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Effects of the 1970 Bank Holding Company Act: Evidence from Capital Markets

JOSEPH AHARONY* and ITZHAK SWARY**

ABSTRACT

This study measures the effects of the 1970 amendment to the Bank Holding Company (BHC) Act on the profitability and risk of BHCs using capital market data. Differences in abnormal returns and risk among three portfolios of bank shares which differ in their regulatory status are examined in various periods preceding and following the enactment. No significant differences in performance and no change in the relative risk of any pair of portfolios were observed. Thus, the null hypothesis that the nonbank expansion provisions of the 1970 amendment had no effect on BHCs' risk and profitability cannot be rejected.

THE GROWTH OF BANK holding companies and their expansion into nonbank activities following the 1970 amendment to the Bank Holding Company (BHC) Act of 1956 produced striking structural changes in the banking industry. The nonbank expansion provisions of the statute triggered a continuing debate about the costs and benefits of these provisions.¹ Black, Miller, and Posner [2] consider the amendment to be an important innovation that can increase the efficiency and hence the profitability of financial intermediaries. Other writers, however, suggest that nonbank activities of bank holding companies may increase the risk of bank failure, thereby increasing the regulatory involvement (Silverberg [14], Orgler and Wolkowitz [13], and Mayne [10]).²

This study analyzes the effects of the 1970 amendment to the Bank Holding Company Act on the profitability and riskiness of bank holding companies. Capital market data are used to measure risk and return (Fama [6]).

I. Potential Effects of the 1970 Amendment on BHCs' Profitability and Risk

The Bank Holding Company Act of 1956 deals only with multibank holding companies (MBHCs); that is, corporations controlling 25 percent or more of the voting shares of at least two commercial banks. The act limits the activities of

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¹ For a review of the debate see Jessee and Seeling [9, Ch. 2].

² For additional discussion of various aspects of potential risk increase as a result of expansion into nonbank activities by BHCs, see Chase and Mingo [3], Heggstad [7], Holland [8], Meinster and Johnson [11].

these corporations to banking services. Under provisions of the 1956 legislation, one-bank holding companies (OBHCs) were not required to register with the Federal Reserve, and hence, their nonbank expansion was tacitly sanctioned.³

The 1970 amendment brought OBHCs under control of the Federal Reserve and permitted MBHCs to engage in selected nonbank activities. The amendment effectively constrained the nonbank activities of OBHCs and expanded the permissible nonbank activities of MBHCs.⁴

To consider the potential effects of the amendment, it is assumed that the objective of BHCs is to maximize the market values of their common shares by undertaking all investments which have positive risk adjusted net present values (NPVs). A component of these NPVs is actually a subsidy by Federal Deposit Insurance Corporation (FDIC) which charges a constant rate insurance premium per dollar of deposits without taking into account the variance of the BHC's returns.⁵ BHCs therefore have an incentive to invest in projects with high variance of returns. Their assumption is that the FDIC is forced to prevent failures of nonbank subsidiaries in order to protect its funds and affiliated banks' depositors. The FDIC's concern is that depositors may view poor performance of nonbank subsidiaries as an indication of the affiliated banks' dishonesty, mismanagement, or both. As a result, depositors may lose their confidence in the banks themselves which can lead to bank run. Thus, the FDIC is actually forced to extend its insurance to BHCs' nonbank subsidiaries for which it does not charge additional premium.

Given the incentive of BHCs to invest in nonbank subsidiaries with high-variance risk, it is hypothesized that the 1970 amendment had the following effects: (1) the provisions to expand the set of permissible nonbank investments of MBHCs increased both their riskiness and profitability; (2) the provisions to constrain nonbank expansion of OBHCs to permissible investments only decreased both their riskiness and profitability. These hypotheses are summarized in Table I under H_1 .

The null hypothesis (H_0) for each bank group is that the 1970 amendment had no influence on their risk and profitability.

II. Methodology and Estimation Procedure

1. Data

The effects of the 1970 amendment on the profitability and risk of BHCs are examined using the market model. Three portfolios of banks with different regulatory status are constructed: (1) 33 OBHCs which were unregulated before the 1970 amendment and were brought under regulation by the 1970 act; (2) 25

³ In fact, one-bank holding companies expanded primarily into closely related nonbank financial fields, and also into various industrial fields such as metal mining and petroleum refining, etc. (see *Federal Reserve Bulletin*, December 1972, p. A99 for a detailed list).

⁴ For a detailed discussion of the provisions of the 1970 amendment, see Jessee and Seeling [9].

⁵ Merton [12] shows that the FDIC provides a put option on the assets of an insured bank and that the insurance premium per dollar of deposits is actually positively related to the variance of return on the bank's assets.

Table I
Predicted Effects of the 1970 Amendment on BHCs' Profitability and Risk

Hypothesis	Multibank Holding Companies	One-Bank Holding Companies	Control Group of Independent Banks
Change in Profitability and risk			
H_0	no change	no change	no change
H_1	increase	decrease	any change

MBHCs all of which were subject to the Bank Holding Company Act prior to December 1970; and (3) 15 independent banks (IND) which serve as a control group.⁶ To be included, each company is required to have weekly rates of return for 110 weeks before and 150 weeks after the last week of 1970 (the enactment week). Weekly rates of return are computed for each company using either daily returns⁷ (when available) or successive end of week daily bid prices plus dividends (in weeks where they became exdividend), adjusted for stock splits and stock dividends.⁸ Sample characteristics such as size and leverage for each group of banks are presented in the Appendix.

2. Measurement of Abnormal Returns

Assuming that security returns follow a multivariate normal distribution, the following market model is used:

$$\tilde{R}_{jw} = \alpha_j + \beta_j \tilde{R}_{mw} + \tilde{\epsilon}_{jw} \quad (1)$$

where

$\tilde{R}_{jw}$ = rate of return of security j over week w ;

$\tilde{R}_{mw}$ = Rate of return on the CRSP value weighted index of all common stocks in the New York and American Stock Exchanges (used as a surrogate of the market portfolio of risky assets), over week w ;⁹

β_j = covariance ($\tilde{R}_{jw}$, $\tilde{R}_{mw}$)/variance ($\tilde{R}_{mw}$);

$\tilde{\epsilon}_{jw}$ = disturbance term of security j in week w , $E(\tilde{\epsilon}_{jw}) = 0$, and

$\alpha_j \equiv E(\tilde{R}_{jw}) - \beta_j E(\tilde{R}_{mw})$

The market model is used to determine whether bank stockholders realized abnormal returns in the weeks surrounding the announcement date of the enactment of the 1970 amendment. These abnormal returns are estimated by the prediction errors obtained in the ols regression of Equation (1). The "enactment week," that is, the calendar week of 31 December 1970 is denoted by EW, and EW-t designates the t-th week before the enactment. For each security j ($j = 1$,

⁶ The sample consists of the largest set that could be obtained for the given data requirements.

⁷ Daily rates of return were obtained from the tapes constructed by the Center for Research in Security Prices (CRSP) at the University of Chicago. Weekly returns are the compounded daily returns for each calendar week.

⁸ Daily prices and dividend data were obtained from the various quarterly issues of over-the-counter *Daily Stock Prices Record* published by the Standard and Poor Corporation.

⁹ Weekly market rates of return are the compounded daily market returns for each calendar week.

... , 73) in every calendar week W ($W = \text{EW}-50$ through $\text{EW}+150$), the parameters of Equation (1) ($\hat{\alpha}_{jw}, \hat{\beta}_{jw}$) are estimated by utilizing data from 60 weeks preceding week W . Abnormal returns, $\hat{\epsilon}_{jw}$, are estimated, for each calendar week W , as the difference between realized security returns (R_{jw}) and the corresponding estimated returns predicted from the market model ($\hat{\alpha}_{jw} + \hat{\beta}_{jw} \cdot R_{mw}$). For any calendar week, the average weekly residual across sample members is:

$$AR_{iw} = \frac{1}{N_i} \sum_{j=1}^{N_i} \hat{\epsilon}_{jw}, \text{ where } N_i = \text{the number of banks} \\ \text{in portfolio } i = 1, \dots, 3. \quad (2)$$

These average residuals are summed over event time to obtain cumulative average weekly residuals (CAR):

$$\text{CAR}_{K,L} = \sum_{w=K}^L AR_{iw} \quad (3)$$

where K and L specify the time period relative to EW. The average and cumulative average weekly residuals are interpreted as the abnormal returns of sample members.

To determine whether estimated average abnormal weekly returns on a portfolio of securities, over various time intervals relative to the enactment week, are significantly different from zero,¹⁰ the standardized average residual for portfolio i in each week W is first calculated as

$$SR_{iw} = \frac{AR_{iw}}{SD_{iw}} \sim t(59) \quad (4)$$

where SD_{iw} is the standard deviation of the average weekly portfolio residuals, calculated from the previous 60-week data.¹¹ It is assumed that the SR_{iw} are identically distributed independent random variables (each has a t -distribution with 59 degrees of freedom). (A similar test is used by Dodd and Ruback [5]). The portfolio test statistic is the ratio of the sample mean of SR_{iw} to the standard deviation (σ) of this sample mean:

$$\text{PTS} = \frac{\sum_{w=K}^L SR_{iw}/M}{\sigma(\sum_{w=K}^L SR_{iw}/M)} = \frac{\sum_{w=K}^L SR_{iw}}{\sqrt{M}} \quad (5)$$

where K and L are the first and last calendar weeks, respectively, of a certain time period relative to EW, in which portfolios are formed, M is the number of weeks in the period, and $\sigma(SR_{iw}) = 1$ due to standardization. Since in our study M is sufficiently large, we approximate the distribution of PTS by the standard normal distribution.

¹⁰ Since industry and other factors cause residuals to be correlated across securities in a given time period, it is incorrect to assess the impact of the amendment on the industry by analyzing the frequency distribution of the individual securities' t -statistics; rather, a portfolio of securities' abnormal returns should be constructed for each period.

¹¹ To obtain an estimator of the standard deviation in week W that is free of covariability of successive residuals, the following procedure is used. For each firm j in the portfolio in week W , the market model (Equation 1) is estimated again over weeks $W-120$ through $W-61$ (when data are available). The estimated parameters $\hat{\alpha}_j$ and $\hat{\beta}_j$ obtained are then used to calculate residuals for each firm j over weeks $W-60$ through $W-1$. These residuals are averaged across firms for each of the 60 weeks preceding week W , and then used to calculate SD_{iw} .

Six holding periods surrounding the enactment week are considered:

- (1) "Pre-enactment" phase, 22 November 1968 through 9 January 1970 (60 weeks, EW-110 through EW-51). This phase ends about one year before the 1970 amendment was passed, and it precedes any specific mention of the act in the financial press. Thus, it serves as a period in which there were no clearly discernible expectations of the forthcoming amendment;
- (2) "Legislative" phase, 12 January 1970 through 24 December 1970 (50 weeks, EW-50 through EW-1). In this phase extensive hearings were held and preparation of the act took place in both the Senate and the House. During the phase many alternative bills and compromises were proposed. For example, on 15 May 1970 the *Wall Street Journal* announced that "Federal Reserve Board Chairman Burns asked for one-bank holding bill soon, but said House measure is too potent." Thus, in this phase legislation was widely anticipated, but its design was uncertain;
- (3) "Enactment" week, 28 December 1970 through 31 December 1970 (one week, EW), is a phase of resolution of the uncertainty that prevailed in the legislative phase;
- (4) "Implementation" phase, 4 January 1971 through 30 July 1971 (30 weeks, EW+1 through EW+30). During this phase it was unclear how the Federal Reserve Board (FRB) would implement Section 4(c) (8) of the BHC Act which requires it to maintain a list and standards of permissible nonbank activities. The *Wall Street Journal* of 23 March 1971 announced that the FRB intends "to hold hearings in April and May on proposals for bank holding firms; actions are being taken to implement the 1970 legislation on restricting activities of these firms." Two months later, on 28 May 1971, it announced that the FRB "cleared seven fields as open to bank holding firms; three other areas that it proposed for bank groups among those are still on table; the new rules will be in effect June 15." Thus, this is a phase of uncertainty about the interpretation and implementation of the act by the FRB;
- (5) "Adjustment" phase, 2 August 1971 through 22 September 1972 (60 weeks, EW+31 through EW+90). During this phase BHCs invested in accord with the new rules of the FRB. This should lead to an increase in the risk of MBHCs and positive abnormal returns to their stockholders, and to a decrease in the risk of OBHCs and negative abnormal returns to their stockholders (see Table I);
- (6) "Postadjustment" phase, 25 September 1972 through 16 November 1973 (60 weeks, EW+91 through EW+150). During this phase extensive nonbank expansion of BHCs continued in accord with the FED's interpretations of the 1970 act as they evolved over time. Thus, the risk-return adjustment is expected to occur also in this phase (see Table I).

III. The Effects of the 1970 Amendment on BHCs' Profitability

Abnormal returns realized by bank stockholders in the weeks surrounding the enactment week of the 1970 amendment are reported in Table II and illustrated in Figure 1.

The results indicate that stockholders of each group of banks, classified according

Table II

Percentage Cumulative Weekly Average Residuals (CAR) for all (73) Banks and Three Subgroups: OBHC (33), MBHC (25), and IND (15)

		Portfolio			
Holding Period		33 One-Bank Holding Companies (OBHC)	25 Multi-bank Holding Companies (MBHC)	15 Independent Banks (IND)	All 73 Banks
Legislative Phase	EW-50	2.55	2.78	1.00	2.31
	through EW-1	(.23) ^a	(.30)	(.50)	(.35)
Enactment Week	EW	.56	1.01	.43	.68
		(.38)	(.91)	(.41)	(.64)
Implementation Phase	EW+1 through EW+30	-8.82	-9.56	-6.27	-8.56
		(-1.08)	(-1.40)	(-.79)	(-1.21)
Adjustment Phase	EW+31 through EW+90	15.33	16.59	12.70	15.23
		(1.91) ^e	(2.25) ^d	(1.46)	(2.07) ^d
Postadjustment Phase	EW+91 through EW+150	-21.88	-23.71	-23.63	-22.86
		(-2.44) ^c	(-2.91) ^b	(-2.48) ^c	(-2.77) ^b

^a PTS of Equation (5) are in parentheses.

^b Significant at 0.5 percent level (one-tailed test).

^c Significant at 1.0 percent level (one-tailed test).

^d Significant at 2.5 percent level (one-tailed test).

^e Significant at 5.0 percent level (one-tailed test).

to their regulatory status, earned, on the average, normal returns (as predicted from the market model) over the legislative phase and during the enactment week. The cumulative weekly average residuals (CAR) for these time intervals are small, and not significantly different from zero.

During the implementation phase, all three groups of banks realized negative abnormal returns (CAR of -8.56 percent for the entire sample), but these returns were not significantly different from zero. Performance during the adjustment phase showed positive abnormal returns of large magnitude for OBHCs and MBHCs (CAR of 15.23 percent, significant at 2.5 percent level for the entire sample). Conversely, during the postadjustment phase, stockholders of each group had abnormal losses (CAR of -22.86 percent, significant at 0.5 percent level for the entire sample).

The similarity in the pattern of the cumulative weekly average residuals (CAR) for all three bank portfolios over the whole period studied is striking (see Figure 1). However, to separate the effect of the 1970 act from unrelated industry movements, a comparison is made between groups of banks with different regulatory status, using a procedure which controls for differences in market-related risk.

Three pairs of portfolios are compared in each week: OBHC, MBHC; OBHC,

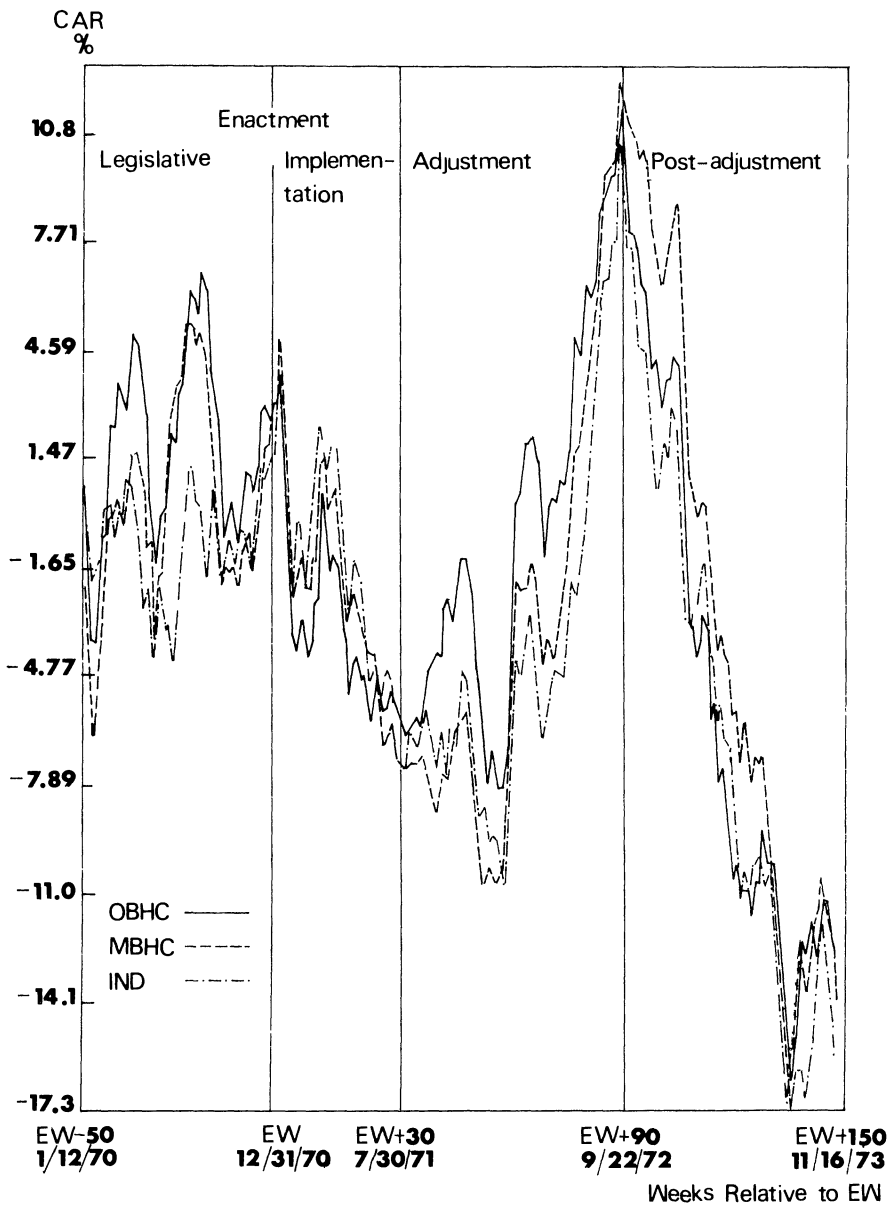


Figure 1. Percentage Cumulative Weekly Average Residuals (CAR) over 200 Weeks Surrounding the Enactment Week (EW) for Three Bank Portfolios: OBHC, MBHC, and IND

IND; and IND, MBHC. The pair OBHC, MBHC is used to illustrate the procedure. For each week the market model is estimated for each security in these two groups using the rates of return over the 60 previous weeks. The β of the MBHC portfolio (β_M) is calculated as an arithmetic mean of the β 's of the individual securities in this group. The β 's of the securities in the OBHC group are ranked by increasing order of β and then divided into two subgroups: low β 's (16 securities), and high β 's (17 securities). Portfolio β 's are calculated for these subgroups (β_o^L and β_o^H , respectively), and a unique set of weights summing to one is calculated for each event related week w , from

$$\lambda_{0w}\beta_{0w}^L + (1 - \lambda_{0w})\beta_{0w}^H = \beta_{Mw} \quad (6)$$

where λ_{0w} is the weight assigned to β_{0w}^L .

These weights are used to construct OBHC portfolios with systematic risk identical to that of the respective MBHC portfolios:

$$R_{0w} = \lambda_{0w}R_{0w}^L + (1 - \lambda_{0w})R_{0w}^H \quad (7)$$

where R_{0w}^L and R_{0w}^H are the rates of return on the low and high equally weighted β portfolios (of OBHCs), respectively, in week w .

Abnormal returns in week w can thus be measured as the difference between the two portfolio returns:

$$DR_{0Mw} = R_{0w} - R_{Mw} \quad (8)$$

where R_{Mw} is the rate of return on an equally weighted portfolio of MBHC shares in week w . DR_{0Mw} can be interpreted as the average rate of return from a strategy of buying the shares of OBHCs and short selling an equal dollar amount of the shares of MBHCs. Because this trading strategy involves no outlay and has a zero β , if the market is efficient, $E(DR_{0Mw}) = 0$ for all periods. Accordingly, if the enactment of the 1970 amendment has no differential impact on banks with different regulatory status the mean differential return ($\overline{DR}_{0Mw}$) over various time periods surrounding the enactment should equal zero. To test this possibility, a t -statistic for differences in two population means with dependent samples is employed.¹² The results are summarized in Table III.

In the various time intervals surrounding EW, the weekly average differential portfolio returns ($\overline{DR}$) between groups of banks with different regulatory status are of small magnitude and do not differ significantly from zero, implying that the enactment of the 1970 amendment to the BHC act had no significant impact on the profitability of either OBHCs, MBHCs, or independent banks. These findings also imply that the significant abnormal returns observed in the adjustment and postadjustment phases (see Table II) are due to industry factors other than the 1970 amendment or nonbank expansion.

¹² The t -statistics are calculated as $\frac{\overline{DR} \cdot \sqrt{n}}{S(DR)} \sim t(n-1)$, where $S(DR)$ is an estimate of the standard deviation of DR for a given holding period, and n is the number of weeks in this period. When the holding period consists of only the event week (EW), $S(DR)$ is estimated using the previous 50 weeks, and the t -statistic is calculated as $\frac{DR_{EW}}{S(DR)} \sim t(49)$. For details see, for example, Chou [4, pp. 333-36].

Table III
Percentage Weekly Average Differential Portfolio Return (DR)

Holding Period		Portfolios Compared		
		OBHC-MBHC	OBHC-IND	MBHC-IND ^a
Legislative Phase	EW-50 through EW-1	.01 (.05) ^b	-.07 (-.46)	-.05 (-.31)
Enactment Week	EW	-.05 (-.06)	.33 (.31)	.06 (.05)
Implementation Phase	EW+1 through EW+30	.18 (1.62)	-.07 (-.48)	-.28 (-1.71)
Adjustment Phase	EW+31 through EW+90	.08 (1.13)	.07 (.70)	-.06 (-.55)
Postadjustment Phase	EW+91 through EW+150	-.08 (-.92)	-.02 (-.16)	.07 (.54)

^a The values of $\overline{DR}$ for this pair cannot be derived from the previous pairs since different β 's (and weights) were used for each calculation.

^b t-statistics are in parentheses.

IV. The Effects of the 1970 Amendment on BHCs' Risk

To test for possible changes in BHCs' risk, $\text{Var}(\tilde{R}_i)$, the total variance of returns of an equally weighted bank portfolio i ($i = 1, \dots, 3$) is estimated and compared over three 60-week periods: pre-enactment phase, adjustment phase, and postadjustment phase. The significance of these changes is tested using an F -statistic.

From the market model (Equation 1),

$$\text{Var}(\tilde{R}_i) = \beta_i^2 \text{Var}(\tilde{R}_m) + \text{Var}(\tilde{\epsilon}_i) \quad (9)$$

Thus, to examine whether a shift in total variance risk is caused by group-specific effects or is due to changes in market-wide factors, possible shifts in systematic risk (β_i), and in the variance of returns of the market portfolio of risky assets ($\text{Var}(\tilde{R}_m)$) are also analyzed.

To test for possible shifts in β_i , the following regression equation is run for each portfolio i :

$$\tilde{R}_{iw} = \alpha_i + \alpha'_i D + \beta_i \tilde{R}_{mw} + \beta'_i D \tilde{R}_{mw} + \tilde{\epsilon}_{iw} \quad (10)$$

The regression is run twice for each portfolio: for the pre-enactment and adjustment phases, and for the adjustment and postadjustment phases. In each run, 120 weeks of data are employed. The dummy variable, D , is set equal to zero in the first 60-week period, and equal to unity in the second 60-week period. The t -statistic on the coefficient, β' , is used to test for systematic risk shifts. The results are presented in Table IV.

There is evidence of a significant and substantial increase in $\text{Var}(\tilde{R}_i)$ for all three bank portfolios during the postadjustment phase as compared to the adjustment phase. This increase in total variance of returns is apparently caused by an increase in both systematic risk (β_i) and the market portfolio risk ($\text{Var}(\tilde{R}_m)$).

Table IV
Estimates of Risk Shifts in Three Bank Portfolios Grouped by Regulatory Status and in the Market Portfolio

	Portfolio									
	Holding Period	33 One-Bank Holding Companies (OBHC)		25 Multibank Holding Companies (MBHC)		15 Independent Banks (IND)		All 73 Banks		Market Portfolio
		β_1	$\text{Var}(\tilde{R}_1)^a$	β_2	$\text{Var}(\tilde{R}_2)$	β_3	$\text{Var}(\tilde{R}_3)$	β_4	$\text{Var}(\tilde{R}_4)$	
Pre-enactment Phase	EW-110 through EW-51	.49 (8.01) ^b	2.48	.44 (9.88)	1.69	.38 (6.56)	1.88	.45 (8.99)	1.90	5.41
Adjustment Phase	EW+31 through EW+90	.23 ^c (3.31)	1.23 ^c	.22 ^c (3.55)	1.05 ^d	.32 (4.54)	1.53	.25 ^c (3.99)	1.09 ^d	3.75 ^e
Postadjustment Phase	EW+91 through EW+150	.58 ^c (10.56)	3.23 ^c	.39 ^d (7.39)	2.00 ^c	.48 ^d (8.13)	2.76 ^d	.49 ^c (9.86)	2.47 ^c	6.37 ^d

^a Variance of percentage returns.
^b t-statistics are in parentheses.
^c Change in risk compared to the previous period significant at 1 percent level (one-tailed test).
^d Change in risk compared to the previous period significant at 5 percent level (one-tailed test).
^e Change in risk compared to the previous period significant at 10 percent level (one-tailed test).

In contrast, the total variance of returns of both OBHC and MBHC portfolios in the adjustment phase decreased significantly as compared to the preenactment phase. This also results from the decline in both the systematic risk of each portfolio and the market portfolio risk. The statistical comparison of the postadjustment and pre-enactment phases shows no significant change in any risk element.

The similarity in the patterns of risk shifts in the three subsample portfolios indicates that these risk changes are unrelated to nonbank expansion following the 1970 amendment. The findings imply that BHCs' expansion into nonbank activities occurred during periods of instability in the banking industry as a whole. Furthermore, these risk shifts were found to coincide with shifts in the variance of returns of the market portfolio (economy-wide changes).

A complementary cross-sectional analysis examines further the effect of the 1970 amendment on bank riskiness. The total variances of returns of the three bank portfolios are compared in the three phases considered: pre-enactment, adjustment, and post-adjustment. Table V presents *F*-statistics for differences in variance for every pair of portfolios in each phase.

During the pre-enactment phase, the OBHC group had a significantly (10 percent level) larger variance of returns than the MBHC group. This indicates that banks which sought projects involving larger levels of risk preferred, prior to 31 December 1970, the status of one-bank holding companies. This status allowed them expansion into nonbank fields and served as leverage for risk taking. In the adjustment phase, no significant differences are observed between the variance of returns of the two BHC groups; however, in the postadjustment phase, the OBHC group had again significantly (5 percent level) larger variance than the MBHC group. A comparison of the variance of returns of either OBHC or MBHC group with that of the independent banks group indicates no significant differences before or after the enactment. One exception occurred in the adjustment phase where the variance of the independent banks group increased and turned out to be significantly larger (10 percent level) than that of the MBHCs group.

Table V
Statistics (F-Values)^a of Relative Risk Measures—
Cross-Sectional Comparison between Bank Portfolios
Grouped by Regulatory Status

Portfolios Compared	Holding Period		
	EW-110 through EW-51	EW+31 through EW+90	EW+91 through EW+150
OBHC/MBHC	1.47 ^c	1.17	1.61 ^b
OBHC/IND	1.32	0.80	1.17
IND/MBHC	1.11	1.46 ^c	1.38

^a $\text{Var}(\text{Group A})/\text{Var}(\text{Group B}) \sim F(59, 59)$ in each period.

^b Difference in risk between groups significant at 5 percent level (one-tailed test).

^c Difference in risk between groups significant at 10 percent level (one-tailed test).

This change, however, cannot be attributed to the enactment of the 1970 amendment.

In summary, the results of the time-series analysis show no significant risk change in any bank group as a result of the enactment of the 1970 amendment. These results are reinforced by the use of cross-sectional comparison between groups of banks in the phases surrounding the enactment. We observe no significant risk change in BHC groups as compared to independent banks. These findings are consistent with the hypothesis that the 1970 amendment had no impact on the risk of either OBHCs, MBHCs, or independent banks.

V. Summary and Implications for the Regulation of Bank Holding Companies

This study measures the effects of the 1970 amendment to the Bank Holding Company Act on the profitability and risk of BHCs. The analysis uses the stock prices of OBHCs, MBHCs, and a control group of independent banks. No significant differences in performance and no change in the relative risk of any pair of portfolios was observed. Thus, the null hypothesis that the nonbank expansion provisions of the 1970 amendment had no effect on BHCs' risk and profitability cannot be rejected (Table I).

During the 1971-74 period, expansion of BHCs into both bank and nonbank activities was significant. The board's positive attitude toward this expansion is evidenced by the short processing time of each application and the high percentage of approvals (93 percent of all applications; see Jessee and Seeling [9], Tables IV and V). In mid-1974, however, the Federal Reserve Board considered the overall impact of nonbank expansion on bank risk and instituted a so-called "go-slow" policy. The processing period for applications was extended and the rate of denials increased. (See for example, *Federal Reserve Bulletin*, 1974, p. 868.) This policy reflects the existing confusion about the costs and benefits resulting from the nonbank expansion of BHCs. Our findings indicate that changes in risk in the banking industry were not related to nonbank expansion (Section IV, Tables IV and V). Rather, the risk shift was affected, to a large extent, by the nonstationarity of the economy. This conclusion, however, applies only to the currently permitted list of nonbank activities and might not hold for other possible nonbank activities.¹³ Therefore, it does not rule out the importance of fixing the list of permitted nonbank activities. As long as regulators are concerned with bank risk, they must consider any potential effect of nonbank expansion of BHCs.

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¹³ During the period 1971-77 the board permitted only activities that were "closely related" to banking. For a detailed list, see *Bank Expansion Quarterly*, 21 (December 1977), Carter H. Golembe Assoc. Inc., Washington, D.C.

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APPENDIX

Sample Characteristics—Total Assets and Leverage Measures for Three Bank Groups as at 31 December 1970

Bank Group	No. of Firms in Sample	Total Assets ^a				Total Deposits/Total Assets			
		Mean	Standard Deviation	Maximum Value	Minimum Value	Mean	Standard Deviation	Maximum Value	Minimum Value
One-Bank Holding Companies	33	5207	7541	29752	353	.803	.045	.874	.682
Multibank Holding Companies	25	2719	2948	11410	507	.832	.036	.872	.713
Independent Banks	15	2045	2292	8038	278	.849	.030	.892	.774

^a Millions of Dollars.

SOURCE: Total assets and total deposits for each company were obtained from *Moody's Bank and Finance Manual*.