Wealth effect of geographical deregulation: The case of Illinois

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In 1981, bank holding companies in Illinois were granted the legal authority to operate more than one full-service banking office through the acquisition of additional banks. Thus, although a single bank is limited to one full-service office, a bank holding company (BHC) could establish a network of such offices in specific regions in the state. Figure 1 outlines the banking regions in Illinois. Under the liberalizing legislation, BHCs are permitted to own banks in their home regions and a region contiguous thereto. Although BHCs were constrained to operate in specific regions, it appeared that the multibank law would be especially advantageous to relatively large holding companies with access to capital for acquisition purposes.[1]

An early analysis of the effects of this legislation showed the cautious approach taken by BHCs in Illinois in response to the new acquisition opportunities, and suggested that this response pattern reflected the combination of a severely depressed economy and overpriced small banks.[2] The present study, however, takes a different tack. It examines the stock market's response to the legislation. Specifically, stock return data for the four largest BHCs in Chicago (and Illinois) that were most able to avail themselves of the Act's acquisition benefits are analyzed after adjusting for risk. These BHCs include Continental Illinois Corporation, First Chicago Corporation, Harris Bankcorp, Inc., and Northern Trust Corporation. The principal concern of the study is whether the securities market perceived these likely beneficiaries of the Act as being positioned to obtain real benefits through expansion. It is important to bear in mind that we are not analyzing any particular acquisition; rather, we are concerned with the creation of potential benefits through the liberalizing legislation.

If returns to these banking organizations were abnormally high during this period, it would suggest the possibility that real benefits would be forthcoming once the BHCs embarked on an expansion program. A long list of motivations for acquisitions has been assembled. Generally, it is agreed that there is not necessarily a single cause for an acquisition.[3]

Among the possible causes are 1) the search for efficiencies (economies) in the production, distribution, and marketing of a product; 2) the satisfaction of managerial needs and wants; 3) the capture of speculative gains; and 4) the desire for increased market share through the elimination of a competitor (but only insofar as the elimination through acquisition results in the ability to increase price above competitive norms, or in other words, the creation of market power). This list is only illustrative of the possible motivations for and benefits to be derived from acquisition.
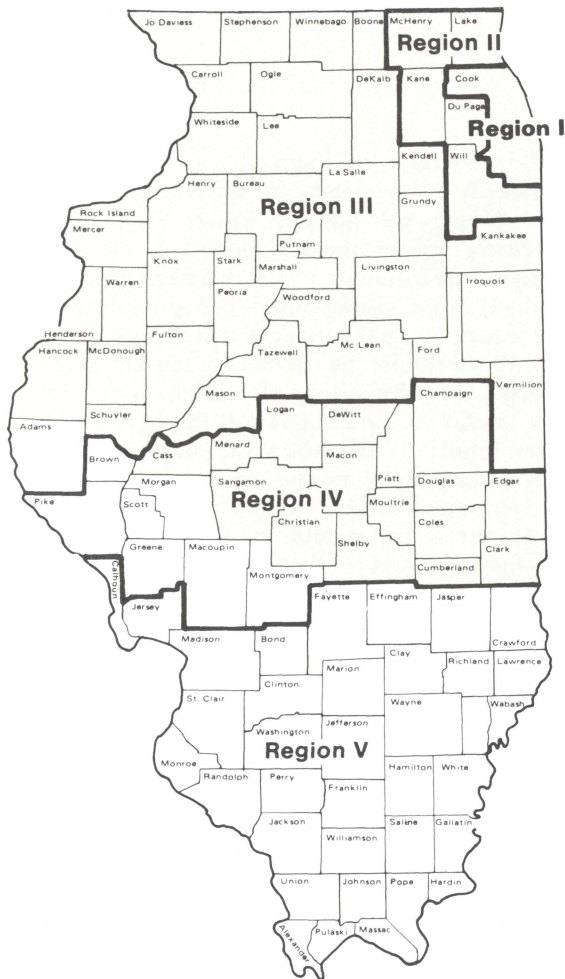
An important issue concerns how the benefits from acquisitions are divided between acquirer and target. Thus, if the benefits are captured in toto by the target firm, the value of the acquirer should remain unaffected. Given their ability to expand for the first time, did the stock market view the four large Chicago holding companies as primed to "take advantage" of the opportunity to gather for themselves the potential benefits associated with additional bank acquisitions?

Methodology

The Sharpe market model is an empirical representation of security returns consistent with the Capital Asset Pricing Model, an economic theory of capital market equilibrium.[4] Despite the restrictive assumptions underlying

Figure 1
Illinois Banking Regions

Seventh District
portion of Illinois

where $\widetilde{R}_j(t)$ is the return on stock j in period t, $Rm(t)$ represents the return on a value-weighted market index in period t, and $\widetilde{u}_j(t)$ is the error term of the linear model. α and β are parameters to be estimated. The value of β_j, or beta, indicates the relative riskiness of the stock in comparison with the market as a whole.

As it appears above, equation (1) represents a single-index market model of the return generating process which controls for marketwide influences on security returns. It is likely, however, that returns on different securities in the same industry are highly correlated. To adjust for industrywide as well as general economic movements, an equal-weighted bank stock index (calculated to be uncorrelated with the market index) was added to equation (1), above.

Thus, the return generating equation used as a base to detect variations from normal return patterns takes the form

$$\widetilde{R}_j(t) = \widetilde{a}_j + \beta_{1j}\widetilde{R}m(t) + B_{2j}\widetilde{R}I(t) = \widetilde{u}_j(t) \qquad (2)$$

where $RI(t)$ represents the return on a bank stock index uncorrelated with the market index; all other notation remains the same. β_2 can be interpreted to represent the relative riskiness of a particular bank stock in comparison with the banking industry as a whole.

Equation (2), then, is used to generate returns for the shares of Continental Illinois, First Chicago, Northern Trust, and Harris, given returns to the market and industry indexes. This formulation represents the normal return process. *Abnormal* returns (which may be thought of as prediction errors) are defined as

$$PE_j(t) = R_j(t) - \alpha_j - \hat{\beta}_{1j}Rm(t) - \hat{\beta}_{2j}RI(t) \qquad (3)$$

where *PE(t)* represents the difference between the *actual* return in period T and the return that would be expected given the parameters estimated for equation (2). The *PEs* are assumed to have a mean of zero and to fluctuate randomly in the absence of any specific event which might cause them to take a distinct pattern. Figure 2 is a stylized graphical presentation of *PE* patterns reflecting different events that have impacts on such patterns.

the model, it has been found useful in event studies involving the impact of new information on market returns.[5]

The model, simply put, is a regression model of form

$$\widetilde{R}_j(t) = \alpha_j + \beta_j\widetilde{R}m(t) = \widetilde{u}_j(t) \qquad (1)$$

Interpretation of prediction errors around an event date

This graph implicitly supports a technical analyst's view of the world since it says that it takes a while to adjust stock prices after the appearance of new information.

cumulative production errors
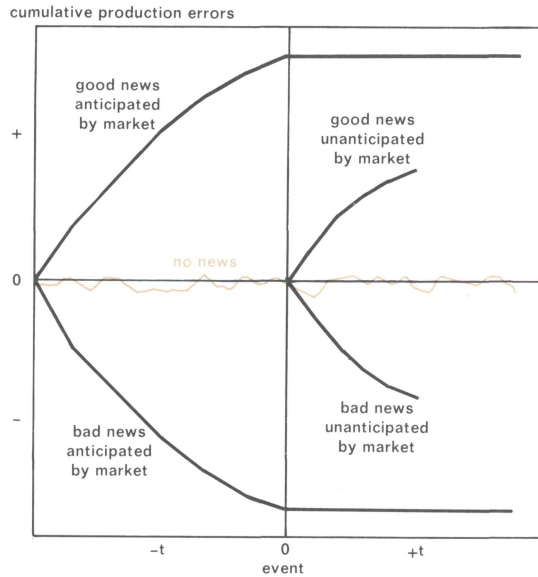
In order to ensure that the estimation of parameters α, β_1 and β_2 are free from "contamination" resulting from anticipatory effects of the Act, these coefficients are estimated using daily return data for the period January 1, 1980 to December 31, 1980. In addition, a buffer period is set aside from January 1, 1981 to March 24, 1981. The analysis of abnormal returns is performed during the interim March 25, 1981 to January 1, 1982, the effective date of the Act. March 25 represents the date of the first reading of the bill in the Illinois legislature that ultimately became the Act. (See box.)

Abnormal returns were tested for significance around three event dates: first reading of the bill, passage of the bill by both houses of the legislature, and the signing of the bill into law by the Governor. The hypothesis tested for each of these dates was whether stock returns to holding the Chicago-based BHCs were abnormally high. If the returns were not abnormally high, the relevant inference is that passage of the Act was neutral with respect to its effect on the valuation of these BHCs in the eyes of the market. However, should the pattern of returns to the BHCs be abnormally high, the implication is that these large BHCs

were perceived to benefit by the Act. There is also the possibility that shifts in risk may be associated with the event dates in question. Risk shifts are also tested for significance.

An analysis of the results of the tests indicates that the model used to generate returns to BHC shareholders adequately captures the risk and return characteristics of the holding companies under study. In all cases, the risk measures, or betas ($\hat{\beta}_1$ and $\hat{\beta}_2$), are highly significant. (See Table 1.) With the exception of First Chicago, the industry beta estimate ($\hat{\beta}_2$) is more significant than the market beta estimate ($\hat{\beta}_1$), indicating the importance of the industry factor in the return generating process in banking.

We next tested for significant abnormal returns for each of the four BHCs at time periods surrounding the major events associated with enactment of the Act (first reading, pas-

Time Line

There are three periods of interest in the study of the stock market's reaction to the change in Illinois banking law. First, the Estimation Period (1/1/80-12/31/80) in which the parameters of the return generating model are estimated for each of the four BHC stocks under consideration. Second, a Buffer Period (1/1/81-3/24/81) is set aside. This is to ensure that consideration of the Act by the legislature did not affect the estimation of the parameters of the return generating model. Finally, the Analysis Period (3/25/81-1/1/82) may be subdivided into three timeframes—the Assignment Period, when the bill that was to become the Act was first read in the legislature and assigned; the Legislative Period, during which the bill was passed by both houses of the legislature; and the Enactment Period, representing the time from passage to gubernatorial approval.
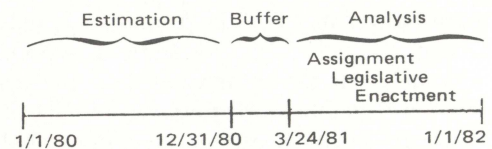
Table 1
Statistical results for capital market models

Multiple regression models for each company

Parameters	Estimates	Standard Error	t^*-Value (H_0: Parameter=0)	Probability > |t^*|	R^2 (Adjusted R^2)[a]	Overall F Value (Probability > | F |)
1. Continental (n=260)						
$\hat{\alpha}$	−0.0000	0.0009	−0.11	0.9107	32.07%	39.48
$\hat{\beta}_1$	0.6288	0.0815	7.72	0.0001	(31.55%)	(.0001)
$\hat{\beta}_2$	0.7834	0.0993	7.89	0.0001		
2. First Chicago (n=260)						
$\hat{\alpha}$	−0.0004	0.0013	−0.32	0.7458	21.27%	29.21
$\hat{\beta}_1$	0.7454	0.1209	6.17	0.0001	(20.66%)	(.0001)
$\hat{\beta}_2$	0.8288	0.1473	5.63	0.0001		
3. Harris (n=260)						
$\hat{\alpha}$	0.0001	0.0009	0.06	0.9549	13.31%	24.82
$\hat{\beta}_1$	0.2471	0.0868	2.85	0.0048	(12.49%)	(.0001)
$\hat{\beta}_2$	0.5891	0.1058	5.57	0.0001		
4. Northern Trust (n=260)						
$\hat{\alpha}$	0.0000	0.0006	0.04	0.9700	16.29%	17.41
$\hat{\beta}_1$	0.2317	0.0536	4.33	0.0001	(15.67%)	(.0001)
$\hat{\beta}_2$	0.3661	0.0652	5.61	0.0001		

[a]The adjusted R^2 corrects for the number of independent variables in the model. The general formula used to make this adjustment is $R_a^2 = 1 - \left(\frac{n-1}{n-p}\right)\left(\frac{SSE}{SSTO}\right)$, where n and p are the number of observations and parameters, respectively.

sage by both houses, and Governor approval). In only one instance was the abnormal return significantly positive (at the 0.10 level of significance). By virtue of the preponderance of the empirical evidence, it is clear that shareholder wealth positions were unaffected by the Act.

The lack of any return change, however, does not preclude a change in the market valuation of bank risk. That is, $\hat{\beta}_1$ and/or $\hat{\beta}_2$ may have been affected. Tests for shifts in systematic risk between the estimation and analysis periods were unable to distinguish any significant changes in risk, with one exception. Risk as measured relative to both the market ($\hat{\beta}_1$)

and industry ($\hat{\beta}_2$) increased significantly in the analysis period for Harris. No specific reason for this reaction is manifest, and none will be conjectured.

Conclusions

The present case study of four, large BHCs considered likely to benefit from a change in banking structure law leads to the conclusion the stock market did not perceive these large holding companies as being able to achieve any significant net benefits from passage of what is, in effect, a liberalized branching law. Questions remain as to why the market reacted as it did. One distinct possi-

bility is that antitrust restrictions were viewed as a substantial impediment to the creation of monopoly power through acquisition by the large banking organizations. If this is a major cause for the results of the study it would confirm the potency of antitrust restrictions as presently construed by the bank regulatory agencies and the Department of Justice. More corroborative evidence is needed to validate this conjecture. Yet, if antitrust remains potent in the eyes of the market, such a finding would have broad implications relative to the ongoing debate on geographic banking deregulation at the state level and interstate.

Aside from possible antitrust inhibitions, it is possible that the market did not view the ability to acquire additional banks in a fairly narrowly specified area of the state as facilitating the achievement of economies of scale or scope. It might well be that the four large holding companies with which the study is concerned have exhausted possible scale economies. As for scope economies, the prospect of an acquisition of an additional bank would not appear to broaden significantly the product offerings of the BHCs so as to achieve significant complementarities.

Yet another possible explanation of the results lies in the respective bargaining positions of the BHCs studied and those banks that might have been viewed as likely targets for acquisition. If the benefits flowing from an acquisition are captured by the target, then there is little reason to believe that the value of the acquiring institution will be enhanced. As we noted at the outset, overpriced small banks were viewed as a reason why Illinois BHCs took a cautious approach to the broadened acquisition opportunities. Perhaps one reason why these smaller banks demanded rather healthy premiums resulted from the fact that the Illinois legislation prohibited BHCs from expanding *de novo* through the establishment of new banks. Therefore, the only means available for expansion was through the acquisition of already existing banks. The effect of the *de novo* prohibition would be to preserve the franchise value of existing banks. One means

of ascertaining whether acquisition benefits were expected to be captured by the smaller Illinois banks (i.e., the banks most likely to be acquisition targets) is to test for abnormally high returns for a sample of small bank stocks around the specific event dates associated with passage of the Act in much the same fashion as we have done for the four largest BHCs.

Whether or not current antitrust proscriptions are adequate to effectively control excessive concentration upon the dismantling of barriers to interstate banking is a significant issue. The results reported here of the wealth effects of a limited dismantling of geographic restrictions is encouraging in affirming the potency of antitrust to the extent that such restrictions may have inhibited the creation of monopoly power in specific markets.

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[1] For a detailed discussion of the legislation amending the Illinois Bank Holding Company Act to permit acquisitions of additional banks in a holding company's home region or region contiguous thereto, see: Douglas H. Ginsberg, "Interpreting the 1981 Amendments to the Illinois Bank Holding Company Act," *Loyola University of Chicago Law Journal* (Fall 1981). Although the amendments contain other provisions, the significance of the Act for our purposes rests with BHCs' new authority to expand beyond one full-service office.

[2] Sue F. Gregorash, "First Year Experience: Illinois Multibanks Shop Carefully," *Economic Perspectives*, Federal Reserve Bank of Chicago (May/June 1983).

[3] See P.O. Steiner, *Mergers*, Chapter 2 (University of Michigan Press: Ann Arbor 1975).

[4] The Sharpe market model is presented in William F. Sharpe, "A Simplified Model for Portfolio Analysis," *Management Science* (January 1963). A good discussion of the Capital Asset Pricing Model is found in William F. Sharpe, *Portfolio Theory and Capital Markets*, NY: McGraw-Hill, Inc. (1970).

[5] See: Stephen J. Brown and Jerold B. Warner, "Measuring Security Price Performance," *Journal of Financial Economics* (September 1980) and G. William Schwert, "Using Financial Data to Measure the Effect of Regulation," *Journal of Law and Economics* (1981).