shleifer, Clifford Smith (the referee), and Philip Strahan for helpful comments and to Andy Curtis, Dragan Filipovich, Steve Sandberg, and Jim Stoker for research assistance. Research support from the National Science Foundation and the Graduate School of Business of the University of Chicago is gratefully acknowledged.
1. Introduction

Potential conflicts of interest are common in many economic relations, for example, among different parties within the firm, between an owner-manager and creditors, and between a firm and its customers. A classic example of a firm that is potentially subject to conflicts of interest is a financial institution. Recently, interest has focused on investment analysts of brokerage houses who tend to provide over-optimistic forecasts of a firm's earnings if their employer is a lead manager or has banking relationships with the firm being underwritten (e.g., Dugar and Nathan, 1995; Lin and McNichols, 1995; Michaely and Womack, 1996; Rajan and Servaes, 1996). Of greater economic and historical importance has been the potential conflict of interest when lending and underwriting are combined in a universal bank. Prior to 1933, for example, commercial banks in the United States were allowed to underwrite corporate securities. Since a commercial bank has loans outstanding to firms, it could favor the interests of its own equity-holders in the following manner: if a bank had private bad news about a firm it had lent to, it could use its underwriting arm to certify and distribute securities on behalf of the firm to an unsuspecting public and have the firm use the proceeds to repay the outstanding bank loan.

A straightforward method of eliminating conflicts of interest is to prohibit an agent from serving two masters. One such example is the 1933 Glass–Steagall Act which forbids commercial banks from underwriting and dealing in corporate securities. A major rationale for the complete separation were allegations that opportunistic commercial banks systematically duped naive investors into buying low-quality securities thus undermining confidence in the public markets (e.g., Kroszner and Rajan, 1994). Such a drastic approach is not without costs because it prevents the possibility of some efficient commercial banks from entering the underwriting business.

A less extreme solution is for the agent to contract so as not to favor unduly one master over another. The conflict of interest between the owner-manager and debt holders, for instance, can be mitigated if the owner agrees to be bound by debt covenants (Jensen and Meckling, 1976). In general, however, conflicts of interest are difficult to contract on because they emerge precisely in situations where information is poor ex ante, and it is difficult ex post to distinguish between malfeasance and bad luck.  

1 Economists would argue that the marginal investor sets the price. While the average investor may have been naive, it seems unlikely that the marginal investor was. Nevertheless, concerns about how the comingling of lending and underwriting could lead to 'conflicts of interest and a loss of public confidence' (e.g., Greenspan, 1988) continue to be a key part of the controversy surrounding Glass–Steagall.

The focus of this paper is on alternative means by which an agent might be able to mitigate conflicts of interest problems. Specifically, we investigate whether the choice of organizational structure by a firm is an effective commitment device against opportunistic behavior. The government often has imposed these structural restrictions on firms in regulated industries, such as telecommunications and financial services. Recently, for example, bank regulators have reinterpreted the Glass-Steagall Act to permit limited amounts of investment banking by subsidiaries of commercial bank holding companies as long as strict ‘firewalls’ separate the lending and underwriting operations. The exact structure and extent of the firewalls play a central role in the ongoing congressional debate on financial-services reform (e.g., Kroszner, 1996; Kroszner and Stratmann, 1997).

Absent in these debates is any evidence on whether internal organizational structure actually reduces conflicts of interest, and if so, whether some market failure would provide grounds for mandating it. Theoretically, an organization could voluntarily reduce the potential for conflicts of interest by creating different incentive structures for the managers in charge of the activities, giving them different positions in the hierarchy, and placing different monitors over them. The internal divisions and independent monitors could raise the costs (hence reduce the likelihood) of future opportunistic behavior. Internal structure thus could be a means by which the management of an enterprise binds its hands, and commits to a particular quality and reliability of business practices.

The value of internal structure as an effective means of commitment, however, can be questioned because the top managers of an organization could offer side payments to subordinates or other internal and external monitors (and in many circumstances, top managers will have an incentive to make such side payments), thus buying their cooperation ex post and vitiating any ex ante commitment. To what extent internal structure is perceived as a credible commitment, therefore, is an empirical issue.

If a firm’s effectiveness in the market-place is impaired by the perceptions of conflicts of interest, managers should have an incentive to adopt a private solution to mitigate or eliminate these perceptions. The failure of internal control systems (see Jensen, 1993) or some (unspecified) market failure could

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3 Alchian and Demsetz (1972), Williamson (1975, 1985), Fama and Jensen (1983a, 1983b), Hart and Moore (1990), and Milgrom and Roberts (1992), among others, explore broadly the theoretical links between a firm’s organizational structure and incentives. (See the readings in Puterman and Kroszner, 1996).

4 Middle managers will find it difficult to be opportunistic if they have to obtain the cooperation of potentially antagonistic managers who are in different parts of the organization (see the theoretical work by Rajan and Zingales, 1997). Recent scandals at Barings in Singapore and Daiwa Bank in New York City, for example, illustrate the importance of placing trading and back office operations under separate management.
prevent this, so whether a private solution is adopted is again an empirical question. Both empirical issues have important implications, not only for the theory of the firm, but also for regulatory policy, and are the subject of this paper.

To address these issues, we compare firms with different internal structures in an environment where conflicts of interest are important and the internal structure's influence on customer perceptions is measurable. Since conflicts of interest are important in financial markets and prices are a readily available measure of perceived value, we focus on financial firms. Specifically, we examine organizational forms that combine lending and underwriting and focus on the initial prices of securities they issue. Since regulatory mandates have tended to crowd out private attempts to handle conflicts of interest in financial services in recent years, we turn to the period prior to the Glass–Steagall Act.

This period of underwriting provides a fertile testing ground for a number of reasons. First, the attention given to conflicts of interest indicates that they were a concern for both underwriters and customers during this period. In Kroszner and Rajan (1994), we examine whether, prior to Glass–Steagall, conflicts of interest problems harmed investors in securities underwritten by commercial banks relative to investors in securities underwritten by independent investment banks. We compare the ex post default performance of securities underwritten by commercial banks with those underwritten by independent investment banks and find, much against the prevailing wisdom, that investors in commercial bank underwritten issues fare better than investors in investment bank underwritten issues (findings subsequently substantiated by Ang and Richardson, 1994; Puri, 1994). The evidence debunks the rationale that the Glass–Steagall Act was necessary because conflicts of interest led commercial banks to dupe naive investors. Instead, we propose that investors rationally discounted for potential conflicts of interest within commercial banks, which is why such investors do not appear to have fared worse. In that paper, however, we did not investigate if commercial banks attempted to overcome perceptions of conflicts of interest or whether internal structure was instrumental in allowing banks to flourish in the underwriting business before Glass–Steagall.

A second reason why this period deserves examination is that banks were free to choose how to structure their underwriting activities. Banks underwrote either through a securities department inside the bank in classic German universal-banking style or through a separately incorporated and capitalized securities affiliate which had its own board of directors. Finally, the 1920s was a period of competition among banks during which they failed because deposit insurance – both explicit and implicit – was virtually nonexistent. This enables

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5While some states had adopted various forms of voluntary or mandated deposit insurance, these schemes had either collapsed before, or were moribund by, the late 1920s (e.g., White, 1983).
us to focus on the choice of organization structure in an environment free of the distortionary influences of deposit insurance (e.g., Kroszner and Strahan, 1996).

In Section 2 we provide a brief background on commercial bank involvement in the securities business before the Glass–Steagall Act. Section 3 then describes some of the conflicts of interest that might arise when commercial banks underwrite corporate securities. We derive a number of empirical implications. The public perception that an underwriter suffers from conflicts of interest would impair its ability to certify the quality of securities it underwrites and, ceteris paribus, lower the prices on the securities it underwrites relative to more credible underwriters. If a bank can mitigate conflicts by placing underwriting activities in a separate affiliate and thereby distancing them from lending activities, and investors find this credible, the prices it obtains on the securities it underwrites should increase. We find that, ceteris paribus, issues underwritten through affiliates did obtain higher prices than issues underwritten through the internal department structure. We also find that the improvement in pricing is positively related to the fraction of the affiliate’s board that is composed of independent directors.

We provide further support for the hypotheses that internal structure matters with direct, but anecdotal, evidence from the 1920s suggesting that the public’s perception about conflicts of interest in banks was an important factor in banks’ decisions about their internal structure. Bank managers at the time discussed how they could improve their credibility and effectiveness by distancing two activities with potential conflicts of interest. Furthermore, during the 1920s depository institutions moved away from the internal department organization towards underwriting through the separately capitalized securities affiliate. We investigate a number of possible regulatory explanations for this trend but find that they cannot explain this movement. Instead, the structural evolution appears to reflect the private choices by the banks. Finally, we conclude with implications both for the theory of organizations and regulatory policy toward firm structure.

2. Organizational structures of commercial bank involvement in the securities business

Prior to the Glass–Steagall Act, commercial banks entered the securities business primarily through one of two organizational forms (e.g., Peach, 1941; Carosso, 1970; White, 1986). The first was a ‘captive’ internal securities department within the commercial bank. This structure is much like that of traditional German universal banks in which investment banking and commercial banking operations co-exist as departments inside the bank (e.g., Edwards and Fischer, 1994). The second was to organize a separately capitalized and separately
incorporated securities affiliate. The separate affiliate form is analogous to the 'section 20' securities subsidiaries that the Federal Reserve and the Office of the Comptroller of the Currency have recently permitted certain banks to establish.

Two key features distinguish the affiliates and in-house departments. (1) Affiliates were chartered under state laws as regular limited liability corporations with their own capitalization. Affiliate securities activities thus could be isolated from the commercial bank's operations, whereas internal department performance and activities could not be monitored as easily by outsiders. The role of the separate capitalization should not be overstated because there was no regulation of affiliate capital and numerous affiliates were incorporated with very little capital (e.g., Peach, 1941, p. 81). (2) Since the affiliate was a separate corporation, it had its own board and officers. Independent directors thus could provide an additional layer of monitoring of the affiliate's activities. The degree of autonomy of the affiliate from the bank varied. For some affiliates, the directors and officers of the bank constituted only a minority of the directors and officers of the affiliate, while for others the management control was more complete (see Preston and Findlay, 1930a, 1930b; Peach, 1941; Carosso, 1970). We will examine measures of the degree of autonomy in more detail below.

The specific legal organization of the affiliates could take a number of forms. First, each shareholder of the bank also would be a shareholder of the affiliate. Second, the stock of the affiliate would be held by another affiliate or by a holding company which also owned the stock of the commercial bank. Third, the bank would appoint a panel of trustees who would hold the shares of the affiliate in trust for the bank. Fourth, the bank would directly own the stock of the affiliate as an investment. See Preston and Findlay (1930a, 1930b), Moore (1934), Peach (1941), Edwards (1942), Carosso (1970), and White (1986).

Section 20 of the Glass-Steagall Act forbids commercial banks from affiliating with any organization 'engaged principally' in securities underwriting and dealing. Since 1989, the regulators have given a more flexible interpretation of the statute to allow banks to operate 'section 20' subsidiaries that are engaged, but not principally, in securities activities. Initially, no more than 5% of total revenue in the subsidiary was permitted to be related to the otherwise prohibited investment banking activities (e.g., Macey and Miller, 1992a, pp. 491–571; Blair, 1994). The regulators recently have raised the revenue limit to 25%.

The two organizations can be thought of as existing along a continuum with the internal department as one extreme, an external pure spot market at the other, and the affiliate form in between (see Williamson, 1975; Brickley et al., 1997, Chapter 15; Mian and Smith, 1990, 1992).

Because affiliates were distinct corporations, they reported separate balance sheets. Their condition thus could be observed separately from the condition of the banks. Moody's Banking and Finance Manual, however, provides separate balance sheets for only 15 of the affiliates in our sample. For this group, the mean capital of affiliates is 15% of their parent bank's capital, and the range is from 4% to 43%.

The affiliates were not, of course, completely isolated from the banks. Since the affiliates typically shared the name of their parent, affiliates enjoyed the '... benefit of the goodwill of their parent banks' (Peach, 1941, p. 52).
State-chartered and nationally-chartered depository institutions had somewhat different legal frameworks for engaging in a variety of financial services. While regulations on the internal activities of state-chartered institutions differed across the states, they generally faced little, if any, restriction on the organization of their securities activities (Peach, 1941, pp. 44–51). The National Banking Act of 1864 did not permit national banks to deal in common stocks internally but left ambiguous their powers with respect to corporate bonds. Nonetheless, many national banks did operate active internal securities departments. The McFadden Act of 1927 explicitly authorized the national banks to deal in, and underwrite, 'investment securities' through internal securities departments. As Kaufman and Mote (1990) demonstrate, this provision was nothing more than a codification of the common, existing practice.

The 1920s saw a dramatic increase in the extent of bank and trust involvement in non-bank activities, either directly or through affiliates (see Kroszner and Rajan, 1994). Table 1 (from Charles E. Mitchell's testimony in 1931 (US Senate, 1931, p. 299)) illustrates the decline of the market share of the independent investment banks in the bond underwriting business during the late 1920s. Commercial banks underwrote roughly 22% of this market in 1927 and 45% by 1929. Peach (1941, p. 83) reports, for example, that the number of national banks operating securities affiliates, although not necessarily underwriting securities, rose from 10 in 1922 to a peak of 114 in 1931. The number of banks engaged in the securities business through their securities departments doubled from 62 to 123 during this period. The movement into underwriting was at least in part motivated by increasing disintermediation during the decade, with a growing number of firms turning to the capital markets to finance their operations and investment (see Kroszner, 1996).

3. Potential conflicts of interest and organizational choice: theory and implications

As commercial banks moved into the underwriting business during the 1920s, bankers clearly believed that they enjoyed some advantages from combining lending and underwriting (see Biddle and Bates, 1931; Peach, 1941). While

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11 Kaufman and Mote (1992) have laid to rest the unfounded assertion that a 1902 ruling by the Comptroller of the Currency forced national banks to transfer corporate securities activities from internal securities departments to separate securities affiliates.

12 Kaufman and Mote (1990, p. 393) provide the following quotation from the Senate and House Reports accompanying the McFadden Act: “this [securities dealing and underwriting] is a business that is regularly carried on by state banks and trust companies and has been engaged in by national banks for a number of years. The effect of this provision, therefore, is primarily regulative.”
servicing their commercial and industrial loan portfolios, commercial banks obtained relatively low-cost access to current information about their client firms' impending financing needs. In addition, putting both functions under a unified management structure could improve the coordination of these functions and minimize competition between the lending and underwriting operations for a customer.

The information and coordination benefits, however, are a double-edged sword because they come at the cost of credibility. Close ties between a commercial bank and its underwriting operations can increase the public's perceptions of conflicts of interest in the bank and impair the bank's ability to certify credibly the value of securities it underwrites. There are essentially two sources of conflict between the lending function and the certification function. First, if a client firm's prospects deteriorate without the public realizing it, a commercial bank could attempt to persuade its underwriting operation to bring out a public issue on behalf of the firm, misrepresent the issue's quality to the investing public in order to sell it, and use the proceeds to repay earlier bank loans made to the firm. Second, if the market does not know the quality of the bank's clientele, the bank could attempt to continue funding their best clients through bank loans and take only the weaker firms to the market. The first argument emphasizes moral hazard, that is, the banks have an incentive to bail out of bad bank loans by refinancing these firms in the public market, while the second emphasizes adverse selection, that is, banks will 'cherry pick' their best clients. Rational
investors who perceive the potential for these conflicts should react by demanding a risk premium on the yield (or, equivalently, imposing a discount on the price) of securities underwritten to the extent of the uncertainty generated by the potential conflicts.\(^\text{13}\)

In deciding the extent to which functions are integrated in the firm \textit{ex ante}, top management has to trade-off the advantages of greater information flow, cooperation, and coordination that come from greater integration against the potential conflicts of interest and suspicion that accompany it. Some elements of organizational structure can reduce the perception of conflicts of interest without substantially diminishing the extent of cooperation between functions. Independent directors on the affiliate's board, for instance, could simply serve as a check against opportunism. Often, however, aspects of organizational structure that reduce perceptions of conflicts of interest are likely to reduce cooperation between functions as well. The separation of the managerial hierarchies in the affiliate structure implies that requests for cooperation and coordination have to travel up from lending operations to the top management of the bank, to the top management of the affiliate and then down again to underwriting operations. In the department structure, such issues could be resolved at a department-head level, thus reducing the organizational layers through which communication and agreement have to take place (see Rotemberg, 1995, for a detailed theory). Also, the affiliate's separate existence, profit stream, and balance sheet make any cross-subsidy of the bank's activity more transparent and less feasible. Consequently, since their futures are less closely tied to the bank, the officers of an affiliate should be more reluctant than officers of an underwriting department to cooperate with the loan officers of the bank.

If potential conflicts of interest are more important than information flows and cooperation between functions and internal structure affects perceptions of conflicts of interest, then we should observe a number of differences between the two forms. First, the primary implication of the theory is that, \textit{ceteris paribus}, internal department underwritten issues, where perceptions of conflicts of interest are relatively high, pay a higher yield (or obtain a lower price) than issues underwritten through more arm's length affiliates.\(^\text{14}\) Second, the credibility

\(^{13}\) See Saunders (1985) and Benston (1990) for a broad discussion, and Rajan (1992), Puri (1993), Kanatas and Qi (1994) for a formal analysis of these issues. Conflicts of interest reduce the credibility of an underwriter's certification, thus adding noise to the quality signal received by the public. This would lead them to demand a higher yield for fixed-income securities.

\(^{14}\) One cannot always conclude that a difference in prices of similar securities obtained by different types of underwriters implies a difference in underwriting ability. Puri (1996) finds that securities underwritten by universal banks obtained higher prices than securities underwritten by investment banks and concludes that universal banks are better at underwriting. Unfortunately, there are plausible explanations of this finding that do not imply any difference in underwriting ability. Firms underwritten by a universal bank are likely to have an ongoing lending relationship with it. While
problems should be greater for smaller, less frequent underwriters than for the larger underwriters. Third, the internal departments should be at disadvantage at issuing the most information-intensive and risky securities such as equity relative to bonds. Due to a perception of great conflicts of interest, internal departments should have more difficulty than affiliates in convincing the public of the value of these securities so they should be more specialized in bonds than equity, relative to the affiliates. The difference in the information-intensity of the securities underwritten also should be particularly great when comparing the smaller underwriters than when comparing the larger ones. Fourth, for securities for which the publicly announced purpose is to repay debt, the greater perception of conflicts of interest should lead to a greater discount on securities underwritten by internal departments than affiliates.

The above paragraph suggests that affiliates would want to adopt mechanisms to enhance their credibility. One such device is through the composition of the board. If independent members of the affiliate's board of directors play a useful monitoring role, then a higher proportion of directors who are not officers or directors of the parent bank should enhance credibility and lead to a lower risk premium (higher price) relative to internal departments.

4. The effects of organizational structure on securities pricing and activities choices

4.1. Data sources and definitions

We use a variety of contemporary and more recent sources to identify commercial banks engaged in investment banking prior to the Glass-Steagall Act: Preston and Findlay (1930a, 1930b), Moore (1934), Peach (1941), Carosso

the relationship provides better information to the bank's underwriting arm (the potential source of the universal bank's superiority in underwriting), by virtue of the lending relationship the bank could also be better able to control future agency and asymmetric information problems at the firm. This will enable the bank to insure the firm against possible future credit rationing (see Diamond, 1991, for the theory; Petersen and Rajan, 1994, for evidence). Both the \textit{ex ante} information the lending relationship provides the underwriting arm and the \textit{ex post} insurance it provides the firm against rationing would suggest higher prices for securities issued by firms with banking relationships. Even if universal banks are no better at underwriting, they could, on average, obtain higher prices for issues because the public prices in the banking relationship. By contrast, our paper examines differences between underwriters, both of whom have a banking arm, and are thus more likely to have similar banking relationships with the firms they underwrite.
(1970), and White (1986), the Commercial and Financial Chronicle (CFC) and the National Securities Dealers of North America (1929). To be included in our sample, the commercial bank or trust must be listed in the Moody's Banking Manual. Moody's provides information on each depository institution’s charter, balance sheet, and the organization of the securities operations.

In order to determine which of these banks were actively involved in securities underwriting, as opposed to simply acting as brokers, we examine the two-volume American Underwriting Houses and Their Issues (1928, 1930). This source groups by underwriter all new public securities issued between 1 January 1925 and 31 December 1929, and provides information on the characteristics of the securities. Securities for which a house was the lead underwriter or syndicate manager list that house's name in bold first, if more than one house is involved. We include in our sample only those securities in which the commercial bank, trust, or its securities affiliate is the lead underwriter or syndicate manager. The listings include common and preferred stock and short and long bonds of private corporations and governments. The entry for each security lists the month of issue, issue size, the coupon, the price, maturity, and the underwriter(s). Our sample includes 43 internal departments of commercial banks and trusts and 32 securities affiliates underwriting a total of 906 securities.

The monthly new capital flotations section of the CFC reports the implied yield to maturity for bonds. To adjust the yield for changes in discount rates over time, we subtract the long-term government bond yield as reported in Banking and Monetary Statistics (1976) from the initial yields. The vast majority of the bonds in the sample have maturities between 10 and 20 years, and the yield curve was quite flat during this period (see Banking and Monetary Statistics, 1976, pp. 428 429, 460, 469).

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15 Any ambiguities or missing information is resolved by examining the monthly reports in the Commercial and Financial Chronicle.

16 Note that we have eight cases in which a bank underwrote first through a department and later in the sample period switched to an affiliate structure. In the totals reported here, securities underwritten by the bank when underwriting through a department are counted with the department totals, and similarly when underwriting through an affiliate. We discuss the 'switchers' in more detail below.

17 Kroszner and Rajan (1994) did not distinguish between the two types of commercial bank underwriting structures and analyzed the ex post performance of only 163 commercial bank underwritten securities drawn from a somewhat different time period.

18 We checked that the prices (associated with the implied yields) reported in the CFC and American Underwriting Houses do correspond to the trading prices soon after the issue. When the CFC did not report the implied yield to maturity for an issue, we calculate the yields from the data in American Underwriting Houses. Our results do not change if we drop observations for which we calculated the yields.

19 The vast majority of the bonds in the sample have maturities between 10 and 20 years, and the yield curve was quite flat during this period (see Banking and Monetary Statistics, 1976, pp. 428 429, 460, 469).
Moody's manuals then provide ratings, debt, assets, industry, and other firm characteristics. Sample statistics for the variables are reported in the Appendix.

4.2. The relative pricing of bonds underwritten by departments and affiliates

We define the initial net yield as implied yield to maturity at the offering date minus the long-term government bond yield in the month of issue. The mean and median initial net yields for the affiliates are 31 and 45 basis points lower than for the departments and the differences are statistically significant at the one percent level.\(^20\) We must, however, correct for differences in the quality of issues underwritten by the two organizational structures before drawing conclusions.

In Table 2, we attempt to make such adjustments by regressing the initial net yield on a variety of ex ante observable proxies for creditworthiness and an indicator variable for the organizational structure of the underwriter. Larger and older firms, on average, tend to be of better credit quality than smaller and younger firms. As proxies for these factors, we include the log of the asset size (in thousands of dollars) of the firm being underwritten and the log of one plus the firm age in years. We also include the firm's debt-to-assets ratio immediately following the bond issue.\(^21\) Finally, we include (but do not report the coefficient estimates for) indicators for the year of issue to proxy for differences in macroeconomic conditions at the time of the issue, indicators for one-digit SIC codes to proxy for inter-industry differences in risk and debt capacity, and separate indicators for railroads and utilities.

As column (i) of Table 2 reveals, the firm size and firm age proxies are strongly negatively correlated with initial net yield. The higher the firm leverage before the issue, the higher is the yield on the bond. The department indicator is positive and economically and statistically significant ($\beta = 0.12, t = 2.2$). Department underwritten securities tend to have a yield which is 12 basis points (a basis point is one-hundredth of a percentage point) more than an affiliate underwritten security. By comparison, a bond rated 'A' by Moody's has a 14 basis point higher yield than a bond rated 'Aa'. The discount thus is approximately equivalent to one rating tick, which is economically significant. The result suggests that the public discounted the prices of department underwritten securities.\(^22\)

\(^{20}\) The numbers in the text are for the sample of issuers for which we have balance sheet data, that is, for the sample included in the regressions. For the whole sample of long-term bonds, the mean (median) initial net yield for affiliates is 2.08 (2.06) and for internal departments is 2.43 (2.56), and the differences are again statistically significant at the 1% level.

\(^{21}\) The results are very similar if we use the debt-to-assets ratio before the bond issue.

\(^{22}\) We also included explanatory variables such as whether a security is listed on an exchange, and the size of the issue, but these did not affect the coefficient estimates and are not reported. White's heteroscedasticity corrections were also applied to all the regressions reported. The internal department coefficient continued to be statistically significant: for the specifications reported in Table 2, the $t$-statistics were between 2.0 and 2.7.
To investigate the robustness of the results concerning the department indicator, we now examine a number of other factors that could affect our interpretation. The department indicator may be a proxy for omitted characteristics of the bank and its clients. We show later that larger banks were more likely to set up affiliates. Larger banks, perhaps, are more likely to have large, established client firms who they can bring to market. The department indicator could be an inverse proxy for bank size and, thus, for the quality of firms being brought to market. To control for this possibility, we include the log of bank assets in the regression. Beatty and Ritter (1986) emphasize the link between underwriter reputation and the quality of issues brought to the market. We include the (log of the) age of the bank as a proxy for the bank’s reputation, and hence, of the quality of issues underwritten. The bank size variable also could proxy for a bank’s reputation. Finally, nationally-chartered banks were supervised by different regulators and perhaps had different controls on their activities than the state chartered banks. To adjust for regulatory differences, we include an indicator variable which is one if the bank has a national charter and zero otherwise.

The estimates, after controlling for bank characteristics, are reported in column (ii) of Table 2. The department coefficient remains positive and statistically significant ($\beta = 0.17, t = 2.7$). Larger and older banks thus tend either to bring better securities to the market or to certify them better. The coefficients on bank size and bank age are negative, although only bank age is marginally

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>(i)</th>
<th>(ii)</th>
<th>(iii)</th>
<th>(iv)</th>
<th>(v)</th>
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<tbody>
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<td>Indicator is 1 if the underwriter is</td>
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<td>0.17</td>
<td>0.16</td>
<td>0.23</td>
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<td></td>
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<td>(−1.30)</td>
<td>(−0.75)</td>
<td>(−1.41)</td>
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<tr>
<td>Indicator is 1 if bank is a national bank</td>
<td>0.18</td>
<td>0.12</td>
<td>0.15</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.96)</td>
<td>(1.82)</td>
<td>(2.02)</td>
<td>(1.84)</td>
<td></td>
</tr>
<tr>
<td>Log of bank age in years</td>
<td>0.09</td>
<td>0.05</td>
<td>0.02</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(−1.72)</td>
<td>(−1.01)</td>
<td>(−0.38)</td>
<td>(−0.16)</td>
<td></td>
</tr>
</tbody>
</table>
Table 2 (continued)

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>(i)</th>
<th>(ii)</th>
<th>(iii)</th>
<th>(iv)</th>
<th>(v)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log of bank assets in $000</td>
<td>-</td>
<td>0.01</td>
<td>-0.04</td>
<td>-0.08</td>
<td>-0.04</td>
</tr>
<tr>
<td>Indicator is 1 if bank is in New York</td>
<td>-</td>
<td>-</td>
<td>0.19</td>
<td>0.30</td>
<td>0.19</td>
</tr>
<tr>
<td>Indicator is 1 if bank is in other financial center</td>
<td>-</td>
<td>-</td>
<td>-0.07</td>
<td>-0.03</td>
<td>-0.04</td>
</tr>
<tr>
<td>Indicator is 1 if state allows limited branching</td>
<td>-</td>
<td>-</td>
<td>-0.08</td>
<td>0.01</td>
<td>-0.06</td>
</tr>
<tr>
<td>Indicator is 1 if state allows unrestricted branching</td>
<td>-</td>
<td>-</td>
<td>0.32</td>
<td>0.37</td>
<td>0.28</td>
</tr>
<tr>
<td>Indicator is one if the underwriter is a department that later switches to an affiliate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.08</td>
<td>-</td>
</tr>
<tr>
<td>Includes indicators for initial Moody's ratings categories</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Number of observations</td>
<td>422</td>
<td>422</td>
<td>422</td>
<td>422</td>
<td>422</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.36</td>
<td>0.36</td>
<td>0.39</td>
<td>0.40</td>
<td>0.52</td>
</tr>
</tbody>
</table>

*aAll specifications include indicators for (a) the year of issue, (b) one-digit SIC codes, (c) whether the issuer is a railroad, and (d) whether the issuer is a public utility. These coefficient estimates are not reported.

*bSeparate indicators are included for each Moody's rating category: that is, the first ratings indicator equals one if Moody's initially rated the bond Aaa and zero otherwise; the second ratings indicator equals one if the bond was rated Aa, etc.

*cFor specification (iv), the department indicator is set to zero for departments that switched. Indicators are included for each 'switcher', and bank characteristics are set to zero for switchers (the indicator absorbs the characteristics).

Sources and Notes: Initial net yield is defined as the implied yield to maturity at the offering date reported in the Commercial and Financial Chronicle or American Underwriting Houses and their Issues minus the long-term government bond rate in the month of issue obtained from Banking and Monetary Statistics. The securities department indicator is one if the underwriter of the issue is an in-house securities department and zero if the underwriter is an affiliate. The total assets of the firm are book assets in the year before the issue as listed in Moody's. Firm age is the number of years that the firm has existed at the date of issue. The debt to total assets ratio is the ratio of total debt (including notes) to book assets in the year before the issue, as obtained from Moody's. The maturity of the bond is the average of maturities for a serial bond and the final maturity for a bond with a balloon payment in years. A national bank has a federal bank charter. Bank age is the number of years since the founding of the bank with which the affiliate or the securities department is associated. Bank assets is the total book value of assets of the bank. Other financial centers include Boston, Chicago, Philadelphia, St. Louis, San Francisco, and Los Angeles. Branching status is obtained from the Federal Reserve Bulletin (1930). Summary statistics for the variables are in the Appendix. t-statistics are shown in parentheses.
statistically significant. Interestingly, the securities underwritten by national banks tend to have higher initial net yields.\textsuperscript{23}

Locational differences are another set of bank characteristics to take into account. In our sample, 63\% of the banks with affiliates were located either in New York or in cities that could be considered financial centers.\textsuperscript{24} By contrast, only 44\% of the banks underwriting through departments were in New York or other the financial centers. To adjust for this, we include indicators for whether the parent bank is in New York or other major financial centers. In addition, branching restrictions may have prevented banks from being 'close' to clients, thereby making it more difficult for them to gather information about them (e.g., Dhawan, 1994). The argument implies that banks in states that did not allow branching obtained lower prices for issues.\textsuperscript{25} To test this, we include indicators for whether the state in which the bank is headquartered permits only limited branching or has no branching restrictions.

After controlling for the locational factors in column (iii), the coefficient on the department indicator remains statistically significant ($\beta = 0.16, t = 2.2$). Interestingly, the higher initial net yield on bonds underwritten by banks in New York City suggests that these banks were perceived by the public as being more aggressive. That the Pecora committee hearings of 1933–1934 singled out a few New York banks for intense investigation supports this interpretation.\textsuperscript{26} Being located in other financial centers had a small, negative, and statistically insignificant effect on initial net yields. We do not find that restrictions on branching increased the risk premium. While bonds underwritten in limited branching states had a slightly (but statistically insignificantly) lower yield than bonds underwritten in states disallowing branching, bonds in states with no branching restrictions had a (statistically significant) higher yield.

Adjusting for observable characteristics of the firm and underwriter, columns (i)–(iii) of Table 2 suggest that department underwritten issues received lower prices (or had higher yields) relative to comparable affiliate underwritten issues. A potential concern could be that we treat the securities underwritten by each

\textsuperscript{23} The results we obtain below are similar when we use the log of bank capital as a measure of bank size. As another measure of bank quality, we include the bank's capital–assets ratio, but this variable has no additional explanatory effect. We also estimate separate regressions for the sample of state chartered banks and national banks and find that the internal securities department coefficient is statistically significant in both.

\textsuperscript{24} These include Boston, Chicago, Philadelphia, St. Louis, San Francisco, and Los Angeles.

\textsuperscript{25} To the extent that there is more noise in the underwriter's information, the public has a more dispersed distribution of a firm's quality, which leads it to attribute lower prices for fixed claim securities such as debt.

\textsuperscript{26} Ang and Richardson (1994) find that bonds underwritten by Chase and National City Company (which bore the brunt of the Pecora Committee investigations; see US Senate, 1933–1934) offered higher yields than other comparable bonds, suggesting that these probably were perceived as 'rogue' banks.
bank as independent observations, while in fact they may not be so. Moulton (1986) shows that a version of the Breusch and Pagan (1980) Lagrangian Multiplier test can be used to test this. While the null hypothesis of independence is rejected for the model estimated in column (i), once we introduce bank characteristics in columns (ii) and (iii), the null hypothesis of independence cannot be rejected, at even the 25% level (the LM test statistic is 0.6).

Eight underwriters switched from the department form to the affiliate form during our sample period. An analysis of this group allows us to check whether firm-specific effects are responsible for the results. In column (iv), we set the department indicator to zero for issues underwritten by these institutions but include a new 'switching department' indicator. This variable is one for bonds underwritten by these eight when they were organized as departments (i.e., before the underwriter switched form), and zero otherwise. As expected, the coefficient estimate in column (iv) indicate that the risk premium on bonds underwritten before the switch (i.e., as departments) was higher than after the switch. The premium is only 8 basis points and not statistically significant. The lack of significance is partly due to the small number of observations for switchers (we have only 49 bonds before the switch and 26 bonds after the switch because most of the switching came relatively late in the sample). In addition, the departments that switched belonged to banks that had on average 60% more assets than banks with departments that did not switch. (In the next section, we show that large departments were discounted relatively less than small departments, so the relatively large size of the switching departments also can account for the small coefficient estimate.)

Another concern is that other relevant information was available to the public at that time, so the list of factors we have included is not be complete. To attempt to take account of quality factors known at the time but that we may have omitted, we include the initial rating by the Moody's rating agency. We create five indicator variables for the top five ratings categories (Aaa, Aa, A, Baa and Ba) which are one if the bond has that rating and zero otherwise. Unrated bonds are the omitted category. If the department indicator is merely a proxy for omitted variables that were known to the public investor at that time of issue, the inclusion of the rating indicators should dramatically reduce the coefficient estimate and increase the standard error for the department indicator. Column (v) of Table 2, however, demonstrates that this does not occur.

---

27 More than two-thirds of the bonds were rated. Roughly 1% of the bonds were rated below 'Ba' at issue, so we do not include a separate indicator for them.

28 We also examined whether Moody's shaded down its ratings of department underwritten issues relative to those of the affiliates. Using an ordered logit procedure, we regressed rating (1 for Aaa, 2 for Aa, etc.) on the right-hand-side variables in columns (ii)-(iii) of Table 2 and found that the departmental indicator was positive and statistically significant. Moody's thus appears to have been more likely to give lower ratings to the departmental issues than to otherwise (observably) equivalent securities underwritten by the affiliates.
The coefficient estimate drops only slightly to 0.14 and the t-statistic rises slightly. The main effect of the inclusion of the ratings indicators is to reduce the magnitude and statistical significance of the firm characteristics and to increase the adjusted $R^2$ (from 0.40 to 0.52), implying that there is considerable information in the ratings. These results suggest that the higher demanded yield is related to the department structure and not to an omitted variable.

4.3. Pricing differences related to the size of the underwriter

There are important differences in size between banks underwriting through departments and banks underwriting through affiliates. On average, smaller banks and banks bringing fewer issues to market tend to underwrite through departments. Banks underwriting through affiliates had assets averaging $316 million and underwrote an average of 18 issues over the 1925–1929 period. By contrast, banks underwriting through departments had assets averaging $119 million and underwrote an average of 8 issues.

The differences in scale of securities operations raises the question of whether the inclusion of bank size is an adequate control. More direct measures of scale of underwriting include the maximum and median size of issue underwritten by the securities arm in the period 1925–1929 and the capital dedicated to underwriting. While the last measure is not available for departments, the first two are available. We report results only on the maximum size of issue underwritten as a measure of the scale of securities operations, the results for median size are similar.

The maximum size of an issue underwritten through an internal department is $60 million. There are four affiliates which underwrite issues larger than this. We include an indicator variable for issues underwritten by the four affiliates. After controlling for the scale of securities operations in this way, column (i) of Table 3

---

29 It is not surprising that almost all of the coefficients estimates in the regression shrink in magnitude because the ratings also partly contain the information contained in the included variables. We also estimate the regression after dropping the unrated bonds. The coefficient for the department indicator is 0.15 ($t = 2.23$) suggesting that the department indicator is not a proxy for information not available for the unrated bonds.

30 Also, we include squares of the firm and bank specific variables to check if the department indicator picks up nonlinearities in the explanatory variables. The coefficient estimate on the department indicator and its standard error again are virtually unchanged. Table 5, discussed in Section 4.4, provides further evidence against omitted variable bias driving the results.

31 The annual volume of issues underwritten is an alternative measure for which we can create a crude calculation and we discuss this below.
Table 3
Alternative specifications for the OLS estimates of the determinants of initial net yields on bonds underwritten by the internal securities departments and separate affiliates of commercial banks, 1925–1929. *

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>(i)</th>
<th>(ii)</th>
<th>(iii)</th>
<th>(iv)</th>
<th>(v)</th>
<th>(vi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator is 1 if the underwriter is internal securities department</td>
<td>0.20</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.19</td>
<td>–</td>
</tr>
<tr>
<td>Indicator is 1 if largest issue by underwriter is above $60 million</td>
<td>0.08</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Indicator is 1 if underwriter is ‘small’ internal department</td>
<td>–</td>
<td>0.28</td>
<td>0.28</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Indicator is 1 if underwriter is ‘large’ internal department</td>
<td>–</td>
<td>0.10</td>
<td>0.14</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Indicator is 1 if underwriter is ‘small’</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.02</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Indicator is 1 if underwriter is ‘large’</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.06</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Indicator is 1 if internal securities department and stated purpose is to refinance debt or loans</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.26</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Indicator is 1 if internal securities dept. and refinancing of debt or loans is not stated</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.14</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Indicator is 1 if separate affiliate and stated purpose is to refinance debt or loans</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.12</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Director overlap between parent bank and affiliate, set to 0 for departments</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.22</td>
<td>–</td>
</tr>
<tr>
<td>Director overlap between parent bank and affiliate, set to 1 for departments</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.19</td>
</tr>
<tr>
<td>Log of firm assets in $000</td>
<td>– 0.02</td>
<td>– 0.01</td>
<td>– 0.01</td>
<td>– 0.01</td>
<td>– 0.01</td>
<td>– 0.01</td>
</tr>
<tr>
<td>Log of firm age in years</td>
<td>– 0.04</td>
<td>– 0.04</td>
<td>– 0.04</td>
<td>– 0.04</td>
<td>– 0.05</td>
<td>– 0.05</td>
</tr>
<tr>
<td>Debt to assets ratio after the issue</td>
<td>0.20</td>
<td>0.19</td>
<td>0.19</td>
<td>0.22</td>
<td>0.12</td>
<td>0.13</td>
</tr>
<tr>
<td>Maturity of bond in years</td>
<td>– 0.004</td>
<td>– 0.003</td>
<td>– 0.003</td>
<td>– 0.003</td>
<td>– 0.001</td>
<td>– 0.001</td>
</tr>
<tr>
<td>Indicator is 1 if bank is a national bank</td>
<td>0.14</td>
<td>0.10</td>
<td>0.12</td>
<td>0.10</td>
<td>0.04</td>
<td>0.05</td>
</tr>
<tr>
<td>Log of bank age in years</td>
<td>– 0.01</td>
<td>– 0.01</td>
<td>– 0.01</td>
<td>– 0.002</td>
<td>– 0.01</td>
<td>– 0.01</td>
</tr>
</tbody>
</table>
Table 3 (continued)

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>(i)</th>
<th>(ii)</th>
<th>(iii)</th>
<th>(iv)</th>
<th>(v)</th>
<th>(vi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log of bank assets in $000</td>
<td>-0.04</td>
<td>-0.01</td>
<td>-0.02</td>
<td>-0.04</td>
<td>-0.07</td>
<td>-0.06</td>
</tr>
<tr>
<td>Indicator is 1 if bank is in New York</td>
<td>0.18</td>
<td>0.14</td>
<td>0.14</td>
<td>0.20</td>
<td>0.21</td>
<td>0.21</td>
</tr>
<tr>
<td>Indicator is 1 if bank is in other financial center</td>
<td>-0.04</td>
<td>-0.05</td>
<td>-0.05</td>
<td>-0.05</td>
<td>-0.07</td>
<td>0.06</td>
</tr>
<tr>
<td>Indicator is 1 if state allows limited branching</td>
<td>(1.89)</td>
<td>(1.50)</td>
<td>(1.43)</td>
<td>(2.12)</td>
<td>(1.98)</td>
<td>(1.97)</td>
</tr>
<tr>
<td>Indicator is 1 if state allows unrestricted branching</td>
<td>-0.04</td>
<td>-0.06</td>
<td>-0.05</td>
<td>-0.06</td>
<td>-0.07</td>
<td>0.06</td>
</tr>
<tr>
<td>Number of observations</td>
<td>422</td>
<td>422</td>
<td>422</td>
<td>422</td>
<td>305</td>
<td>305</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.52</td>
<td>0.52</td>
<td>0.52</td>
<td>0.52</td>
<td>0.47</td>
<td>0.48</td>
</tr>
</tbody>
</table>

*All specifications include separate indicators for each Moody's rating category: that is, the first ratings indicator equals one if Moody's initially rated the bond Aaa and zero otherwise; the second ratings indicator equals one if the bond was rated Aa, etc. All specifications also include indicators for (a) the year of issue, (b) one-digit SIC codes, (c) whether the issuer is a railroad, and (d) whether the issuer is a public utility. These coefficient estimates are not reported.

No internal bond department underwrites a bond issue greater than $60 million during our sample period.

If an underwriter's largest issue between 1925 and 1929 is less than or equal to $2.5 million, it is classified as 'small'. If an underwriter's largest issue lies between $2.5 million and $60 million, it is classified as 'large'. (The maximum issue size for an internal bond department in our sample is $60 million.) Affiliates which underwrote an issue greater than $60 million are classified as 'extra-large'. The $2.5 million cut-off is chosen because it is the median of the maximum issue sizes after dropping the extra-large underwriters.

Director overlap between the parent bank and affiliate is the proportion of the directors of affiliate who also are directors of the parent bank; in the first definition, the variable is set to zero for internal departments and, in the second definition, is set to one for the internal departments.

Sources and Notes: Initial net yield is defined as the implied yield to maturity at the offering date reported in the Commercial and Financial Chronicle or American Underwriting Houses and their Issues minus the long-term government bond rate in the month of issue obtained from Banking and Monetary Statistics. The department indicator is one if the underwriter of the issue is an in-house securities department and zero if the underwriter is an affiliate. Stated purpose of the issue is obtained from the Commercial and Financial Chronicle. The total assets of the firm are book assets in the year before the issue as listed in Moody's. Firm age is the number of years that the firm has existed at the date of issue. The debt to total assets ratio is the ratio of total debt (including notes) to book assets in the year before the issue, as obtained from Moody's. The maturity of the bond is the average of maturities for a serial bond and the final maturity for a bond with a balloon payment in years. A national bank has a federal bank charter. Bank age is the number of years since the founding of the bank with which the affiliate or the securities department is associated. Bank assets is the book value of total assets of the bank. Other financial centers include Boston, Chicago, Philadelphia, St. Louis, San Francisco, and Los Angeles. Branching status is obtained from the Federal Reserve Bulletin (1930). Summary statistics for the variables are in the Appendix. t-statistics are shown in parentheses.
shows that the department indicator remains economically and statistically significant ($\beta = 0.2$, $t = 2.5$).\textsuperscript{32}

Large underwriters typically tap the market more often and have better reputations (or at least there is less uncertainty about their quality). Since reputation should mitigate concerns about having the ‘wrong’ structure, the public should discount securities underwritten by small, and typically less reputable, departments more than securities underwritten by large departments. A more subtle implication is that even measured relative to issues by affiliates of similar size, the discounts for small department issues should be larger.

The data are consistent with these predictions. We classify the underwriters as ‘small’ (maximum size of issue underwritten is less than $2.5$ million) and ‘large’ (maximum size of issue underwritten is between $2.5$ million and $60$ million). The four affiliates with maximum size of issue over $60$ million are classified as ‘extra-large.’\textsuperscript{33} When we include separate indicators for small and large departments (Table 3, column ii), the coefficient on the small department indicator is statistically and economically larger ($\beta = 0.28$, $t = 3.33$) than the coefficient on the large department indicator ($\beta = 0.10$, $t = 1.58$). In column (iii) of Table 3, we also include indicator variables for small and large underwriters, regardless of structure. These estimates show that relative to issues underwritten by small affiliates, issues underwritten by small departments yield 28 basis points more ($t = 1.94$) while relative to issues underwritten by large affiliates, issues underwritten by large departments yield 14 basis points more ($t = 1.67$). By contrast, the size of the underwriter by itself has little effect. Small underwriter issues yield a statistically insignificant 2 basis points less, while large underwriter issues yield an insignificant 6 basis point less, than issues underwritten by the extra-large affiliates.\textsuperscript{34}

\textsuperscript{32} Although we do not have the amount of capital dedicated to securities operations for departments, we have the total bank capital. Under the assumption that bank capital is correlated with capital dedicated to securities operations, we use bank capital to determine the cutoff. The results are unchanged if we include an indicator for the issues underwritten by the largest affiliates using this measure of size.

\textsuperscript{33} As noted above, no bond departments underwrote issues greater than $60$ million. After dropping the affiliates that underwrote issues greater than $60$ million in size, the median underwriter underwrote issues smaller than $2.5$ million. This accounts for the ranges we pick.

\textsuperscript{34} We also defined an underwriter’s size based on the total dollar volume of securities issued divided by the number of years in operation. This measure is somewhat crude since we can tell when an underwriter is in operation only by the issuance of securities, so this measure probably boosts the size of those underwriters who issued only sporadically. We re-estimated columns (i)-(iii) with this new measure (results available upon request). While the results for columns (i) and (ii) are nearly unchanged, we no longer find the premium for small departments relative to small affiliates economically larger than the premium for large departments relative to large affiliates in column (iii). The reason is that the coefficient estimate for small affiliate is boosted by this classification, thus reducing the estimated premium difference. We cannot tell if the discrepancy is because of the inaccuracy in the measure or the lack of robustness in the column (iii) result.
4.4. The mix of securities and clients underwritten by departments and affiliates

The public's concern about conflicts will affect the kinds of securities departments can bring to market. Similar to Myers and Majluf's (1984) argument, if investors are wary of the motives of an underwriter, in equilibrium the underwriter will be forced to issue securities that are less information-intensive and risky, that is, those for which the certification role of the underwriter is less important, such as debt rather than equity.

Panel A of Table 4 compares the types of securities issued by the two organizational structures in our sample. The chi-squared test rejects the null hypothesis that the distribution of types of securities underwritten is the same for both houses. The separate affiliates tend to do more junior securities such as common and preferred stock while the department tend to focus more on bonds.35

Panel B of Table 4 compares the different types of issuers for which the departments and the affiliates underwrote but does not provide a clear contrast between the two organization forms. Internal departments focused a majority of their activity (63%) on industrial firms, whereas about 35% of securities underwritten by affiliates were for industrial companies. By contrast, public utility issues constitute a larger fraction of affiliates' activities (33%) than for the departments (18%). There are a number of other potentially illuminating differences in issuer type across the organizational structures, but the numbers are sufficiently small that one must be cautious in drawing strong conclusions. Investment trusts, which tended to be more speculative, are a larger part of the affiliates' operations. Affiliates also tended to underwrite relatively more for foreign issuers, which may have been more costly for domestic owners to monitor than domestic issues. Overall, the main difference that results from Table 4 is that the departments tend to focus on more senior and less information-intensive securities, such as bonds.

The greater relative discounting of small department issues that we document in the previous section suggests that the information-intensity and riskiness of the securities also should be related to underwriter size. More specifically, relative to comparable affiliates, concerns about potential conflicts of interest should lead small departments to be more conservative in their choice of securities and clients than would be large departments. This is indeed the case.

35 We also can consider the column percentages rather than row percentages in Table 4 (Panel A). The market share in each type of security for the internal department increases monotonically with the seniority and safety of the security. The department share is the highest for short bonds (48%), lower for long bonds (38%) and preferred (26%), and the least for equity (19%).
Table 4
Number (percent) of securities issued by the sample of depository institutions through affiliates and internal securities departments between January 1925 and December 1929, by type of security and type of issuer.

**Panel A: Types of securities issued**

<table>
<thead>
<tr>
<th>Organization of securities operation</th>
<th>Common stock</th>
<th>Preferred stock</th>
<th>Short-term Bonds</th>
<th>Long-term Bonds</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separate affiliate</td>
<td>44 (7.6%)</td>
<td>83 (14.3%)</td>
<td>40 (6.9%)</td>
<td>413 (71.2%)</td>
<td>580 (100%)</td>
</tr>
<tr>
<td>Internal department</td>
<td>10 (3.1%)</td>
<td>30 (9.2%)</td>
<td>38 (11.7%)</td>
<td>248 (76.1%)</td>
<td>326 (100%)</td>
</tr>
</tbody>
</table>

Chi²(3) = 17.7*, p-value = 0.001

**Panel B: Types of securities issuers**

<table>
<thead>
<tr>
<th></th>
<th>Industrial enterprises</th>
<th>Railroads</th>
<th>Public utilities</th>
<th>Real estate (Mortgages)</th>
<th>Investment trusts</th>
<th>Foreign government</th>
<th>Foreign corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separate affiliate</td>
<td>203 (35.0%)</td>
<td>37 (6.4%)</td>
<td>189 (32.6%)</td>
<td>10 (1.7%)</td>
<td>35 (6.0%)</td>
<td>54 (9.3%)</td>
<td>52 (9.0%)</td>
</tr>
<tr>
<td>Internal department</td>
<td>219 (67.2%)</td>
<td>11 (3.4%)</td>
<td>57 (17.5%)</td>
<td>10 (3.1%)</td>
<td>10 (3.1%)</td>
<td>13 (4.0%)</td>
<td>6 (1.8%)</td>
</tr>
</tbody>
</table>

Chi²(6) = 97.4*, p-value = 0.000

Notes: Separate affiliate refers to the separately incorporated and capitalized securities affiliate of a commercial bank or trust. Internal department refers to the in-house securities department of a commercial bank or trust.

*Chi² is the Pearson's χ² for the hypothesis that the internal department and separate affiliate rows are from the same distribution.

Source: Compiled from *American Underwriting Houses and Their Issues* (Volus. I and II).
In Table 5, we compare observable measures of creditworthiness for firms underwritten by different size categories of departments and affiliates. For the small underwriters, the firms brought to market by departments are slightly larger, older, and significantly less indebted. If we associate a number with a security's Moody's rating (Aaa = 1, Aa = 2, ... Unrated = 8), internal departments underwrite securities that have a significantly higher rating. This result could be due, in part, to our observation that internal departments underwrite less equity which is junior, and hence low rated, than do the affiliates (10% versus 45% of securities). Even when we restrict the sample only to long bonds, we continue to find that internal departments underwrite higher quality securities based on observable factors. Finally, 20% of bonds underwritten by small departments are investment grade, while only 6% of bonds underwritten by the small affiliates are. In summary, small departments on average underwrite higher quality firms and more senior securities than small affiliates, although not all of these differences are statistically significant at conventional levels.

For large underwriters, the quality differences are less pronounced. Large departments tend to underwrite smaller firms and younger firms than do comparable affiliates, but the differences are not statistically significant. In contrast, large departments underwrite statistically significantly less indebted firms and statistically significantly better rated securities. The rating differences, however, vanish when we correct for the fact that departments underwrite much less equity (13% versus 28%). Large departments underwrite a slightly higher proportion of investment-grade issues than do the large affiliates (44% versus 39%). Consistent with our hypothesis, the small departments appear to underwrite relatively higher quality securities (based on observable factors) than small affiliates, while the large departments underwrite securities more similar in quality to those underwritten by large affiliates. That small departments underwrite observationally safer firms and securities (Table 5) but are subject to higher discounts than comparable affiliates (Table 3, columns ii and iii) clearly suggests that the public was particularly suspicious of departments.

Furthermore, the ex ante observable quality differences documented here make it unlikely that our results on the higher risk premium associated with department underwritten issues are due to omitted variable bias. If omitted factors were driving the positive coefficient estimate on the department indicator (Tables 2 and 3), then the department indicator would have to be correlated with an omitted quality variable which was both (a) observable to the public at that time but not already included in our specifications and (b) negatively correlated with the observable measures of quality. Table 5 thus provides a valuable robustness check on our earlier results.

4.5. How the stated purpose of the issue affects the relative pricing

When a new security is issued, the Commercial and Financial Chronicle provides a very brief indication about how the proceeds of the issue are to be
Table 5
Characteristics of firms underwritten by affiliates and internal departments of depository institutions, 1925-1929.

<table>
<thead>
<tr>
<th>Firm characteristics (Mean for group)</th>
<th>Number of issues</th>
<th>Age of firm</th>
<th>Size of firm ($ 000)</th>
<th>Debt to assets ratio (after issue)</th>
<th>Rating of securities issued</th>
<th>Rating of bonds issued</th>
<th>Fraction of bonds rated investment grade (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small underwriters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Departments</td>
<td>140</td>
<td>12.5</td>
<td>5,896</td>
<td>0.30</td>
<td>6.66</td>
<td>6.62</td>
<td>20%</td>
</tr>
<tr>
<td>Affiliates</td>
<td>44</td>
<td>7.8</td>
<td>5,491</td>
<td>0.38</td>
<td>7.32</td>
<td>7.19</td>
<td>6%</td>
</tr>
<tr>
<td>Large underwriters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Departments</td>
<td>186</td>
<td>15.3</td>
<td>66,714</td>
<td>0.32</td>
<td>5.26</td>
<td>5.38</td>
<td>44%</td>
</tr>
<tr>
<td>Affiliates</td>
<td>166</td>
<td>19.6</td>
<td>143,780</td>
<td>0.40</td>
<td>5.72</td>
<td>5.39</td>
<td>39%</td>
</tr>
<tr>
<td>Extra large affiliates</td>
<td>370</td>
<td>14</td>
<td>125,607</td>
<td>0.43</td>
<td>4.29</td>
<td>4.01</td>
<td>78%</td>
</tr>
</tbody>
</table>

Notes: If an underwriter's largest issue between 1925 and 1929 is less than or equal to $2.5 million, it is classified as small. If the issue size lies between $2.5 million and $60 million, it is classified as large. Only affiliates have the maximum size of the issue greater than $60 million. These are classified as extra-large. $2.5 million is the median issue size for all underwriters that had a maximum issue size of less than or equal to $60 million. The data for this table are obtained from various editions of Moody's. The age of the firm is the number of years between the last change in control or founding of the firm and the issue date. The size of the firm is the book value of assets. The debt to assets ratio is the ratio of total debt (including both notes and bonds) to assets. The rating for the issue is the Moody's rating in the year of the issue. If that is not available, the rating is obtained for the following year. If the security is unrated in both years, it is classified as unrated. Medians for ratings are obtained by converting letter ratings into a numerical scale where a security rating of Aaa is assigned the number 1, Aa assigned 2, ... and an unrated security is assigned the number 8. Bonds are rated investment grade if their rating is Baa and above. The numbers for each cell vary.

*Difference in means between departments and affiliates statistically significant at the 10% level.

bDifference in means between departments and affiliates statistically significant at the 5% level.

cDifference in means between departments and affiliates statistically significant at the 1% level.
used. The 'stated purpose' of a number of issues was to repay debt.\footnote{The stated purposes fell into the following categories: repay/refinance debt (and in a handful of cases bank loans were specified), acquisitions, capital and property improvement, 'working capital', and 'general corporate purposes'.} While one could expect the underwriter to disguise the purpose of the issue if the public viewed debt repayment as particularly suspicious, it may not always have been possible to do so. Our hypothesis would suggest that departments would suffer greater discounts when underwriting issues whose stated purpose was debt repayment. In column (iv) of Table 3, we include indicators if the underwriter is a department and the stated purpose of the issue is debt repayment, if the underwriter is a department and the stated purpose of the issue is not debt repayment, and if the underwriter is an affiliate and the stated purpose is debt repayment. Department issues whose stated purpose is debt repayment have risk premia are about twice as high ($\beta_{\text{dept} \& \text{repayment}} = 0.26$, $t = 2.6$) as department issues whose purpose is not debt repayment ($\beta_{\text{dept} \& \text{not repayment}} = 0.14$, $t = 2.2$) and affiliate issues whose purpose is debt repayment ($\beta_{\text{aff} \& \text{repayment}} = 0.12$, $t = 1.12$).\footnote{These department coefficients are, however, different only at the 17% confidence level.} The magnitude of the coefficients suggests that department issues were suspect regardless of the stated purpose (which is consistent both with the 'cherry picking' interpretation of conflicts of interest and with the possibility that the public believed the purpose of the issue was often disguised), but that issues whose purpose was repayment were especially suspect if underwritten by departments. Affiliates, however, were less suspect, even when the purpose was debt repayment.

4.6. The overlap between bank and affiliate boards as a measure of autonomy and credibility

Our hypothesis would imply that the public would apply a greater discount to issues underwritten by affiliates that are more closely tied to the bank. The only consistent measure of independence for which we have enough data is the degree of overlap of the bank and affiliate boards. To the extent that the affiliate has board members who are independent from the bank, it would be more difficult for the bank to impose its will on the affiliate, and the public's perception of conflicts of interest should be lower.\footnote{For modern evidence on the role of independent board members, see Weisbach (1988).}

We use two definitions of the director overlap variable, in columns (v) and (vi) of Table 3. Since we do not have data on board composition for some of the affiliates, the number of observations in the regression drops to 305. First, we define the extent of director overlap as the number of directors common to both affiliate and parent bank divided by the number of directors of the affiliate. This overlap variable is set to zero for internal departments. In the regression, we
include this variable and the department indicator, thereby imposing a (perhaps overly) strict distinction between the department and affiliate. In the second definition, the overlap variable is once again the proportion of the directors of the affiliate who also are directors of the parent bank, but now the variable is set to one (100% overlap) for the internal departments. The second definition considers the difference between the department and affiliates to be continuous along this dimension, which is a more satisfactory characterization (see Mian and Smith, 1990, 1992).

The estimation results for the first definition of overlap are in columns (v) of Table 3. The coefficients for both the department indicator and the affiliate director overlap variables are positive and of similar magnitudes to our previous results ($\beta_{\text{department}} = 0.19, t = 1.67; \beta_{\text{overlap}} = 0.22, t = 1.55$). These point estimates imply that issues underwritten by an affiliate which has a board 100% controlled by the bank (so affiliate overlap equals one) are discounted to roughly the same extent as issues underwritten by an internal department. Given this result, the second definition of overlap – which treats a department and an affiliate with 100% overlap the same – seems more appropriate. The final column of Table 3 uses the second definition of overlap and again shows that greater overlap leads to a greater discount ($\beta_{\text{overlap}} = 0.19, t = 1.80$). These results suggest that the degree of common managerial control is an important determinant of the extent to which an underwriter is viewed as subject to potential conflicts.

In summary, both the primary and more subtle predictions of our hypothesis are borne out in the data. Investors appear to ask for higher initial yields for issues brought to market by underwriters which have a greater potential conflict of interest. The risk premium appears to be greater for the smaller departments and when the stated purpose of the issue is to repay debt. Increasing the number of independent directors at an affiliate appears to improve prices for the securities underwritten. Also, internal departments choose to underwrite relatively less of the information-intensive securities.  

39 An alternative explanation of the higher prices obtained by the affiliate organizations is that they were more effective at fooling the public about the true quality of the securities they underwrote than were the internal departments. This hypothesis would imply that, ceteris paribus, the securities underwritten by the affiliates would then have a lower return ex post. Since we do not have the data to make an accurate calculation of returns, we use ex post default performance as a proxy for returns (see Kroszner and Rajan, 1994). In our sample, the default rate is 31% for bonds underwritten by departments and 15% for bonds underwritten by affiliates, and the difference is statistically significant. To adjust for other factors that might predict default, we estimate a logit regression where the dependent variable equals one if the bond defaults by 1940 and zero otherwise. The dependent variables include the department indicator and the ex ante quality factors for both the firm and underwriter that we use in Table 2. The indicator for internal department is positive and statistically significant. The default analysis thus is not consistent with this alternative hypothesis. Taken together with our earlier results, this suggests that while the public did not discount with perfect foresight for the true extent of department defaults in the Great Depression, it anticipated in the right direction.
5. Contemporary discussion of the effects of internal structure on outside perceptions

While we argue that the public appears to have been suspicious of potential conflicts in departmental issues, the evidence is more plausible if the public and bankers at the time recognized a relation between organization structure and credibility. We examined the contemporary literature for discussions of the costs and benefits of different bank organizational structures. Bank managers were indeed concerned that the public would sense potential conflicts of interest when certain financial functions were closely linked within the bank, and this would impair the bank's ability to compete. Some banks and trusts explicitly argued that having an internal department which underwrote and distributed securities could compromise the 'soundness, integrity, and conservatism' of their investment advice, and such institutions proudly advertised that they did not have such a department (Peach, 1941, p. 72). In 1925, for example, the Farmers' Loan and Trust Company of New York announced in the *Commercial and Financial Chronicle* (May 2, 1925, p. 2228):

> Due to our policy and firm conviction that, as a trustee, we should never place ourselves in the position of a buyer and seller of securities at the same time, we have never had a bond department. Our whole security department is organized for the impartial study of securities for the benefit of our customers and not for the sale of bonds to the public.

In addition, a contemporary casebook on investment banking discussed how considerations of the potential for conflicts of interest affected the way a bank’s investment counseling operations were structured (Biddle and Bates, 1931, pp. 67–80). The ‘Lakeshore Niagara Bank and Trust Company’ had a separately capitalized and incorporated securities affiliate named the ‘Lakeshore Niagara Corporation’. In 1928, the bank decided that it wished to enhance its internal ‘statistical department’ to be able to provide more investment advice to its customers. Some of the bank’s managers were concerned that even though ‘it was the theoretical function of the statistical department to render unbiased advice on investment problems ... this was not always understood by customers...’. The bank first considered creating a new ‘investment management department’ within the bank. The bank's management rejected this option, however, because the department ‘might be injured by the imputation that it was conducted for the benefit of the securities corporation in so far as its advice was biased in favor of securities offered by the Lakeshore Niagara Corporation’ (Biddle and Bates, 1931, p. 69). Instead, the bank decided that the investment management operation would be ‘incorporated as a subsidiary of the Lakeshore

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40 The Central Hanover Bank and Trust Company is another example (Peach, 1941, p. 72).
Niagara Bank and Trust Company independent of control by the trust department or the investment subsidiary (Biddle and Bates, 1931, p. 72). This example illustrates that 'this question of a conflict of interest' had an important effect on how commercial bankers chose to structure their securities-related businesses (Biddle and Bates, 1931, p. 70).\footnote{Underscoring the sensitivity to the conflicts of interest issue, the bank decided to include the following clause in the contract with clients of the investment management subsidiary: “I understand that my attorney [the investment management subsidiary] is an organization in or with which the Lakeshore Niagara Bank and Trust Company and the Lakeshore Niagara Corporation are interested and affiliated, and I agree, therefore, that my attorney, whenever considering it to be in my best interests, shall have entire freedom to invest in securities in which said bank and/or corporation are or is interested, to buy from, sell to, trade or otherwise deal with and utilize the services of said bank and corporation … all to the same extent as an attorney having no interest or affiliation with said organizations or members thereof having no benefit from such transactions might do and without accountability for any benefit received” (Biddle and Bates, 1931, p. 73).}

This is not to say that the bank did not see any virtues in providing security advice. Even though management worried whether 'an investment counsel department known to be affiliated with a securities selling organization could attract enough business to cover its overhead when in competition with independent investment counsel' it felt that the fee from the appropriately structured department would 'partially cover the rapidly mounting overhead'. This discussion suggests that the bank managers believed that there were scope economies in joint activities but that these benefits had to be traded off against the costs of perceptions of conflicts of interest in determining the optimal organizational form.

6. Evolution of the relative market shares of the competing organizational structures

Since we have established that departments appear to have obtained lower prices (that is, faced higher risk premia) on the securities that they underwrote, and bank managers appear to have been aware of the credibility problems associated with underwriting through such a structure, our final question is whether this had an effect on the organizational forms that were adopted and the market shares of the different forms. Our hypothesis implies that, after experience with both structures, competition would provide bankers with the incentive to move toward the separate affiliate form to avoid the costs stemming from the lack of credibility of the internal department structure. If there were fixed costs in changing form, however, such a move might be delayed until the underwriting business was large enough to justify the change.
As noted above, the commercial banks were eroding the market share of independent investment banks in the underwriting business during the 1920s. Table 1 shows that most of this growth came through the separate affiliate form. In particular, the share of bonds underwritten by separate affiliates of commercial banks tripled between 1927 and 1929, while the share underwritten through the securities departments of the banks fell by half. For these three years, separate affiliates underwrote three-quarters of the total volume of issues underwritten by commercial banks' securities departments and affiliates.

The data in our sample show the same pattern of a systematic evolution toward the affiliate structure. Table 6a shows that in 1925 the number of securities underwritten by depository institutions was evenly divided between the two organizational forms. As the 1920s progress, the share of securities underwritten through internal departments steadily declines as affiliates increase in popularity. By 1929, underwriting through internal departments drops to 18% of securities underwritten by depository institutions. To check whether this result was part of a longer term trend, we collected the number of issues underwritten by the two forms from the monthly 'new capital flotations' section of the Commercial and Financial Chronicle for 1921.\(^{42}\) 57% of the securities underwritten by depository institutions were done through the department form in 1921, so the loss in their market share appears to be a persistent trend throughout the decade.

The evolution away from departments and towards affiliates occurred in three ways. First, new entrants into the securities business disproportionately adopted the affiliate form.\(^{43}\) Second, existing departments switched to the affiliate form. We found no examples of institutions that switched from using the affiliate form to using an internal department for their securities operations. Of the eight institutions that switched from department to affiliate, three had national charters and five had state charters, so both types of banks switched. Third, the increase in market share of the affiliates also took place through a relative reduction in business done by existing departments. The six departments that underwrote throughout 1925 to 1929 went from underwriting an average of 3.2 issues per year in 1925 to 1.8 issues per year in 1929. The eight affiliates who

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\(^{42}\) Using a different data set from the first quarters of 1921 to 1929 (Kroszner and Rajan, 1994), we find a decline in the department's market share from more than 70% to 15% of the offerings.

\(^{43}\) The entry numbers should be treated as suggestive. Since we do not have founding dates for all underwriters, we define a firm to have entered in 1929, for example, if it underwrites in 1929 but not in the period 1925–1928. Of the firms that entered in 1929, for instance, 75% did so using affiliates even though 58% of the incumbents in 1928 were departments.
Table 6a
Number of securities underwritten and relative shares (in percent) by separate affiliates and internal departments of all depository institutions, 1925–1929.

<table>
<thead>
<tr>
<th></th>
<th>1925</th>
<th>1926</th>
<th>1927</th>
<th>1928</th>
<th>1929</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separate affiliate</td>
<td>78 (51%)</td>
<td>95 (56%)</td>
<td>126 (64%)</td>
<td>146 (65%)</td>
<td>135 (82%)</td>
</tr>
<tr>
<td>Internal department</td>
<td>75 (49%)</td>
<td>75 (44%)</td>
<td>69 (36%)</td>
<td>78 (35%)</td>
<td>29 (18%)</td>
</tr>
<tr>
<td>Total</td>
<td>153 (100%)</td>
<td>170 (100%)</td>
<td>195 (100%)</td>
<td>224 (100%)</td>
<td>164 (100%)</td>
</tr>
</tbody>
</table>

Notes: The sample includes all securities for which a depository institution was the sole underwriter, lead underwriter, or syndicate manager.
Sources: Moody’s Bank and Finance Manual and American Underwriting Houses and Their Issues, Volumes I and II.

underwrote throughout, however, slightly increased their business from 9.5 issues to 10 issues.44

6.1. Can regulation explain the evolution toward the affiliate organization?

Since we are arguing that the evolution toward the affiliate structure is a competitive response to the credibility costs of the internal department structure, we now explore whether three alternative ‘regulatory’ hypotheses can account for the trend. National and state banks faced somewhat different regulatory treatment of their securities operations, as noted above, so we first

44Finally, there is a last piece of evidence suggesting that the loss in department share in underwriting was related to the lower credibility of the organizational form. While perceptions of conflicts of interest should affect a department’s ability to certify issues, it should have much less influence on its ability to distribute issues certified by another underwriter. The lead underwriter typically takes on the main certification role for an issue, whereas the other syndicate members play more of a distributional role as ‘secondary’ underwriters. Our hypothesis thus implies that the loss in department market share should be less pronounced when the departments are not the lead underwriter than when they are. For a sub-sample of issues (all industrial issues in the first quarter of every year in the 1920s), we collected data on secondary underwriters to an issue and identified all issues in which each of our main sample of commercial bank underwriters participated as a ‘secondary’ underwriter. The decline in market share of the departments as secondary underwriters is much less steep than in their role as lead underwriters (not reported in Table 6a). The departments had a 75% share of secondary participations in 1921, a 72% share in 1925, and a 59% share in 1929. That departments were primarily disadvantaged in certifying which is evidenced by the fact that the ratio of the number of issues in which they were lead underwriters to the number in which they were secondary participants fell from three-quarters to two-fifths during the decade. One could argue that departments were relegated to the role of secondary underwriters because they were smaller rather than less credible. So we classify departments and affiliates into quartiles based on the maximum issue size they underwrite (we define issue size when a syndicate underwrites as the amount issued divided by the number of members in the syndicate). In three of the four quartiles (including the largest two), departments underwrite more secondary offerings than affiliates.
Table 6b
Number of securities underwritten and relative shares (in percent) by separate affiliates and internal departments of depository institutions with national and state charters, 1925–1929.

<table>
<thead>
<tr>
<th></th>
<th>1925</th>
<th>1926</th>
<th>1927</th>
<th>1928</th>
<th>1929</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State charter</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Separate affiliate</td>
<td>45 (39%)</td>
<td>40 (38%)</td>
<td>54 (46%)</td>
<td>61 (47%)</td>
<td>55 (68%)</td>
</tr>
<tr>
<td>Internal department</td>
<td>70 (61%)</td>
<td>66 (62%)</td>
<td>62 (54%)</td>
<td>70 (53%)</td>
<td>26 (32%)</td>
</tr>
<tr>
<td>Total</td>
<td>115 (100%)</td>
<td>106 (100%)</td>
<td>116 (100%)</td>
<td>131 (100%)</td>
<td>81 (100%)</td>
</tr>
<tr>
<td><strong>National Charter</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Separate affiliate</td>
<td>33 (87%)</td>
<td>55 (86%)</td>
<td>72 (91%)</td>
<td>85 (92%)</td>
<td>80 (96%)</td>
</tr>
<tr>
<td>Internal department</td>
<td>5 (13%)</td>
<td>9 (14%)</td>
<td>7 (9%)</td>
<td>8 (8%)</td>
<td>3 (4%)</td>
</tr>
<tr>
<td>Total</td>
<td>38 (100%)</td>
<td>64 (100%)</td>
<td>79 (100%)</td>
<td>93 (100%)</td>
<td>83 (100%)</td>
</tr>
</tbody>
</table>

Notes: The sample includes all securities for which a depository institution was the sole underwriter, lead underwriter, or syndicate manager. State charter refers to depository institutions chartered under state banking laws. National charter refers to banks chartered under national banking laws.

Sources: Moody’s Bank and Finance Manual and American Underwriting Houses and Their Issues, Vols. I and II.

examine their choices separately to see whether regulatory differences might be driving the changes. Table 6b describes the changes in organizational form of underwriting by depository institutions with state and national charters. While there is only a slight downward trend in issues underwritten through departments of national banks, the vast majority of the issues underwritten by national banks were through arm’s length affiliates throughout the sample period. The McFadden Act of 1927, which made internal securities operations explicitly permissible, does not appear to have an important impact on the manner in which the national banks organized their securities activities, thereby confirming the interpretation of the Act as doing nothing more than codifying existing practice (Kaufman and Mote, 1990). Since the share of underwriting through departments does not rise after 1927, the national banks do not appear to have been constrained in their organizational choice by the legal uncertainty of internal securities operations before McFadden.

The state-chartered institutions do increase their use of the affiliate structure during our sample period: the share of securities they underwrite through affiliates grows from roughly 40% to nearly 70% between 1925 and 1929. State banks and trusts generally faced no regulatory constraints on their securities activities, and contemporary sources do not report any regulatory changes that would have resulted in this organizational change.
A second potential regulatory-based explanation concerns restrictions on branching. Since affiliates were not treated as branches of depository institutions, they were not subject to the locational limitations that banks and their branches faced. Most states did have some form of branching restriction. These regulations ranged from the extreme of ‘unit banking’, which prohibited all branching, to limitations on the number and/or location of branches within the state, typically restricting branches to the same city or county (see White, 1983). Potentially, affiliates could have been a way to evade or relax these geographical constraints, although affiliates could not legally be engaged in traditional banking functions of taking deposits and making loans.

If the evasion of branching restrictions were an important factor motivating the banks to open affiliates, the popularity of affiliates relative to departments should be directly related to the restrictiveness of the anti-branching statutes in each state. To test this hypothesis, we categorize states as (a) unlimited branching, (b) limited branching, and (c) branching prohibited, using the classification from the Federal Reserve Board (Federal Reserve Bulletin, 1930). We then compare the relative frequency of departments and affiliates. The results in Table 7a do not support the evasion of branching restrictions as an important factor in determining the way banks structured their securities operations. The chi-squared test cannot reject the null hypothesis of no difference between the distribution of affiliates and departments in states with different branching restrictions. In addition, Table 7a shows that the affiliate structure tends to be relatively more frequent in states with no branching restrictions and less frequent where branching is prohibited. These relationships are the opposite of what one would expect if affiliates were used to escape anti-branching laws.

In Table 7b, we examine national and state institutions separately, because before the 1927 McFadden Act national banks generally faced more restrictions on intra-state branching than state-chartered institutions in the same states (see White, 1983). Again, escaping branching restrictions does not appear to have been an important factor for either the state or the nationally-chartered banks. The McFadden Act gave national banks branching powers almost equal to those of the state-chartered banks in the states in which they were located. Since this Act did not reverse the trend towards affiliates, it suggests again that branching does not appear to have been an important factor in the national banks’ choice of the affiliate structure.

We also ran a logit regression in which the dependent variable is a zero-one indicator for whether the affiliate structure was chosen. The independent variables included two indicators for branching status (e.g., full and limited) as well as characteristics of the depository institution (e.g., an indicator for national versus state charter, the log of the total assets of the institution, and the capital-to-asset ratio). The coefficients of the branching status indicators were small and statistically insignificant. National banks and large banks were more likely, however, to choose the affiliate form.
Table 7a
Distribution of affiliates and internal departments operating in states with different branching restrictions, 1925–1929.

<table>
<thead>
<tr>
<th>Branching</th>
<th>Separate affiliate</th>
<th>Internal department</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>prohibited</td>
<td>14 (42%)</td>
<td>19 (58%)</td>
<td>33 (100%)</td>
</tr>
<tr>
<td>limited branching</td>
<td>13 (37%)</td>
<td>22 (63%)</td>
<td>35 (100%)</td>
</tr>
<tr>
<td>full branching</td>
<td>5 (71%)</td>
<td>2 (29%)</td>
<td>7 (100%)</td>
</tr>
<tr>
<td>total</td>
<td>32 (43%)</td>
<td>43 (57%)</td>
<td>75 (100%)</td>
</tr>
</tbody>
</table>

Chi² (2) = 2.8*, \( p = 0.25 \)

Notes: 'Full branching' states have no restrictions on branching of depository institutions. 'Limited branching' states have some restrictions on the location and/or number of branches. 'Branching prohibited' states permit no branches. Percentages are given in parentheses.

*aChi² is the Pearson's \( \chi^2 \) for the hypothesis that the internal department and separate affiliate rows are from the same distribution.

Sources: Federal Reserve Bulletin (1930), Moody's Bank and Finance Manual and American Underwriting Houses and Their Issues, Vols. 1 and II.

Table 7b
Distribution of affiliates and internal departments of state and nationally chartered depository institutions operating in states with different branching restrictions, 1925–1929.

<table>
<thead>
<tr>
<th>Branching</th>
<th>State charter</th>
<th>National charter</th>
</tr>
</thead>
<tbody>
<tr>
<td>prohibited</td>
<td>5 (22%)</td>
<td>9 (90%)</td>
</tr>
<tr>
<td>limited branching</td>
<td>4 (20%)</td>
<td>9 (60%)</td>
</tr>
<tr>
<td>full branching</td>
<td>1 (33%)</td>
<td>4 (100%)</td>
</tr>
<tr>
<td>total</td>
<td>10 (22%)</td>
<td>22 (76%)</td>
</tr>
</tbody>
</table>

Chi² (2) = 0.27*, \( p = 0.87 \)

Notes: 'Full branching' states have no restrictions on branching of depository institutions. 'Limited branching' states have some restrictions on the location and/or number of branches. 'Branching prohibited' states permit no branches. State charter refers to depository institutions chartered under state banking laws. National charter refers to banks chartered under national banking laws.

*a Chi² is the Pearson's \( \chi^2 \) for the hypothesis that the internal department and separate affiliate rows are from the same distribution.

We also can investigate the branching restriction hypothesis by examining the actual locational choices of the affiliates. Most securities affiliates had a single office in the same city—typically along the same street—as the parent bank. Only a few of the largest affiliates had offices outside of the home state of the parent bank, just as only a few of the largest independent investment banks had offices in multiple states. Finally, there was little change in branching statutes during the 1925–1929 period, and the few changes that did occur involved a relaxation of branching restrictions (Federal Reserve Bulletin, 1930). Branching restrictions, thus, do not appear to be a likely candidate to explain the increasing popularity of the affiliate structure before the Glass–Steagall Act.

A final regulatory difference across states that could have an impact on whether to open an affiliate concerns liability. The shareholders of all national banks and most state banks were subject to ‘double liability’, that is, shareholders could be assessed an additional sum up to the paid-in capital of the bank if the bank were to fail (see Macey and Miller, 1992b for more details). Since affiliates are standard ‘single’ liability corporations, they could be used as a means to avoid the double liability obligation. If affiliates were formed for this purpose, then they should be more frequent in states with double liability than states with standard single liability for bank shareholders. We found no statistically or economically significant difference in the use of affiliates by state banks between the states with different liability obligations for bank shareholders.

6.2. Alternative explanations of the success of the affiliate organization

In principle, we would like to examine the total costs of underwriting through the different structures in order to evaluate their relative efficiencies. Unfortunately, we do not have any data to compare the direct underwriting costs (such as syndicate fees, due diligence costs, etc.) of underwriting for departments and affiliates, and that is why we focus on the initial net yields. Also, the fixed costs of setting up affiliates could have been large (our anecdotal contemporary evidence does discuss the additional ‘overhead’ of setting up a separate affiliate) which is consistent with only larger departments switching structure, and affiliates, in

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46 National City Bank's affiliate had by far the largest number of offices of any affiliate, with roughly 60 around the country.

47 Neither we nor Macey and Miller (1992b) were able to discover any court cases concerning the failure of an affiliate in which the liability issue arose, so it is unclear how the rules worked in practice.

48 The absence in the contemporary literature of any discussion of taxes as a rationale for the choice of organizational form suggests this was not important.
general, doing more business than departments. The existence of fixed switching costs provides a partial explanation for why some banks continued to underwrite through departments despite being subject to a discount by the market. Only the larger banks who underwrote many issues would have found the fixed costs of switching to the affiliate form compensated by the reduction in discounts on the issues. Scale by itself, however, does not explain what advantage the affiliate structure had over the department structure. The eight banks that switched from the department to the affiliate structure did not perceptibly increase the size of the issues they underwrote nor their annual number of issues underwritten.

Another explanation for the switch to affiliates relates to change in the mix of securities issued during the 1920s. Beginning in the latter half of 1928 and continuing through October of 1929, equity issuance grew rapidly in popularity, and firms switched from issuing bonds to issuing stocks. Since regulation, as noted above, created obstacles for national banks to underwrite equity through internal departments, the equity boom would have given national banks an incentive to move to the affiliate form. Most of the national banks, however, had already chosen the affiliate form long before the increase in equity issuance. The equity boom in 1929 thus does not appear to a major factor in their evolution toward the affiliate organization. As discussed above, state chartered banks do not seem to have been similarly restricted in their internal securities activities yet they moved to the affiliate form. Our hypothesis provides an explanation for the changing choices of state-chartered banks based on the growing popularity of equity. Since the discount the market imposes on department issues increases as the underwritten securities become more junior and information-sensitive, departments would have been at a disadvantage in underwriting equity. The equity boom starting in late 1928 probably accelerated the move towards the affiliate form, not because state banks were restricted from underwriting equity through departments, but because departments could not effectively underwrite equity.

A last possible explanation is risk-aversion on the part of bank managers and owners. Almost no banks were under the umbrella of deposit insurance in the late 1920s (see White, 1983). As the quality of bond issuances deteriorated over the 1920s (see Kroszner and Rajan, 1994), and as the issued securities became more junior, bank owners and managers sought to protect themselves against shocks to the underwriting business (and potential bank runs) by distancing themselves from it. While this line of argument might account for some of the movement from the department towards the affiliate form, risk aversion does

\[^{49}\text{A not unrelated argument is that it was harder for bank managers to control managers of affiliates. Consequently, affiliate managers were willing to take on greater risks without considering its impact on the rest of the bank's business.}\]
not explain the discount on department underwritten securities (or the slower
decline in market share for secondary underwritings). Risk averse bank man-
gagers and owners would have had the incentive to underwrite the highest quality
securities through departments, and a rational public should have priced these
securities higher (i.e., required a lower yield) than comparable securities under-
written by the not-so-choosy affiliates. While other, partial, explanations of the
movement towards the affiliate form over the 1920s may exist, the competitive
disadvantage of departments stemming from the discounts imposed by a public
concerned about the potential for conflicts of interest, we believe, is an integral
part of the complete explanation.

7. Discussion and conclusion

This paper has investigated empirically whether the internal organization
of the firm can play an important role in affecting a firm’s ability to commit
to a particular quality of business practices and, if so, whether competition
would be sufficient to lead firms to adopt the superior structure. The poten-
tial for a firm to succumb opportunistically to conflicts of interest is an
important enough concern to outsiders so as to impair the functioning of
the firm. We present evidence that the potential for conflicts of interest does
appear to be recognized by outsiders. In particular, we demonstrate that
securities underwritten by the organization structure that has more perceived
potential for conflicts of interest are discounted relative to comparable securities
underwritten by the competing organization. The choice of internal structure
thus does appear to affect outside perceptions and the ability of the firm to
compete.

In addition, contemporary discussions indicate that managers appear to
believe that they can credibly commit to reduce the potential for opportunism
through the appropriate choice of internal organization structure. For instance,
this involves separating the operations that could generate conflicts of interest
into distinct units and providing them with different governing boards. We find
that the improvement in the price of the securities (reduction in the risk
premium) is associated with the extent of the autonomy of the affiliate board
from the bank. Competing banks initially chose a variety of structures but as the

50 More modern evidence exists suggesting that conflicts of interest are important. For instance,
when a number of investment banks in the United States went public in the 1980’s, those
underwriting their own initial public offerings had to underprice them more than those going public
through an impartial underwriter. Packer (1996) finds that when a Japanese underwriter brings to
market a firm in which its venture capital affiliate has an interest, the issue tends to be more heavily
underpriced than other issues.
1920's progressed the separate affiliate form appears to have triumphed. When faced with competitive and relatively unregulated markets, firms thus appear to internalize the costs of the potential conflicts of interest and move to adopt the internal structure that minimizes them.

Our study is, we believe, the first to provide systematic evidence that internal organizational structure does influence a firm's credibility and effectiveness. These results have important implications for the theory of the firm and for regulatory policy. For the theory of the firm, we find that structural choices can be credible commitment devices even when side payments by managers are possible, so further theoretical work which explores the 'black box' of the firm holds the promise of empirical relevance. For regulatory policy, our results support regulators' previously untested intuition that organization structure has significant consequences, but it raises questions about whether structure must be mandated. The current debate over Glass–Steagall reform focuses on the appropriate structural separations or 'firewalls' that should be required of banks that wish to underwrite securities. Our results suggest that if the financial markets are competitive and externalities (such as implicit or explicit deposit insurance) are small, banks naturally evolve towards the desired structure. More research, however, would be valuable to understand the precise ways in which organizational structure can lead to effective distancing of the two activities and, hence, greater credibility.

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51 Recent anecdotal evidence that market forces may lead to separation is that Deutsche Bank moved its investment banking operations to its separately incorporated and capitalized Morgan Grenfell subsidiary in London. Until recently, the German securities market had been dominated by 'insiders', primarily the relatively well-informed banks, and few individuals directly purchased securities. In these circumstances, perceptions about the credibility of the underwriter would have had a less important role in determining structural choice.
Appendix

Table A.1
Summary statistics for variables used in the regressions (N = 422)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. dev.</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial net yield</td>
<td>2.11</td>
<td>0.57</td>
<td>0.50</td>
<td>3.56</td>
</tr>
<tr>
<td>Indicator is 1 if the underwriter is an internal</td>
<td>0.39</td>
<td>0.49</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>securities department</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log of firm assets in $000</td>
<td>9.98</td>
<td>1.75</td>
<td>4.80</td>
<td>14.61</td>
</tr>
<tr>
<td>Log of firm age in years</td>
<td>2.22</td>
<td>1.24</td>
<td>0</td>
<td>4.83</td>
</tr>
<tr>
<td>Debt to assets ratio after the issue</td>
<td>0.38</td>
<td>0.17</td>
<td>0.02</td>
<td>0.91</td>
</tr>
<tr>
<td>Maturity of bond in years</td>
<td>17.53</td>
<td>10.63</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>Indicator is 1 if bank is a national bank</td>
<td>0.32</td>
<td>0.47</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Log of bank age in years</td>
<td>3.83</td>
<td>0.51</td>
<td>0</td>
<td>4.98</td>
</tr>
<tr>
<td>Log of bank assets in $000</td>
<td>12.12</td>
<td>1.46</td>
<td>7.62</td>
<td>14.34</td>
</tr>
<tr>
<td>Indicator is 1 if bank is in New York</td>
<td>0.31</td>
<td>0.46</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Indicator is 1 if bank is in other financial center</td>
<td>0.47</td>
<td>0.50</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Indicator is 1 if state allows limited branching</td>
<td>0.47</td>
<td>0.50</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Indicator is 1 if state allows unrestricted branching</td>
<td>0.05</td>
<td>0.21</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Indicator 1 if underwriter is ‘small’</td>
<td>0.19</td>
<td>0.39</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Indicator 1 if underwriter is ‘large’</td>
<td>0.37</td>
<td>0.49</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Indicator 1 if stated purpose of issue is to</td>
<td>0.09</td>
<td>0.29</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>refinance debt or loans</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director overlap between bank and affiliate, set</td>
<td>0.31</td>
<td>0.40</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>to 0 for departments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Director overlap between bank and affiliate, set</td>
<td>0.85</td>
<td>0.27</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>to 1 for departments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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