Agency Problems and Risk Taking at Banks

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Abstract

The moral hazard problem associated with deposit insurance generates the potential for excessive risk taking on the part of bank owners. The banking literature identifies franchise value -- a firm's profit-generating potential -- as one force mitigating that risk taking. We argue that in the presence of owner/manager agency problems, managerial risk aversion may also offset the excessive risk taking that stems from moral hazard. Empirical models of bank risk tend to focus either on the disciplinary role of franchise value or on owner/manager agency problems. We estimate a unified model and find that both franchise value and ownership structure affect risk at banks. More important, we identify an interesting interaction effect: The relationship between ownership structure and risk is significant only at low franchise value banks -- those where moral hazard problems are most severe and where conflicts between owner and manager risk preferences are therefore strongest. Risk is lower at banks with no insider holdings, but among other banks, there is no relationship between the level of insider holdings and risk. This suggests that the owner/manager agency problem affects the choice of risk for only a small number of banks -- those with low franchise value and no insider holdings. Most of these banks increase their insider holdings within a year, and these changes in ownership structure are associated with increased risk. This suggests that owner/manager agency problems are quickly addressed.

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1. Introduction

The banking literature has emphasized a number of agency problems. As in non-financial corporations, limited liability gives bank shareholders an incentive to expropriate wealth from bondholders by increasing risk. Since the government protects bondholders (particularly depositors) from the consequences of bank risk taking, their incentive to monitor and constrain risk taking is weak. The absence of such discipline is known as "moral hazard" or the "moral hazard problem associated with deposit insurance" in the banking literature. A second agency problem arises because limits on managerial wealth force a separation of ownership and control. As a consequence, managers may pursue their own objectives at the expense of shareholders. (Berle and Means 1932, Jensen and Meckling 1976). This paper jointly examines the importance of moral hazard and the owner/manager agency problem at commercial banks.

The moral hazard problem has been examined extensively for thrift institutions, particularly in explaining their increased risk taking and the consequent high failure rates in the 1980s (e.g. Kane 1988, Barth 1991, and White 1991). Keeley (1990) appeals to moral hazard to explain the high failure rates for banks in the aftermath of deregulation and the associated loss in bank franchise value.

Gorton and Rosen (1995) argue instead that the owner/manager agency problem provides the explanation for increased risk taking at banks in the 1980s. According to their model, bank managers faced with declining prospects for future profits resort to high portfolio risk as a way of concealing poor prospects from shareholders. This perspective differs from mainstream treatment of the owner/manager agency problem. More typically, this problem is characterized by excessively *safe* behavior on the part of the manager, who stands to lose invested wealth,

firm-specific human capital, and the benefits associated with control in the event of bankruptcy. In this second characterization, the owner/manager agency problem may actually reduce the risk that would otherwise be undertaken in the presence of deposit insurance, thus mitigating the effect of the moral hazard problem. The interests of risk-averse bank managers might make the firm's choice of risk closer to that which would be preferred by the deposit insurer.

The moral hazard and owner/manager agency problems are by no means mutually exclusive in banking.[1] Nevertheless, the banking literature has sought evidence of each agency problem in isolation.[2] One set of papers argues that franchise value works to reduce the moral hazard problem by increasing the cost of financial distress, thereby lowering shareholders' desired level of risk (Keeley 1990, Demsetz, Saidenberg, and Strahan 1996, and Galloway, Lee, and Roden 1997). These papers find the expected inverse relationship between franchise value and risk.

A separate set of papers allows for the possibility that bank managers do not act in the interest of shareholders (e.g. Saunders, Strock and Travlos 1990, Gorton and Rosen 1995, Houston and James 1995). Studies that find a statistically significant relationship between ownership structure and bank risk conclude that an owner/manager agency problem exists in banking. Ownership structure is presumed to align managers' interests with those of owners.

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[1] Recent legislative initiatives seem to recognize the importance of both types of agency problems at banks. The Prompt Corrective Action provisions of the FDIC Improvement Act (FDICIA) place increasing constraints on bank activities as capital falls, a direct attempt to address the moral hazard problem associated with deposit insurance. FDICIA also strengthens regulatory oversight of compensation to senior bank managers, perhaps in attempt to thwart owners' efforts to induce greater risk taking on the part of bank managers.

[2] There are exceptions in studies that focus on other types of financial institutions. See Brewer and Saidenberg (1996) and Brewer, Mondschean, and Strahan (1997) for treatments of both agency problems in the context of the thrift industry and the insurance industry, respectively.

The owner/manager agency literature lacks consensus, however, on the exact relationship between ownership structure and risk.

In this paper, we examine the moral hazard and owner/manager agency problems simultaneously. Franchise value and ownership structure have been shown to be empirically related in nonfinancial firms (Morck, Shleifer, and Vishny 1988) and in banks (DeYoung, Spong, and Sullivan 1996). Hence, the efficacy of franchise value in mitigating moral hazard cannot be assessed in the absence of controls for ownership structure, and vice versa. Moreover, the moral hazard problem and the owner/manager agency problem may be interrelated. At high franchise value banks -- where we expect the effects of moral hazard to be smaller -- owner and manager interests are likely to be aligned because both perceive high costs associated with financial distress. By contrast, the incentive to increase risk at low franchise value banks -- where we expect the effects of moral hazard to be larger -- places shareholders' interest at odds with those of risk averse managers. Hence, there are both theoretical and empirical reasons to estimate a unified model of bank risk taking that includes both franchise value *and* ownership structure as regressors *and* allows for any interaction effects.

Our analysis is based on a large dataset that tracks risk-taking behavior, franchise value, and ownership structure at over 350 publicly traded bank holding companies (BHCs) throughout the 1991-1995 period. We focus on the 1990s because data on ownership structure is more readily available in this period. Because this is a period of relative stability, our results may not hold with equal force for the 1980s.

We find a robust negative relationship between franchise value and risk, even after controlling for ownership structure. We also find a statistically significant relationship between

ownership structure and risk, but *only for banks with relatively low franchise value*. For these banks, risk increases with the shareholdings of managers (insider holdings). Risk also increases with large block holdings, the holdings of all shareholders who own at least 5% of the firm. Since neither pattern holds for relatively high franchise value banks, we infer that the incentives of managers and owners do *not* diverge greatly when high profit-generating potential mitigates moral hazard.

Although we argue that franchise value helps align the risk taking incentives of managers and owners, our findings are open to an alternative explanation. Perhaps some banks have high franchise value *because* they have addressed owner-manager conflicts -- either through ownership structure or some other means -- whereas other banks have low franchise value because their owner/manager conflicts are not fully addressed. This could explain why we observe a relationship between ownership structure and risk for low franchise value banks but not for high franchise value banks.

Our results suggest, however, that most of the low franchise value banks have addressed the owner/manager agency problem. First, the relationship between ownership structure and risk at low franchise value banks is driven solely by banks with no insider holdings. Among banks with positive insiders holdings, there is no relationship between ownership structure and risk. Second, banks with low franchise value and positive insider holdings take about 50 percent more risk than those with high franchise value and positive insider holdings. We infer that risk taking for banks with positive insider holdings reflects shareholders' interests *regardless of franchise value*: risk is high when franchise value is low, and low when franchise value is high.

According to our interpretation, banks with low franchise value and no insider holdings

take less risk than shareholders would prefer because their risk averse managers perceive a higher cost of financial distress than shareholders. Other low franchise value banks with *positive* insider holdings take more risk. Why should a small increase in insider holdings have a large effect on managerial behavior? A possible explanation is that BHCs can be sorted into two groups: those whose managers receive performance-based compensation of some form (managerial equity holdings are one such form) and those whose managers do not receive performance-based compensation. In our regression, positive insider holdings may act as an indicator for banks in the first group, with contracting mechanisms that align manager and shareholder interests. We discuss this interpretation further in Section 6.

Of course, if agency problems remain unaddressed among a small group of banks -- those with low franchise value and no insider holdings, or about four percent of our sample -- market forces should compel them to change their behavior. Most of these banks do increase their insider holdings within a year, and these changes in ownership structure are associated with increases in risk. We conclude that owner/manager agency problems are quickly addressed at most banks.

2. Agency Problems in Banking

This section takes a closer look at both moral hazard and the owner/manager agency problem, as well as the empirical evidence linking each agency problem to bank risk.

Moral Hazard and Franchise Value

Limited liability allows shareholders to keep all *upside* gains while *sharing* their losses with bondholders. Shareholders therefore have a strong incentive to increase risk. The moral hazard problem associated with deposit insurance refers to the fact that depositors, being fully

insured, have very weak incentives to monitor shareholders and prevent them from increasing risk (Merton 1977). The monitoring function therefore falls on the deposit insurer. Because the deposit insurer is acting on behalf of the taxpayer, who ultimately bears the risk of bank losses, a second kind of moral hazard problem exists as well. Kane (1986, 1989) argues that regulators do not have sufficient incentives to monitor bank risk taking optimally. In his analysis of the thrift crisis, Kane suggests that regulators with relatively short time horizons had strong incentives to pursue a policy of forbearance, thereby deferring the realization of losses onto future generations of regulators and their principals, the taxpayers.

Franchise value -- the present value of a firm's future economic profits as a going concern -- helps alleviate these moral hazard problems by reducing shareholders' incentives to take risk. Franchise value increases the costs of financial distress (bankruptcy) because it is not fully marketable. This is true in both financial and non-financial firms but is particularly important in banking, where lending relationships based on private information are not easily transferred to third parties. Franchise value from non-marketable lending relationships makes bankruptcy particularly costly, thus reducing the value-maximizing choice of both leverage and asset risk. Franchise value therefore helps solve the moral hazard problem by decreasing the extent of monitoring required to induce high franchise value banks to operate with a given level of risk.

Marcus (1984) and Acharya (1996) provide theoretical discussions of the relationship between franchise value and risk at banks. Keeley (1990) looks at the relationship empirically and finds that declining franchise value in the 1960s and 1970s can explain the increased risk taking at banks during the 1980s. He argues that risk was low for the first 45 years of the FDIC's history because regulations restricted entry into banking markets (e.g. unit banking laws) and

reduced price competition (e.g. Regulation Q), thus keeping bank franchise value high.[3] In the 1960s and 1970s, franchise value fell because of increased competition from nonbank sources (such as money market mutual funds and finance companies) and increased competition within the banking industry (a consequence of deregulation).[4] Keeley argues that the decline in franchise value led to a reduction in the cost of financial distress, and a corresponding increase in bank shareholders' desired level of risk in the 1980s.[5]

The Owner/manager Agency Problem and the Structure of Ownership

The owner/manager agency problem may also work to offset the moral hazard problem. Managers who stand to lose invested wealth, firm-specific human capital, or the benefits associated with control of the firm, may act in a risk-averse rather than value maximizing manner. Absent shareholder discipline, they may choose safer assets or choose to operate with higher capital than shareholders would desire. In this sense, the owner/manager agency problem offsets the risk taking that arises from the moral hazard problem.

A number of forces may counteract this tendency. First, if outside (non-managerial)

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[3] Note that franchise value stemming from regulatory barriers is transferrable, in contrast to franchise value stemming from lending relationship, as discussed above.

[4] For a full treatment of changes in banking regulations over the past two decades, see Berger, Kashyap and Scalise (1995). For an analysis of the causes of bank deregulation during this period, see Kroszner and Strahan (1997).

[5] The thrift industry followed the same pattern. Thrift franchise value fell in the 1970s, both because of increased competition from money market mutual funds and because the development of secondary markets in mortgage securities reduced their ability to earn profits from mortgage lending. Moreover, unlike banks, thrifts faced a very large reduction in capital in the late 1970s and early 1980s because the value of their mortgage portfolios, which dominate thrift balance sheets, fell sharply in response to increased interest rates. With minimal franchise value, thrift owners had little incentive to rebuild their capital positions. Saddled with little capital and little or no franchise value, thrift owners had an incentive to gamble. Many responded to this incentive by using insured deposits to increase their holdings of high-risk assets such as junk bonds and commercial real estate. This risky behavior led to a large number of thrift failures and ultimately to the taxpayer bailout of the thrift insurance fund.

ownership is sufficiently concentrated, outsiders have a strong incentive to keep risk-averse managerial behavior in check. Second, if managers have a sufficient ownership stake in the firm, then their incentives will be aligned with those of outside shareholders and the agency problem will be minimized (Demsetz and Lehn 1985, Jensen and Meckling 1976). Third, both the managerial labor market and the takeover market may also constrain managerial behavior.[6]

Saunders, Strock, and Travlos (1990) look for evidence that ownership structure can mitigate owner/manager agency problems at banks. In particular, they find a positive relationship between insider holdings and firm-specific risk, consistent with the idea that managers' incentives become more aligned with those of outside shareholders as the proportion of insider holdings rises. Gorton and Rosen (1995) focus on the entrenchment problem in their study of risk and ownership structure at large bank holding companies. They assume that in a declining industry stockholders prefer *safe* assets to *risky* assets. They develop a model in which "bad" managers in "unhealthy" industries take excessive risk in order to mimic the behavior of "good" managers. Applied to banking, their model predicts that risk first increases and then decreases as insider ownership increases. Gorton and Rosen find a non-monotonic relationship between insider holdings and risk that they argue is consistent with their model of entrenchment but not with a model of moral hazard.

While we remain agnostic as to the sign of the insider ownership/risk relationship, we recognize that the alignment and entrenchment effects can both be at work and can work in opposite directions. Moreover, insiders with large stakes in a given firm may lack diversification

[6] Schranz (1993) shows that for banks, profits are higher in states where 1980s deregulation increased takeover activity.

in their private portfolios and may therefore prefer less risk than well diversified shareholders. Following Morck, Shleifer and Vishny (1988), we allow insider holdings to affect risk in both a linear and piecewise linear fashion. We also use a set of indicator variables associated with successive levels of insider ownership to allow for unconstrained non-monotonicity in the relationship between insider holdings and risk.

Allowing for an Interaction

Finally, we consider the interaction between franchise value and insider holdings in our model of bank risk. If managers are risk averse, the conflict between owners and managers (at least with respect to the choice of risk) may be less severe at high franchise value banks because shareholders (along with managers) see high costs to financial distress. Consequently, we expect the relationship between ownership structure and risk to be *weakest* at high franchise value banks. We expect that relationship to be *strongest* at low franchise value banks, where the risk preferences of owners and managers are most likely to diverge.

To our knowledge, we are the first to allow for this interactive effect in a model of bank risk. Houston and James (1995) include measures of insider holdings, risk, and franchise value in their model.[7] They find that franchise value affects the level of insider holdings but risk does not. In contrast, we will show that franchise value affects the *relationship* between insider holdings and risk. Allowing for this interaction proves to be important. It reveals a positive (though highly nonlinear) effect of insider holdings on risk at low franchise value banks and indicates that agency problems are unaddressed only at banks with low franchise value and no insider holdings.

[7] Note that Houston and James work with data from an earlier period (1981-90 vs. 1991-95).

3. Empirical Methods

This section describes our empirical framework. Using panel data from 1991 to 1995, we estimate a reduced form regression which relates bank holding company (BHC) risk to franchise value and insider ownership. The dataset, variable definitions and model specification are described below.

Data

We identified over 350 publicly traded BHCs by comparing institutions' names in both 1986 and 1995 regulatory reports to names on the Center for Research in Security Prices (CRSP) tapes. We built our data set by tracking the 1986 and 1995 subsamples throughout the intervening years. This minimizes survivorship bias in our final sample. Our analysis draws on data from the 1991-95 period, since readily available data on ownership structure are available only since 1991. We limit our analysis to those BHCs that traded for at least 30 weeks in a given calendar year and for which we could retrieve (1) data from consolidated financial statements (the Y-9C Reports) describing BHC characteristics, and (2) usable ownership data from Compact Disclosure. This resulted in a sample of 367 BHCs.[8] The annual sample size ranges from a low of 238 (in 1991) to a high of 291 (in 1994).

Measuring risk

Our primary measure of risk is the annualized standard deviation of the weekly stock

[8] The only identifier common to regulatory reports and CRSP is the company's name. Our sample includes only those BHCs for which the match between the name provided by CRSP and that appearing in regulatory reports was unambiguous. Compact Disclosure and CRSP both use "cusip" numbers and ticker symbols as company identifiers.

return (equity risk) for a given BHC in a given year.[9] This "all-in risk" measure incorporates risks associated with all of the BHC's assets, liabilities and off-balance sheet positions, reflects any diversification across those positions, and reflects BHC leverage.

Measuring franchise value

Stock price data from publicly traded BHCs also facilitate measurement of franchise value, which we define as the ratio of the market value of assets to the replacement cost of assets. While replacement cost is difficult to measure in general, it is particularly problematic at banks. We use the book value of tangible assets as a proxy for replacement cost, and measure franchise value with the following ratio:

$$Q_{it} = \frac{Market\ value\ of\ equity + book\ value\ of\ liabilities}{book\ value\ of\ tangible\ assets}$$

The future profitability of the BHC as a going concern -- profitability stemming from efficiency, market power, or lending relationships -- will contribute to the numerator of this ratio but not to its denominator.[10] Thus Q_{it} captures the present value of the BHC as a going concern in a way that permits comparability across firms of different sizes. The components of Q_{it} are measured using beginning-of-year data.

Measuring ownership structure

Data on the ownership structure of BHCs are constructed from SEC filings and are made

[9] We constructed weekly (Friday-to-Friday) returns using daily CRSP return data from 1991 through 1995. Daily returns are adjusted by CRSP to account for dividend payouts and stock splits. In cases where Friday was a holiday and no stocks were traded, we used the Thursday-to-Friday or Friday-to-Thursday returns instead.

[10] We use tangible assets rather than total assets in the denominator because goodwill in part reflects franchise value derived from a bank's prior acquisitions. Tangible assets equals tangible accounting principal (TAP) capital plus debt, where TAP capital equals GAAP capital minus goodwill and other intangible assets.

available by Disclosure, Inc. through Compact Disclosure and CDA Spectrum. The Compact Disclosure data reflect information from firms' most recent proxy statements while the Spectrum data are updated using other SEC filings. We use the Spectrum data in our analysis because there are fewer missing observations.

Our insider holdings variable measures the shares held by officers and directors of the BHCs, as a fraction of shares outstanding. Included in the holdings of insiders are all family shares beneficially owned by insiders as well as all outstanding options to purchase shares. The ownership data used for each year in our analysis are from the fourth quarter of the previous year.

We first estimate a linear relationship between insider holdings and risk and then allow for nonlinearities in order to capture both alignment and entrenchment effects. Following Morck, Shleifer and Vishny (1988), we allow the insider holdings slope to change at 5 percent and 25 percent in our second specification. A third specification imposes even less structure on the relationship between insider holdings and risk. Here we include indicator variables for BHCs with six levels of insider holdings: those with no insider holdings, those with insider holdings between 0 and 5 percent, between 5 and 10 percent, between 10 and 20 percent, between 20 and 40 percent and over 40 percent.

We also include another ownership structure variable, large block holdings. Blockholders are individuals who control 5 percent or more of the outstanding shares, and consequently have a strong incentive to keep managerial behavior in check. Large block holdings are measured as the sums of the shares of all blockholders divided by shares outstanding and are included only in a linear fashion.

Control variables

It is important to distinguish the effect of ownership structure on risk from the effect of a bank's risk *environment* on its ownership structure. Demsetz and Lehn (1985) argue that firms with greater control potential -- the wealth gain that could be achieved through more effective monitoring of management -- will choose to operate with more concentrated ownership as long as the market for corporate control and the managerial labor market do not perfectly align the interests of managers with those of shareholders. They argue further that firms located in riskier environments will have greater control potential because in such environments "managerial behavior simultaneously figures more prominently in a firm's fortunes and becomes more difficult to monitor." In contrast, the optimal ownership structure of firms in heavily regulated industries or industries with predictable demand and costs conditions may be less concentrated.

Although the firms in our sample all belong to the same industry, there remains the potential for their risk environments to differ. In particular, some regions of the U.S. may offer greater opportunities for profitable but risky lending. In such regions, we expect BHCs to take more risk; however, we also expect BHCs in these regions to have a greater incentive to operate with concentrated ownership. This introduces a potential upward bias in our estimated relationship between ownership structure and risk. It is therefore important that we control for the riskiness of the BHC's environment. We do so by including a set of variables measuring the proportion of business that each firm conducts in each of the 10 census regions of the U.S. in a given year. We measure the proportion of business conducted by each BHC in each region as the ratio of commercial bank assets in that region to total bank assets of the BHC.[11]

[11] Of course, if it is not just the risk environment but the overall choice of risk that determines the firm's optimal ownership structure, then we face an endogeneity problem that will lead to an upward bias in the estimated effect of ownership structure on risk. In principle, the bias could be eliminated by employing an IV estimator using a set of instruments that affect a BHC's ownership structure but not the BHC's choice of risk. It is extremely difficult

We also include a measure of BHC size and control for economic conditions -- in particular, the effects of state-level business cycles. We include size since larger BHCs are typically better diversified than smaller ones and since size typically reduces ownership concentration. Size is measured as the log of total assets, using data from the end of the previous year. Economic conditions are measured using state-level personal income growth for each year. Since many of the BHCs in our sample operate in more than one state, we measure personal income growth using an asset-weighted average of growth for the states in which a BHC has one or more commercial bank subsidiaries.

Summary statistics

The mean and standard deviation of all of the variables used in our analysis are presented in Panel A of Table 1, with a correlation matrix appearing in Panel B. There are 1,322 BHC-year observations.[12] The BHCs in the sample range from just under $102 million to $250 billion in assets, averaging over $8 billion in assets. The average standard deviation of weekly stock returns equals 30 percent (on an annualized basis) and ranges from 6 percent to 258 percent. The average capital to assets ratio is 7.9 percent.

Our measure of franchise value averages 1.02; that is, the market value of assets exceeds the book value of assets by 2 percent on average. This ratio ranges from 0.92 to 1.49. Insider ownership averages 12 percent of the outstanding shares of the BHCs, ranging from 0 to 88 percent. Approximately one-sixth of the observations lie in each of the six insider holdings groups that underly our indicator variable approach. Large block holdings average 12 percent of

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to come up with an appropriate set of such instruments, however.

[12] We dropped six observations for which insider holdings were reported as 100 percent. Our results are not sensitive to their exclusion.

the outstanding shares of the BHCs, ranging from 0 to 100 percent.[13]

Estimation

To summarize, we use panel data to estimate the following equations:

Linear Specification

$$Risk_{it} = \alpha_t + \alpha_1 Q_{it} + \alpha_2(Insider\ Holdings) + \alpha_3(Large\ Block\ Holdings)_{it} + \alpha_4 Size_{it} + \alpha_5 Personal\ Income\ Growth_{it} + \sum \beta_k reg_{itk} + \varepsilon_{it}$$

Piecewise Linear Specification

$$Risk_{it} = \alpha_t + \alpha_1 Q_{it} + \alpha_2(Insider\ Holdings\ 0\text{-}5\%)_{it} + \alpha_3(Insider\ Holdings\ 5\text{-}25\%)_{it} + \alpha_4(Insider\ Holdings\ >25\%)_{it} + \alpha_5(Large\ Block\ Holdings)_{it} + \alpha_6 Size_{it} + \alpha_7 Personal\ Income\ Growth_{it} + \sum \beta_k reg_{itk} + \varepsilon_{it}$$

Indicator Variable Specification

$$Risk_{it} = \alpha_t + \alpha_1 Q_{it} + \alpha_2(Insider\ Indicator\ >0\text{-}5\%)_{it} + \alpha_3(Insider\ Indicator\ 5\text{-}10\%)_{it} + \alpha_4(Insider\ Indicator\ 10\text{-}20\%)_{it} + \alpha_5(Insider\ Indicator\ 20\text{-}40\%) + \alpha_6(Insider\ Indicator\ >40\%) + \alpha_7(Large\ Block\ Holdings)_{it} + \alpha_8 Size_{it} + \alpha_9 Personal\ Income\ Growth_{it} + \sum \beta_k reg_{itk} + \varepsilon_{it}$$

Variables named "Insider Indicator" in the third specification are simple dummy variables, in contrast to the "Insider Holdings" variables defined earlier for the piecewise linear specification. The omitted "insider indicator" variable corresponds to BHCs with no insider ownership. In each specification, reg_{itk} refers to the variables measuring the proportion of business conducted in each census region, where k represents a given census region.

In each specification, the dependent variable is measured in logs. We include time fixed

[13] Large block holdings may include insider holdings if an insider holds at least 5 percent of outstanding shares.

effects to control for changes in the average level of risk and estimate a random effects specification to control for BHC-specific time invariant factors relating to risk that are not modeled elsewhere. After estimating each equation using our entire sample, we split the sample into low- and high franchise value subsamples and repeat each estimation. Each year, low franchise value BHCs are defined as those with franchise values below the yearly sample median.

4. Results

Table 2 presents estimation of the basic models. We regress equity risk on our measure of franchise value, insider holdings and large block holdings, controlling for firm size, personal income growth and regional effects. Column (1) reports the results using the linear specification for insider holdings. Columns (2) and (3) report results using the piecewise linear and indicator variables specifications, respectively.

Reading across the first row of Table 2, we see a robust negative relationship between franchise value and equity risk. The effect of franchise value is both statistically and economically meaningful, with coefficients significant at the one percent level. The estimated coefficients imply that a one standard deviation increase in franchise value (a 0.04 increase in Q_{it}) leads to a 7.4 percent decrease in risk. As hypothesized, risk taking is lower at BHCs with more franchise value.[14]

[14] One complication that arises when measuring franchise value at banks is that the market value of equity will include the subsidy associated with deposit insurance, which *increases* with risk taking (Kane and Unal, 1990). Since we seek evidence of an *inverse* relationship between franchise value and risk taking, this complication works against us, making it more difficult for us to find empirical support for the hypothesis we test. A second complication is that bank franchise value stems in part from the unique relationship which develops between the bank and its borrowers. (See Petersen and Rajan 1995 and Berger and Udell 1995 for discussions of relationship lending). If "relationship lending" is a relatively risky activity, which seems likely, the direction of causation may run, at least in part, *from* risk to franchise value. Again, this would tend to counteract the hypothesized negative influence of franchise value, biasing the coefficient up (towards zero).

The effect of insider holdings on BHC risk appears to be driven by differences in the risk taking propensities of BHCs with no insider holdings compared to those with some insider holdings. In the linear specification, the coefficient on insider holdings is positive but not statistically significant. In the piecewise linear specification, the 0 to 5 percent linear term is positive, the 5 percent to 25 percent linear term is negative and the over 25 percent term is positive. The signs in the piecewise linear specification are consistent with Morck, Shleifer and Vishny in that they suggest an alignment effect followed by an entrenchment effect followed by alignment again. The insider holdings variable, however, is statistically significant only in the 0 to 5 percent range in the piecewise linear specification.

The specification that uses indicator variables to measure insider holdings shows that BHCs with some insider holdings take about 9 percent more risk than BHCs with no insider holdings (the omitted category). Among those BHCs with positive insider holdings, however, there appears to be no relationship between the amount of insider holdings and risk. Formally, we can not reject the null hypothesis that each of the coefficients on the insider indicator variables are equal, but we can reject the hypothesis that each of these coefficients equals zero. We have also estimated this specification splitting the >0 to 5 percent insider indicator into two indicator variables, one for insider holdings from >0 to 2 percent and one from 2 to 5 percent (not shown). In this alternative specification, we again find a significant increase in risk beyond zero insider holdings, but no significant differences among the BHCs with some insider holdings.

Across the equations in Table 2, we consistently observe a positive relationship between large block holdings and risk, although that relationship is not statistically significant. The coefficient on economic growth is negative but not statistically significant, while asset size enters

negatively and significantly in all three models. In all three models, variables measuring the proportion of business in each census region (not shown) are jointly significant.

Next we repeat the Table 2 specifications, splitting the sample into low and high franchise value BHCs. Each year, low franchise value BHCs are defined as those with franchise value below the median for all BHCs in our sample in that year. Table 1 reports summary statistics for equity risk and the explanatory variables for the low and high franchise value BHCs. While risk is significantly higher and capital significantly lower for the low franchise value BHCs, the distributions of the other variables are similar for the two samples.

As reported in Table 3, franchise value and insider holdings both exhibit a tighter relationship with risk for low franchise value BHCs than for high franchise value BHCs. For low franchise value BHCs, the coefficient on franchise value rises in magnitude to about -7.9. Table 3 also shows a marked difference between the effect of ownership structure in the low and high franchise value subsamples. In particular, ownership structure affects risk taking only in the low franchise value subsample, the set of BHCs where the interests of owners and managers are least likely to be aligned. Low franchise value BHCs with some insider holdings take about 20 percent more risk than those with no insider holdings. Once insider holdings exceeds 40 percent, risk falls. For the low franchise value subsample, we *can* reject the hypothesis that all of the coefficients on the insider holdings dummy variables are equal.

On its face, this last finding appears consistent with Gorton and Rosen (1995), who argue that entrenched managers at BHCs with poor prospects (that is, managers with some insider holdings but not enough to be fully aligned) take "too much" risk. However, this result is also consistent with the idea that managers holding a large fraction of their wealth in a single

company may display a greater degree of risk aversion than well-diversified shareholders would prefer. In our sample, most of the BHCs with insider holdings beyond 40 percent are at the small end of our sample, with median total assets of $600 million, as compared to $1.3 billion for the sample as a whole. For these BHCs, it is plausible that a small number of individuals are responsible for a large fraction of insider holdings. They may therefore hold a large fraction of their wealth in a single firm and exhibit more risk aversion than diversified shareholders. Moreover, small BHCs tend to hold more capital than larger BHCs and their stocks tend to be less liquid. Both factors will reduce measured equity risk.[15] If we drop BHCs with assets below $250 million, we still find that BHCs with some insider holdings have significantly more risk than those with none, but we can not reject the hypothesis that all of the coefficients on the insider holdings dummy variables are equal.

Decomposing Risk

Tables 2 and 3 show that bank managers pursue less risky strategies when franchise value is high. Among low franchise value BHCs, they pursue more risky strategies when their equity stakes are positive. Next we take a closer look at the way risk-enhancement or reduction is accomplished. In particular, we determine whether risk is adjusted through leverage, asset risk, or both. In Table 4, we estimate the effect of our right-hand-side variables on asset risk. To get at asset risk, we again use stock return variability to measure risk but now include the capital-asset ratio as a right-hand-side variable to control for the effects of leverage. We recognize that the capital-asset ratio is endogenous but include it as a regressor in this specification to isolate

[15] Though we control for size in each of our regressions, we may not be adequately capturing this "small bank" effect.

the effects of franchise value and insider holdings on asset risk.[16] Table 5 shows how franchise value affects leverage. Tables 4 and 5 both omit the linear and piecewise linear insider holdings specifications, since the indicator variable specification proved to be more revealing in our earlier tables.

Asset Risk

We find a robust negative relationship between franchise value and asset risk that is again driven by the low franchise value BHCs (Table 4). The effect continues to be economically and statistically important. The ownership structure results in Table 4 look much like those presented earlier, with increased asset risk for BHCs with some insider holdings, compared to those with none. Again, the explanatory power comes from the low franchise value BHCs -- those with the most substantial owner/manager conflicts. We find no significant effect of large blockholdings on asset risk.

Leverage

The effect of franchise value on the capital-asset ratio (the inverse of leverage) is positive and significant for the full sample (Table 5), consistent with the notion that BHCs seek to preserve a valuable franchise through reductions in leverage. As with equity risk, the relationship is statistically significant (now at the ten percent level) only for the low franchise value sub-sample.[17] Turning to ownership structure, we now find no insider holdings effect; however, we do find a significant negative relationship between large block holdings and the

[16] Another way to estimate the effect of franchise value on asset risk -- without including capital as a regressor -- is to "unlever" equity risk by multiplying stock return variance by the capital-asset ratio. We have tried unlevering equity risk in this manner and our results are similar to those reported here.

[17] The average capital-asset ratio is 0.8 percentage points higher for the high franchise value subsample than for the low franchise value subsample . This difference is significant at the one percent level.

capital-asset ratio. This is consistent with managerial risk-aversion and suggests that owners may discipline that risk aversion by influencing managers' (observable) capital choice when ownership is concentrated. Consistent with this interpretation, we see that the relationship between large block holdings and capital is significant only at low franchise value BHCs, those for which owner and manager incentives regarding risk taking are most likely to diverge.

5. Robustness Checks

We have tested the robustness of our results to changes in the model specification, changes in our sample, and changes in our measures of risk and franchise value. We discuss each category of robustness checks in turn. In all three cases the qualitative findings remain intact.

Model specification

We have estimated our results including BHC fixed effects rather than random effects. In this model, the regression coefficients are driven by within-BHC changes in the variables over time. This specification avoids a potential omitted variables problem that would occur if the BHC-specific component of the error is correlated with the regressors in the model. The results for the variables of interest -- those measuring franchise value and ownership structure -- are qualitatively similar to those reported above. The main results also remain intact in annual cross-sections. In each year, we estimate a negative and statistically significant coefficient on franchise value, while the relationship between insider holdings and risk is also consistent with those presented in Tables 2-4 in most years.

A second potential specification error may occur if franchise value -- the market-to-book asset ratio -- is mismeasured. Our particular concern is that BHC assets do not capitalize the

revenue that flows from fee-generating activities. This could induce a downward bias on our estimate of the effects of franchise value on risk if BHCs active in these areas are also riskier than average. We control for this possibility by including the ratio of non-interest income to net interest income minus loan loss provisions as a proxy for the importance of these off-balance sheet assets.[18] While we *do* find a positive correlation between our measure of franchise value and the importance of off-balance sheet activities, we continue to find a negative and significant relationship between franchise and equity risk in the augmented model.

Sample

We have estimated our model with two alternative samples of BHCs to address the concern that our results may be driven by the high rate of merger and acquisition (M&A) activity during the 1990s. The volatility of the market value of both the acquiring and target firm in a merger typically increases just before the merger. Moreover, target firms often experience a run up in their stock price. Together, these patterns lead to a potential upward bias on the estimated effect of franchise value on risk for target firms. Similarly, if trading activity by either insiders or large blockholders picks up around the time of a merger -- for instance, if insiders buy shares of target firms' stock before leading up to a merger, then equity risk could appear to be associated with ownership structure because of the influence of these observations.

To check whether M&A activity affects our findings, we first estimate our model using a balanced panel. In this sample, only surviving BHCs are included. Failing BHCs or those that were acquired are dropped. As a second check, BHCs that were active acquirers (those

[18] Under certain simplifying assumptions laid out in Boyd and Gertler (1994), this ratio equals the ratio of the present value of fees generated by off-balance sheet activities to on-balance sheet activities.

experiencing asset growth greater than 25 percent during a given year) are dropped. In both cases, our results remain consistent with those presented above.

Measuring Franchise Value and Risk

We have experimented with three measures of franchise value. First, we have estimated the model using the market-to-book equity ratio rather than the market-to-book asset ratio (Q) and found almost identical results. Second, the basic results remain when beginning-of-period Q replaces beginning-of-year Q. For instance, for BHCs appearing in our sample for the years 1991 through 1995, we use the estimate of Q from the end of 1990 for *each year* between 1991 and 1995. We also find that the effects of ownership structure are important only in the low franchise value sample when we split the sample based on beginning-of-period Q.

Third, the basic results remain intact when Q is replace by balance sheet proxies of franchise value -- return on assets or return on equity during the prior year. These two balance sheet measures are also negative and significant in our asset risk regression. Of course, this result could reflect the fact that during our sample period banks that engaged in ex-ante safer activities earned ex-post higher profits (see Berger 1995). This is why we prefer our original forward-looking measure of franchise value.

Finally, the basic results also remain using alternative measures of risk. We have split our stock market measure of risk into systematic and firm-specific components.[19] Franchise value and ownership structure affect both components of risk similarly. Franchise value is also negatively related to a BHC's loan portfolio concentration, measured as the sum of the squared shares of the four major categories of bank loans (consumer, business, real estate and other). In

[19] For details on how we construct systematic and firm-specific risk, see Demsetz and Strahan (1997).

other words, BHCs with more franchise value appear to reduce asset risk by holding a better diversified loan portfolio. We have also tested whether franchise value is negatively related to the ratio of loans to assets, another balance sheet measure of asset risk (loans are riskier than securities). In this case, we do not find the hypothesized negative relationship, perhaps because lending also reflects the presence of valuable customer relationships, which represent an important component of franchise value in banking.

6. Discussion

The relationship between franchise value and risk confirms our expectations and calls for no additional discussion. Our results regarding ownership structure -- consistent with models in which managers are more risk-averse than owners -- do raise a few questions.

First, in contrast to Morck, Shleifer and Vishny, we find no evidence that insider holdings entrench management in banking. In particular, we find no statistically significant decline in risk taking at intermediate levels of insider holdings, as one would expect if managerial stockholdings help entrench bank management. A possible explanation is that entrenchment in banks may simply be unrelated to insider holdings because of the scarcity of hostile takeovers. Prowse (1995) finds that hostile takeovers occur about five times more frequently in non-financial industries than in banking and that replacement of managers by boards of directors is twice as frequent in non-financial firms, even though the equity stakes of insiders on boards of directors at BHCs are not larger than at non-financial firms. A weak market for corporate control may make the percent of stock owned by insiders a poor proxy for management entrenchment in banking.[20]

[20] Note that within the banking industry Prowse finds that the equity stake of insiders on boards of directors does affect management turnover.

Second, we find that at low franchise value BHCs, insiders with no equity stake take on less *asset risk;* they do not, however, hold more capital. Conversely, concentrated ownership is associated with increased leverage but *no more asset risk*. This is consistent with the idea that outside blockholders more readily control managerial risk taking by influencing leverage than by influencing asset risk.

Third, if bank managers are entrenched regardless of their stock holdings, we should expect increases in insider holdings to continue to align managers' and shareholders' interests at all levels -- that is, we should expect a monotonically increasing relationship between insider holdings and BHC risk. In contrast, we find significant differences in risk at BHCs with no insider holdings and those with positive insider holdings, but no significant differences *among* BHCs with positive insider holdings.

We offer the following explanation for this third result. Suppose BHCs can be sorted into two groups: those whose managers receive performance-based compensation of some form (managerial equity holdings are one such form) and those whose managers do not receive performance-based compensation. In our sample, BHCs in the first group are identified only on the basis of their positive managerial shareholdings. If these BHCs are in fact addressing their owner/manager agency problems using a variety of performance-based compensation instruments, we should not necessarily expect their risk taking to reflect their *level* of insider holdings. In our sample, BHCs in the second group are identified on the basis of their lack of managerial shareholdings. Among low franchise value BHCs, those with no managerial shareholdings (i.e., no observable tendency toward performance-based compensation) take lower risk, suggesting that owner/manager agency problems may indeed persist.

Table 6 presents further evidence consistent with this interpretation. We report the mean of the equity risk variable for low and high franchise value BHCs in each of the groupings used to construct our insider holding indicator variables. For each group of BHCs with *positive* insider holdings, low franchise value BHCs take about 50 percent more risk than high franchise value BHCs. Moreover, as seen in our regression results, there is no relationship between insider holdings and risk *among* the group of BHCs with positive insider holdings. Since we expect shareholders at BHCs with low franchise value to prefer relatively more risk, these two patterns suggest that owner-manager agency problems have been addressed at BHCs with positive insider holdings (i.e. at BHCs that use performance-based compensation contracts). By contrast, there is no statistically significant difference in risk for low and high franchise value BHCs when insider holdings are zero. In the absence of equity ownership (a form of performance-based compensation), risk averse managers appear to take less risk than shareholders would prefer when franchise value is low.

The statistics in Table 6 are consistent with the absence of agency problems for most BHCs. Risk taking for BHCs with positive insider holdings reflects shareholders' interests: risk is high when franchise value is low, and vice versa. Similarly, BHCs with no insider holdings and *high* franchise value appear to be choosing risk optimally, although this comes as no surprise since we see no reason for conflict between owners and managers of high franchise value BHCs. (Both want low risk and a low probability of bankruptcy.) Only among a relatively small group of BHCs -- those with low franchise value and no insider holdings, or about 4 percent of our sample -- is there evidence that agency problems remain unaddressed.

Of course, if agency problems remain unaddressed among a relatively limited group of

BHCs, market forces should compel them to change their behavior. In fact, most of the low franchise value BHCs with no insider holdings *do* change their behavior. The probability that their insider holdings increase to a positive value within a year is about 65 percent, and for those that do increase their insider holdings, the median increase is nine percentage points. In contrast, the probability that BHCs with *positive* insider holdings increase their insider holdings within a year is only 47 percent, and the median increase for them is less than one percentage point. Finally, increases in insider holdings are associated with increased risk. We know this because the estimates of the effect of insider holdings on risk are similar to those reported above even when we include BHC-level fixed effects; in this model, the estimated coefficients are driven solely by within-firm changes over time.

7. Conclusion

Our empirical evidence shows that both franchise value and ownership structure affect risk at banks. Franchise value disciplines the risk taking associated with moral hazard by increasing the costs of financial distress. Asset risk is higher at banks with positive insider ownership, consistent with the notion that managerial shareholdings work to align the interests of otherwise risk-averse managers with less risk-averse owners. Capital is lower (but asset risk no higher) at banks with concentrated ownership, suggesting that outside blockholders more readily control managerial risk taking by influencing leverage than by influencing asset risk.

Our results also emphasize an important interaction: The relationship between ownership structure and risk is significant only for the set of banks with relatively low franchise value. These results suggest that the risk preferences of owners and managers are well aligned at high franchise value banks. Only at low franchise value banks -- where owners' risk preferences are

not tempered by high costs of financial distress -- do concentrated ownership structure and managerial equity stakes affect managers' choices regarding risk.

Finally, the observed ownership structure/risk relationship for the low franchise value banks is driven solely by those with no insider holdings. Among banks with positive insider holdings, we see no relationship between risk and the level of insider holdings. We infer that the owner/manager agency problem affects the choice of risk for only a small number of banks -- those with low franchise value and no insider holdings, or about 4 percent of our sample. Most of these banks increase their insider holdings within a year, and these changes in ownership structure are associated with increased risk. This suggests that owner/manager agency problems are quickly addressed at most banks.

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Table 1
Summary Statistics[a]

Panel A: Mean and Standard Deviation

	All BHCs		Low Franchise Value BHCs		High Franchise Value BHCs	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
	(1)	(2)	(3)	(4)	(5)	(6)
Equity risk (Annualized Standard Deviation of Weekly Stock Returns)	0.30	0.20	0.36	0.25	0.24	0.11
Capital-Asset Ratio	0.08	0.02	0.07	0.02	0.08	0.02
Franchise Value (Market-to-Book Asset Ratio)	1.02	0.04	1.00	0.02	1.05	0.04
Insider Holdings	0.11	0.13	0.11	0.12	0.11	0.13
Large Block Holdings	0.12	0.17	0.12	0.17	0.11	0.17
Total Assets ($ billions)	8.31	23.87	9.65	30.72	6.96	13.88
Economic Growth (Growth in Personal Income)[b]	0.02	0.02	0.02	0.02	0.02	0.02
N	1332		662		660	

Panel B: Correlation Matrix

	Equity Risk	Capital-Asset Ratio	Franchise Value	Insider Holdings	Large Block Holding	Log of Total Assets
	(1)	(2)	(3)	(4)	(5)	(6)
Equity risk	1					
Capital-Asset Ratio	-0.40*	1				
Franchise Value	-0.37*	0.27*	1			
Insider Holdings	0.05	0.04	0.01	1		
Large Block Holdings	0.04	-0.11*	-0.01	0.32*	1	
Log of Total Assets	-0.17*	-0.25*	0.10*	-0.24*	0.06*	1
Economic Growth[b]	-0.27*	0.19*	0.30*	-0.04	0.02	0.03

[a] Based on pooled data from 1991 to 1995.
[b] Growth in personal income for each BHC is computed as the asset-weighted average of the growth in real personal income for each state in which the BHC has one or more commercial bank subsidiaries.
* Correlation is statistically significant at the 5 percent level.

Table 2

Regressions of the Log of Equity risk on Franchise Value (Market-to-Book Asset Ratio), Insider Holdings, Large Block Holdings, Firm Size (Log of Total Assets), Economic Growth (Growth in Personal Income), and a set of variables (not shown) measuring the proportion of business conducted in each census region. Regressions include Time Fixed Effects and BHC-Specific Random Effects. Pooled Data from 1991 to 1995. Standard errors in parentheses; "**" indicates statistical significance at the 1 percent level, "*" indicates statistical significance at the 5 percent level.

	Equity Risk		
	(1)	(2)	(3)
Franchise Value	-1.84**	-1.85**	-1.87**
	(0.31)	(0.32)	(0.32)
Insider Holdings:			
Linear	0.09	---	---
	(0.10)		
Piecewise Linear:			
0-5%	---	1.55*	---
		(0.75)	
5-25%	---	-0.16	---
		(0.22)	
>25%	---	0.11	---
		(0.20)	
Insider Indicators:			
0%	---	---	---
>0-5%	---	---	0.08
			(0.05)
5-10%	---	---	0.09*
			(0.04)
10-20%	---	---	0.08
			(0.04)
20-40%	---	---	0.09
			(0.05)
>40%	---	---	0.02
			(0.07)
Large Block Holdings	0.06	0.05	0.05
	(0.07)	(0.07)	(0.07)
Firm Size	-0.03**	-0.03*	-0.03**
	(0.01)	(0.01)	(0.01)
Economic Growth	-0.91	-0.90	-0.96
	(0.87)	(0.87)	(0.87)
R^2	0.33	0.33	0.33

Table 3

Regressions of the Log of Equity risk on Franchise Value (Market-to-Book Asset Ratio), Insider Holdings, Large Block Holdings, Firm Size (Log of Total Assets), Economic Growth (Growth in Personal Income), and a set of variables (not shown) measuring the proportion of business conducted in each census region. Regressions include Time Fixed Effects and BHC-Specific Random Effects. Pooled Data from 1991 to 1995. Standard errors in parentheses; "**" indicates statistical significance at the 1 percent level, "*" indicates statistical significance at the 5 percent level.

	Equity Risk					
	Low Franchise Value BHCs			High Franchise Value BHCs		
	(1)	(2)	(3)	(4)	(5)	(6)
Franchise Value	-7.87**	-7.87**	-7.87**	0.15	0.17	0.18
	(0.99)	(1.00)	(0.99)	(0.36)	(0.36)	(0.36)
Insider Holdings:						
Linear	0.03	---	---	0.16	---	---
	(0.15)			(0.11)		
Piecewise Linear:						
0-5%	---	2.25*	---	---	-0.59	---
		(1.08)			(0.90)	
5-25%	---	-0.15	---	---	0.04	---
		(0.31)			(0.27)	
>25%	---	-0.20	---	---	0.38	---
		(0.35)			(0.22)	
Insider Indicators:						
0%	---	---	---	---	---	---
>0-5%	---	---	0.19**	---	---	-0.06
			(0.07)			(0.06)
5-10%	---	---	0.25**	---	---	-0.10
			(0.06)			(0.05)
10-20%	---	---	0.18**	---	---	-0.05
			(0.06)			(0.05)
20-40%	---	---	0.18*	---	---	-0.01
			(0.07)			(0.06)
>40%	---	---	0.05	---	---	-0.03
			(0.10)			(0.08)
Large Block Holdings	0.14	0.13	0.13	-0.13	-0.11	-0.11
	(0.10)	(0.10)	(0.10)	(0.08)	(0.09)	(0.09)
Firm Size	-0.01	-0.01	-0.02	-0.02*	-0.03*	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Economic Growth	-1.19	-1.27	-1.55	-0.53	-0.53	-0.67
	(1.38)	(1.37)	(1.36)	(1.12)	(1.12)	(1.13)
R^2	0.40	0.40	0.41	0.22	0.22	0.22

Table 4

Regressions of the Log of Equity risk on Franchise Value (Market-to-Book Asset Ratio), Insider Holdings, Large Block Holdings, Leverage (Log of Capital-Asset Ratio), Firm Size (Log of Total Assets), Economic Growth (Growth in Personal Income), and a set of variables (not shown) measuring the proportion of business conducted in each census region. Regressions include Time Fixed Effects and BHC-Specific Random Effects. Pooled Data from 1991 to 1995.

	Equity Risk		
	All BHCs	Low Franchise Value BHCs	High Franchise Value BHCs
	(1)	(2)	(3)
Franchise Value	-1.55**	-7.25**	0.14
	(0.29)	(0.90)	(0.34)
Insider Indicators:			
0%	---	---	---
>0-5%	0.09*	0.21**	-0.06
	(0.04)	(0.06)	(0.05)
5-10%	0.08*	0.24**	-0.10*
	(0.04)	(0.06)	(0.05)
10-20%	0.08	0.17**	-0.04
	(0.04)	(0.06)	(0.05)
20-40%	0.09	0.19**	-0.02
	(0.05)	(0.06)	(0.06)
>40%	0.05	0.10	-0.01
	(0.06)	(0.09)	(0.08)
Large Block Holdings	-0.01	0.01	-0.12
	(0.07)	(0.09)	(0.08)
Leverage	-0.69**	-0.71**	-0.48**
	(0.05)	(0.06)	(0.08)
Firm Size	-0.06**	-0.05**	-0.04**
	(0.01)	(0.01)	(0.01)
Economic Growth	-0.87	-0.97	-0.62
	(0.81)	(1.25)	(1.09)
R^2	0.45	0.54	0.25

Table 5

Regressions of the Log of the Capital-Asset Ratio on Franchise Value (Market-to-Book Asset Ratio), Insider Holdings, Large Block Holdings, Firm Size (Log of Total Assets), economic growth (Growth in Personal Income), and a set of variables (not shown) measuring the proportion of business conducted in each census region. Regressions include Time Fixed Effects and BHC-Specific Random Effects. Pooled Data from 1991 to 1995. Standard errors in parentheses; "**" indicates statistical significance at the 1 percent level, "*" indicates statistical significance at the 5 percent level.

	Capital-Asset Ratio		
	All BHCs	Low Franchise Value BHCs	High Franchise Value BHCs
	(1)	(2)	(3)
Franchise Value	0.53**	0.79	0.02
	(0.16)	(0.58)	(0.15)
Insider Indicators:			
0%	---	---	---
>0-5%	-0.003	0.03	-0.03
	(0.02)	(0.04)	(0.02)
5-10%	-0.03	-0.01	-0.01
	(0.02)	(0.04)	(0.02)
10-20%	-0.01	-0.01	-0.001
	(0.02)	(0.04)	(0.02)
20-40%	0.01	0.02	-0.02
	(0.02)	(0.04)	(0.02)
>40%	0.05	0.07	0.03
	(0.03)	(0.06)	(0.03)
Large Block Holdings	-0.08*	-0.15*	-0.01
	(0.04)	(0.06)	(0.03)
Firm Size	-0.04**	-0.04**	-0.05**
	(0.01)	(0.01)	(0.01)
Economic Growth	-0.18	0.49	-0.33
	(0.42)	(0.77)	(0.39)
R^2	0.24	0.20	0.31

Table 6

Means of Equity risk by subsample with t-test for difference in subsample means. Pooled Data from 1991 to 1995. Standard errors in parentheses; "**" indicates statistical significance at the 1 percent level, "*" indicates statistical significance at the 5 percent level.

	Mean Equity Risk Low Franchise Value BHCs	Mean Equity Risk High Franchise Value BHCs	Difference in Means (Standard Error)
Insider Holdings: 0%	0.26	0.26	-0.001 (0.02)
Insider Holdings: <5%	0.37	0.23	0.14** (0.02)
Insider Holdings: 5-10%	0.35	0.23	0.13** (0.03)
Insider Holdings: 10-20%	0.38	0.24	0.14** (0.02)
Insider Holdings: 20-40%	0.38	0.27	0.10** (0.03)
Insider Holdings: >40%	0.33	0.25	0.08* (0.03)