



---

Regional Research Institute Publications and  
Working Papers

Regional Research Institute

---

1996

# External Ownership and Bank Lending Behavior: Empirical Evidence Using Control Group Methods

Andrew Isserman

Kimberly Dinjar Mencken

Follow this and additional works at: [https://researchrepository.wvu.edu/rri\\_pubs](https://researchrepository.wvu.edu/rri_pubs)

 Part of the [Regional Economics Commons](#)

---

External Ownership and Bank  
Lending Behavior: Empirical Evidence  
Using Control Group Methods

by

**Andrew Isserman and Kimberly Dinjar Mencken**

RESEARCH PAPER 9624

Regional Research Institute  
West Virginia University  
P.O. Box 6825  
Morgantown, WV 26506-6825

Paper presented at the annual meeting of the British/Irish Section  
of the Regional Science Association International,  
Edinburgh, Scotland, September 23-25, 1996

**ABSTRACT:** As banking systems have become more integrated on both the international and national scales, banks in peripheral regions have been purchased by larger banks headquartered outside those regions. These externally controlled banks allegedly siphon funds from the regions by taking deposits but curtailing their lending activity. Such a practice would retard regional economic development efforts by making it more difficult for local businesses and residents to obtain commercial and industrial loans.

West Virginia is an ideal place to study whether lending behavior changes following bank takeovers, because it was closed to external bank ownership (interstate banking) until 1988. To test the hypothesis that external ownership leads to reduced lending, this research matches the externally owned banks to a control group of local, independent banks. Then it compares the lending behavior of the two groups to determine whether there are statistically significant differences. The results provide almost no evidence in support of the contentions of local economic developers. In fact, on several measures the external banks are more active lenders than the local banks. The nature of the data precludes, however, eliminating the possibility that external banks are siphoning funds out of the region through systematic bias in their lending within the data categories.

## Introduction

Major changes have occurred in the United States banking system. Interstate banking has permitted bank-holding companies from one state to own and operate banks and bank-holding companies in other states. Banks have merged, and many locally owned, independent banks have been absorbed into multi-bank holding companies. Consequently, there are now 2,810 fewer banks than a decade ago—11,595 in 1994 compared to 14,405 in 1985. The sharpest decline has been in the number of independent, locally owned banks.

This paper focuses on the relationship between external ownership of a bank and its lending behavior. External control might lead to reduced local lending, particularly for commercial and industrial activities. Thus, external control might retard local economic development. This fear is strongest in rural and peripheral regions. Local leaders argue that externally controlled banks siphon funds from the area, taking the deposits of local residents but investing their money in other places where rates of return are higher. Also, the local banker might be replaced by a corporate manager, who has no commitment to the local area and is less willing to lend based on personal knowledge of local residents and opportunities. Hence, local businesses and residents will find it more difficult to obtain loans (Dunham, 1986; Markley, 1987).

Yet external control in banking can lead to increased local lending. Large bank-holding companies have the technical capacity needed to construct innovative and complex financial packages, while some smaller banks lack the expertise to engage in commercial lending at all (Boggs, Sorenson, and Isserman, 1988). Also, holding companies with banks in different regions can have a more diversified loan portfolio, which both reduces their risk and enables them to be more active in local commercial lending.

These arguments echo the larger literature on external ownership and regional development, although that literature focuses primarily on manufacturing branch plants, despite the growing importance of services (Begg, 1993; Goe, 1990). The literature argues that external acquisition will result in spatial functional specialization within the firm, with the key control functions being transferred to the home office (Leigh and North, 1978; Harris, 1988; Ashcroft, 1988; Ashcroft and Love, 1989; Schackmann-Fallis, 1989)—a practice referred to as back officing in the producer services literature (Glasmeier and Howland, 1994). Local offices offer less complex services and have less control over the products offered in the local market. In terms of banking, decision making for commercial loans is taken out of the hands of the local bank office and placed in a remote home office. Yet external control can give firms access to more financial capital and technical expertise (Leigh and North, 1978; Ashcroft and Love, 1988; Love, 1990). Thus, the acquired banks may have more funds to lend and may offer more technical support and business assistance to those seeking loans.

This paper presents empirical evidence on the effects of the takeover of local banks. West Virginia, a state with 1.8 million residents, offers a natural experiment to help answer these questions. West Virginia prohibited interstate banking until 1988. Thus, it is an ideal place to study how lending behavior changes following a takeover by an externally owned bank-holding company.

In the research to follow, the externally owned banks are matched to a control group of local banks to determine the effects of external ownership. This control group method is adapted

from one developed at the Regional Research Institute to study regional growth (see Isserman and Beaumont 1989; Isserman, 1994; Isserman and Rephann, 1995; Rephann and Isserman, 1994). The results provide almost no evidence in support of the fears of local economic developers.

### The West Virginia Study Area

West Virginia provides an important case study for several reasons (Boggs, Sorenson, and Isserman, 1988). The state is rural, with an historically lagging, resource-based economy. Until recently it was dominated by coal mining and branch plant heavy manufacturing. The only state entirely within Appalachia, it is a prototype of the peripheral, externally dominated region. West Virginia did not permit any branch banks until 1969, when banks were allowed to have one branch office near their main bank building to accommodate drive-in banking. In 1984, banks were permitted to have branches anywhere within the county of the home office, and, in December 1986, anywhere within the state. Finally, in response to changes in federal bank regulations, West Virginia permitted interstate banking effective January 1, 1988. For the first time, a bank or holding company headquartered outside West Virginia could acquire a West Virginia bank or bank holding company.

Today West Virginia banks fall into three categories, which will be used in this study. *Local* banks are independent or held by a single-bank holding company. *Regional* banks are held by in-state, multi-bank holding companies; thus, they are externally owned from a local perspective but still owned within the region. *External* banks are held by multi-bank holding companies headquartered outside West Virginia..

Before interstate banking, West Virginia banks differed greatly from national averages, but by 1994 they were similar to U.S. banks. Table 1 highlights several important balance sheet measures for West Virginia and U.S. banks in 1985 and 1994. Because U.S. banks now hold a greater percentage of their assets in securities, West Virginia banks differ little. Because West Virginia banks now hold a greater percentage of assets in loans, particularly commercial and industrial loans, those gaps are closed, too. These changes mean higher loan to deposit ratios for the West Virginia banks, but also higher loans losses as a percent of loans.

Table 1. Selected Balance Sheet Measures: West Virginia and U.S. Banks

	1985		1994	
	WV	US	WV	US
Percentage of Assets Held in:				
Securities	34.6%	16.1%	30.0%	27.6%
Loans	49.9%	58.9%	60.8%	61.2%
Commercial and Industrial	8.8%	21.1%	18.1%	18.2%
Real Estate	22.0%	16.1%	26.5%	25.2%
Individuals	17.6%	7.1%	15.4%	14.4%
Equity Capital/Assets	8.9%	6.2%	9.6%	8.7%
Loans/Deposits	58.3%	75.9%	74.4%	77.5%
C&I Loans/Deposits	10.3%	24.9%	22.1%	23.0%
Loans Losses/Loans	0.66%	1.25%	1.42%	1.77%

## The Quasi-Experimental Control Group Method

This research compares the lending behavior of the external, regional, and local banks. By 1994 there were 116 banks that had existed in 1984. Among them were 64 local banks, 29 regional banks, and 23 external banks. In control group language, the 64 independent local banks constitute the potential control reservoir. Each external bank is matched to an independent bank. The effects of external ownership are then isolated as the differences in lending behavior between the external banks and their control group of local banks. The effects of regional versus local ownership are isolated in the same way using a control group for the regional banks.

### Selecting the Control Groups

The control groups of local banks are chosen by their similarity to the external and regional banks prior to the onset of interstate banking. On the basis of its size and capacity, its banking orientation and strategy, and local demand conditions, each external and regional bank is paired with a bank that remained independent after 1987. The variables used to match the banks are shown in Table 2. The first eight variables come from balance sheets and income statements of the banks. The remaining seven describe market conditions faced by the bank. The data are mostly for 1987, but a few measure changes between 1984 and 1987. Although all the variables are reasonable indicators of lending behavior, they do not constitute a rigorous theory of bank lending behavior. In fact, because there is no firmly established theory, the control group approach is a good choice. A tightly specified theory, in contrast, should be modeled directly.

---

Table 2. Variables Used to Identify Bank Control Groups

---

#### **Bank Size and Capacity**

Deposits, 1987  
 Commercial and Industrial Loans, 1987  
 % Share of All County Deposits, 1987  
 % Change in Assets, 1984-87

#### **Bank Orientation and Strategy**

Loan/Deposit Ratio, 1987  
 % Change in Commercial and Industrial Loans, 1984-87  
 Loan Losses/Loans Ratio, 1987  
 Retained Earnings/Asset Ratio, 1987

#### **Local Demand**

% Change in County Income, 1984-87  
 County Per Capita Income, 1987  
 Proprietors Income as % of Total Income (nonfarm), 1987  
 % Employment in Manufacturing, 1987  
 % Employment in Mining, 1987  
 % Employment in Construction, 1987  
 % Employment in Services, 1987

---

Larger banks tend to have larger, more specialized staffs, which permit them to offer more services and to engage in riskier activities, such as commercial and industrial lending, which require more technical expertise. Deposits is a good measure of bank size. The volume of commercial and industrial loans measures the extent to which a bank has decided to build the capacity for such lending. The percent share of county deposits measures the degree of competition that a bank faces in the local market. The percent change in assets measures how aggressively the bank is seeking and achieving growth.

The loan to deposit ratio measures the bank's orientation toward lending instead of investing in securities; it is scaled to the size of the bank. The percentage change in commercial and industrial loans measures the banks' growing or declining interest in this activity. Loan losses relative to loans measures how willing the bank has been to make risky loans. The retained earnings to assets ratio is a measure of the bank's capitalization.

The remaining variables measure conditions in the bank's local area. The percentage change in income measures growth and the potential availability of funds. Per capita income measures the wealth of the county. Proprietors' income as a share of total income reflects the presence of entrepreneurial activity and small businesses, typically customers for loans. Mining and manufacturing are sectors that tend to borrow less from local banks because their activities are financed by their parent companies, often from retained earnings. Those sectors have also declined considerably within West Virginia, so counties dependent on them are more likely to be lagging loan markets. The presence of relatively large construction and service sectors signals the opposite, namely, growth and lending opportunities.

Matching the 23 external banks with the most similar of the 69 local banks entails measuring the difference between each external bank and each local bank for each of the 15 variables. These 15 differences are then combined into a single distance metric to measure the overall difference between the two banks. The distance measure is the Mahalanobis metric:

$$d(\mathbf{x}_X, \mathbf{x}_L) = (\mathbf{x}_X - \mathbf{x}_L)^T \mathbf{S}^{-1} (\mathbf{x}_X - \mathbf{x}_L),$$

where  $\mathbf{x}_X$  is a vector of values for the external bank,  $\mathbf{x}_L$  is a vector of values for the local bank, and  $\mathbf{S}$  is the variance-covariance matrix for all the local banks. Thus the weight assigned to each variable depends on the variability of the data. In essence, the Mahalanobis metric forgives differences in variables that have large variances—recognizing that it is relatively hard to find a close match.

Each external bank is matched to its closest twin so that the group of selected local banks is as much like the group of external banks as possible. In other words, the sum of the Mahalanobis distances between each external bank and its twin is the minimum possible. This minimum is found using an optimal matching routine based on network flow algorithms (Rosenbaum, 1989). Essentially the optimal matching program resolves conflicts that arise when two or more external banks have the same most similar local bank. Some banks are assigned their second, third, or next most closely matched banks, but in a manner that makes the two groups of banks as similar as possible.

#### Measuring Differences between External and Local Banks

The effect of external ownership is measured by comparing the two groups of banks in 1994, five years after interstate banking began. Ideally, the control group selection process

produced two groups of banks that were identical in 1987. Significant mean differences between the two groups in 1994 (as measured by a t-test) are then ascribed to the effect of external ownership. Since the literature argues that external ownership may increase or decrease lending, two-tailed tests are appropriate. To summarize with an example, if the external banks have smaller mean increases in commercial and industrial lending than the local banks, the findings will support contentions that external ownership retards local lending.

Note the caveat that *ideally* the banks were identical before interstate banking began. This ideal will not be met if there is selection bias in the bank merger or acquisition process. For instance, if banks that are more aggressive lenders or are larger are more likely to be purchased or merged into interstate holding companies, there will be differences between the two groups of banks before interstate banking—despite the efforts to match banks. To guard for this possibility and to take it into account when drawing conclusions, mean differences between the two groups of banks are measured both before and after interstate banking, that is, in 1987 and 1994.

### **The Data**

One primary data source provides information on the banks, another on the counties in which they are located. The bank information comes from the Federal Deposit Insurance Corporation (FDIC) and includes the banks' annual reports of condition (balance sheets) and their reports of income (income statements). These data are submitted quarterly to the FDIC by all banks in the country. Although requirements for the reports differ somewhat by bank asset size, all variables used here are directly comparable among reports. The reports of condition are snapshots of the assets and liabilities on the date of the report. The reports of income are cumulative, so the fourth quarter report shows all income and expenses incurred during the entire year. The loan and lease financing receivables report, which is part of the report of condition, gives a detailed listing of the types of loans and leases held by the bank, such as real estate loans, commercial loans, and personal loans (e.g., mortgage or automobile loans).

The county data come from the Regional Economic Information System (REIS) of the Bureau of Economic Analysis (BEA). REIS includes annual data from 1969 to 1994 for income, employment, and population for the roughly 3,200 U.S. counties. Such data are not available on a finer geographical scale, but counties are perhaps the most reasonable approximation of a bank's local lending area. West Virginia's long-time restriction of banks to one county supports that contention.

### **Control Group Test Results**

The statistical tests on lending behavior focus on seven sets of variables:

- deposits
- loans
- commercial and industrial loans
- loans relative to deposits
- commercial and industrial loans relative to deposits
- commercial and industrial loans relative to loans
- the bank's share of county deposits.

External ownership can harm the local economy if external banks lend less than local banks and, even more so, if they grow faster and dominate the local banking industry as well. The 1987 level, the 1994 level, the change between 1987 and 1994, and the percentage change are examined for each set of variables. The 1987 value serves to identify any selection bias. The t-test is used to identify statistically significant differences with a 10% significance level as the criterion for significance. Non-residential real estate loans are included with commercial and industrial loans, because the combined variable gives a better measure of business lending activity.

#### External versus Local Banks

Very few statistically significant differences exist between the external banks and their control group of local banks. Of the 28 variables shown in Table 3, only two have significantly different means. The banks that were to become externally owned devoted a larger share of their loan portfolios to commercial and industrial loans in 1987, that is, *before* interstate banking. Thereafter, they had a decline in that share, while local banks had an increase. Hence, by 1994 there was no longer a statistically significant difference between external and local banks in the commercial and industrial loan share.

The results do not support contentions that external ownership leads to less lending in the local economy. In fact, the loan to deposit ratio, a measure of loan activity scaled by bank size, is higher for external banks and has increased more for external banks, although the difference is not statistically significant. In aggregate terms, the external banks are larger and lend more, but again the mean differences are not statistically significant.

The failure to find statistically significant differences between the two groups of banks underscores an important point. Individual banks vary greatly in their behavior. External ownership apparently is not a dominant factor in predicting bank behavior. After matching banks on the basis of their size and capacity, their orientation and strategy before takeover, and their local demand context, there are no important differences in the lending behavior of external and local banks. The pre-takeover difference in loan composition disappears, making the two groups of banks more similar.

#### Regional versus Local Banks

When the comparison is repeated for regional and local banks, the outcome again is few statistically significant differences. There are five exceptions (Table 4). The regional banks have a higher loan to deposit ratio, as well as greater absolute and percentage increases in that ratio. These results mean that regional banks are more active lenders than local banks. They also had a greater percentage growth in loans. As was the case for external banks, the commercial and industrial share of all loans declined for the regional banks, while it grew for the local banks. Yet the regional banks still do more commercial lending as a proportion of deposits, although the difference is not statistically significant. In short, this analysis finds no evidence that the regional banks lend less than local ones.



Table 3. Lending Behavior of External Banks and their Local Bank Control Group (n=23)

Variable	Mean Local	Mean External	External Difference	t-stat	Prob. t
Deposits 87	63,864	98,994	35,131	1.26	0.215
Deposits 94	145,276	228,905	83,629	0.69	0.492
Change in Deposits	81,412	129,911	48,499	0.49	0.625
% Change in Deposits	71%	65%	-5%	-0.16	0.870
Loans 87	40,053	66,393	26,340	1.28	0.215
Loans 94	106,234	182,092	75,857	0.76	0.450
Change in Loans	66,181	115,699	49,518	0.60	0.550
% Change in Loans	91%	101%	10%	0.27	0.787
Commercial and Industrial Loans 87	11,846	24,432	12,585	1.54	0.135
Commercial and Industrial Loans 94	38,958	56,033	17,075	0.50	0.619
Change in C&I Loans	27,112	31,602	4,490	0.16	0.870
% Change in C&I Loans	175%	90%	-86%	-1.16	0.254
Loan/Deposit Ratio 87	0.606	0.615	0.009	0.21	0.830
Loan/Deposit Ratio 94	0.659	0.714	0.055	1.42	0.163
Change in Loan/Deposit Ratio	0.053	0.098	0.045	1.27	0.210
% Change in Loan/Deposit Ratio	11%	25%	15%	1.41	0.169
C&I Loan/Deposit Ratio 87	0.153	0.196	0.043	1.64	0.106
C&I Loan/Deposit Ratio 94	0.180	0.203	0.023	0.90	0.371
Change in C&I Loan/Dep. Ratio	0.027	0.006	-0.021	-0.97	0.335
% Change in C&I Loan/Dep. Ratio	60%	23%	-37%	-1.03	0.307
<b>C&amp;I Loans/Loans Ratio 87</b>	<b>0.252</b>	<b>0.316</b>	<b>0.064</b>	<b>1.77</b>	<b>0.081</b>
C&I Loans/Loans Ratio 94	0.285	0.288	0.003	0.09	0.930
<b>Change in C&amp;I Loan/Loans Ratio</b>	<b>0.033</b>	<b>-0.028</b>	<b>-0.061</b>	<b>-1.97</b>	<b>0.056</b>
% Change in C&I Loan/Loans Ratio	35%	2%	-33%	-1.55	0.128
Share of County Deposits 1987	0.331	0.406	0.075	0.88	0.384
Share of County Deposits 1994	0.331	0.413	0.082	0.88	0.383
Change in County Share	0.000	0.007	0.006	0.22	0.827
% Change in County Share	-5%	-2%	3%	0.28	0.782

Note: Boldface means significant at the 10% level or better.

Table 4. Lending Behavior of Regional Banks and their Local Bank Control Group (n=29)

Variable	Mean Local	Mean Regional	Regional Difference	t-stat	Prob. t
Deposits 87	66,646	90,327	23,681	0.96	0.340
Deposits 94	136,769	165,206	28,437	0.41	0.682
Change in Deposits	70,123	74,879	4,756	0.09	0.927
% Change in Deposits	63%	97%	34%	0.95	0.347
Loans 87	39,498	59,021	19,524	1.10	0.278
Loans 94	95,669	130,300	34,631	0.62	0.535
Change in Loans	56,171	71,278	15,107	0.36	0.725
<b>% Change in Loans</b>	<b>78%</b>	<b>142%</b>	<b>63%</b>	<b>1.73</b>	<b>0.080</b>
Commercial and Industrial Loans 87	11,319	17,919	6,600	1.02	0.310
Commercial and Industrial Loans 94	33,769	35,446	1,677	-0.08	0.936
Change in C&I Loans	22,450	17,527	-4,923	-0.29	0.770
% Change in C&I Loans	133%	171%	38%	0.65	0.519
Loan/Deposit Ratio 87	0.574	0.618	0.044	1.31	0.197
<b>Loan/Deposit Ratio 94</b>	<b>0.618</b>	<b>0.764</b>	<b>0.146</b>	<b>3.75</b>	<b>0.000</b>
<b>Change in Loan/Deposit Ratio</b>	<b>0.044</b>	<b>0.146</b>	<b>0.102</b>	<b>3.26</b>	<b>0.002</b>
<b>% Change in Loan/Deposit Ratio</b>	<b>8%</b>	<b>27%</b>	<b>18%</b>	<b>2.97</b>	<b>0.004</b>
C&I Loan/Deposit Ratio 87	0.134	0.160	0.026	1.06	0.293
C&I Loan/Deposit Ratio 94	0.162	0.180	0.018	0.75	0.457
Change in C&I Loan/Dep. Ratio	0.027	0.020	-0.007	-0.40	0.690
% Change in C&I Loan/Dep. Ratio	37%	40%	3%	0.14	0.891
C&I Loans/Loans Ratio 87	0.230	0.254	0.024	0.72	0.477
C&I Loans/Loans Ratio 94	0.264	0.236	-0.028	-0.88	0.380
<b>Change in C&amp;I Loan/Loans Ratio</b>	<b>0.033</b>	<b>-0.018</b>	<b>-0.051</b>	<b>-2.10</b>	<b>0.040</b>
% Change in C&I Loan/Loans Ratio	32%	7%	-25%	-1.50	0.138
Share of County Deposits 1987	0.412	0.474	0.062	0.81	0.425
Share of County Deposits 1994	0.403	0.480	0.077	0.95	0.347
Change in County Share	-0.009	0.005	0.014	0.65	0.516
% Change in County Share	-5%	-2%	3%	0.28	0.782

Note: Boldface means significant at the 10% level or better.

External versus Regional Banks

Conceivably there are differences between external and regional ownership. This possibility can be examined by selecting a control group of regional banks for the external banks. Only two statistically significant differences result (table 5). The regional banks are more active lenders as measured by the loan to deposit ratio and the percent change in commercial loans, but there are no significant differences in their commercial loan to deposit ratios.

Table 5. Lending Behavior of External Banks and their Regional Bank Control Group (n=23)

Variable	Mean Regional	Mean External	External Difference	t-stat	Prob. t
Deposits 87	99,913	98,994	-918	-0.02	0.981
Deposits 94	188,362	228,905	40,543	0.36	0.721
Change in Deposits	88,449	129,911	41,462	0.50	0.624
% Change in Deposits	112%	65%	-47%	-1.09	0.284
Loans 87	65,723	66,392	669	0.02	0.981
Loans 94	149,766	182,092	32,326	0.34	0.773
Change in Loans	84,043	115,699	31,656	0.44	0.661
% Change in Loans	162%	101%	-62%	-1.48	0.145
Commercial and Industrial Loans 87	21,049	24,432	3,383	0.32	0.748
Commercial and Industrial Loans 94	42,096	56,033	13,937	0.49	0.631
Change in C&I Loans	21,047	31,602	10,555	0.52	0.610
<b>% Change in C&amp;I Loans</b>	<b>199%</b>	<b>90%</b>	<b>-109%</b>	<b>-1.92</b>	<b>0.069</b>
Loan/Deposit Ratio 87	0.619	0.615	-0.004	0.09	0.929
<b>Loan/Deposit Ratio 94</b>	<b>0.781</b>	<b>0.714</b>	<b>-0.067</b>	<b>-1.88</b>	<b>0.066</b>
Change in Loan/Deposit Ratio	0.162	0.098	-0.064	-1.66	0.102
% Change in Loan/Deposit Ratio	29%	26%	-4%	-0.37	0.714
C&I Loan/Deposit Ratio 87	0.176	0.196	0.020	0.68	0.498
C&I Loan/Deposit Ratio 94	0.198	0.203	0.005	0.19	0.848
Change in C&I Loan/Dep. Ratio	0.022	0.006	-0.016	-0.68	0.502
% Change in C&I Loan/Dep. Ratio	46%	23%	-23%	-0.93	0.359
C&I Loans/Loans Ratio 87	0.279	0.316	0.037	0.98	0.331
C&I Loans/Loans Ratio 94	0.257	0.288	0.031	1.04	0.303
Change in C&I Loan/Loans Ratio	-0.022	-0.028	-0.006	-0.19	0.853
% Change in C&I Loan/Loans Ratio	10%	2%	-8%	-0.50	0.620
Share of County Deposits 1987	0.485	0.406	-0.079	-0.93	0.356
Share of County Deposits 1994	0.495	0.413	-0.082	-0.94	0.354
Change in County Share	0.010	0.006	-0.004	-0.16	0.879
% Change in County Share	4%	-2%	-6%	-0.80	0.431

Note: Boldface means significant at the 10% level or better.

### External and Regional versus Local Banks

One reason for the paucity of statistically significant differences may be the small number of banks in each group. Combining the external and regional banks into one *non-local* group compensates for this problem, although at the cost of less close matches. For this analysis, each of the 52 external or regional banks receives a twin from among the 64 local banks, whereas previously their best matches were made as 23 or 29 out of 64 possibilities.

Two important conclusions flow from the 14 statistically significant differences between the local and non-local banks (Table 6). First, there is strong evidence of selection bias. The banks that became non-local were different from the banks that remained local. The local banks were smaller and made fewer loans in absolute terms and relative to deposits. They also made fewer commercial and industrial loans relative to deposits and total loans. Second, the non-local banks continued to lend more in absolute terms and relative to deposits. The non-local banks had greater percentage increases in loans and the loan to deposit ratio. The commercial loan share of all loans is the only case in which the local banks outperform the non-local ones; the share declined for the non-local banks and increased for the local ones. Note, however, that there is no difference between the two groups in the growth of commercial loans and that the non-local banks had faster growth in total loans.

### **Conclusion and Further Research**

This research has found virtually no evidence that external ownership leads to reduced lending. The strongest argument in favor of the reduced lending hypothesis is that, whereas the non-local banks had significantly more commercial loans than local banks before multi-bank, interstate banking, they no longer do so. Yet, although the difference is no longer statistically significant, the non-local banks continue to average more commercial loans and more absolute growth in commercial loans. In short, there is no convincing support for contentions that external ownership leads to less lending.

External ownership, nevertheless, may retard local economic development in a way that goes beyond the scope of this study. Implicit thus far has been an assumption that the loan portfolios within a category do not differ between the non-local and local banks. Yet maybe local businesses receive a smaller proportion of the commercial and industrial loans from the non-local banks. The data do not permit testing this assumption because they do not distinguish between loans for local and non-local activities. Thus, although non-local banks have higher loan to deposit ratios and commercial loan to deposit ratios, they might be doing less lending to local businesses. That possibility of such disguised disinvestment remains a question for future research.

Other lingering questions are methodological. How much is gained by using the control group approach instead of just comparing all the banks in each group? Also, how do the control group results differ from those obtainable through standard regression methods? Research continues on those questions, too.

Table 6. Lending Behavior of Non-local Banks and their Local Bank Control Group (n=52)

Variable	Mean Local	Mean Non-local	Non-local Difference	t-stat	Prob. t
<b>Deposits 87</b>	<b>56,252</b>	<b>94,161</b>	<b>37,909</b>	<b>2.14</b>	<b>0.035</b>
Deposits 94	105,915	193,381	87,466	1.49	0.137
Change in Deposits	49,663	99,220	49,557	1.09	0.276
% Change in Deposits	61%	83%	23%	1.00	0.322
<b>Loans 87</b>	<b>32,795</b>	<b>62,281</b>	<b>29,487</b>	<b>2.28</b>	<b>0.026</b>
<b>Loans 94</b>	<b>70,544</b>	<b>153,208</b>	<b>82,663</b>	<b>1.71</b>	<b>0.080</b>
Change in Loans	37,750	90,926	53,176	1.40	0.164
% Change in Loans	77%	124%	46%	1.92	0.057
<b>Commercial and Industrial Loans 87</b>	<b>9,013</b>	<b>20,800</b>	<b>11,787</b>	<b>2.39</b>	<b>0.019</b>
Commercial and Industrial Loans 94	23,377	44,552	21,175	1.31	0.194
Change in C&I Loans	14,363	23,752	9,389	0.73	0.464
% Change in C&I Loans	138%	135%	-3%	-0.06	0.949
<b>Loan/Deposit Ratio 87</b>	<b>0.562</b>	<b>0.617</b>	<b>0.055</b>	<b>1.96</b>	<b>0.052</b>
<b>Loan/Deposit Ratio 94</b>	<b>0.599</b>	<b>0.742</b>	<b>0.143</b>	<b>5.17</b>	<b>0.000</b>
<b>Change in Loan/Deposit Ratio</b>	<b>0.037</b>	<b>0.125</b>	<b>0.088</b>	<b>3.65</b>	<b>0.000</b>
<b>% Change in Loan/Deposit Ratio</b>	<b>10%</b>	<b>26%</b>	<b>17%</b>	<b>2.77</b>	<b>0.006</b>
<b>C&amp;I Loan/Deposit Ratio 87</b>	<b>0.137</b>	<b>0.176</b>	<b>0.039</b>	<b>2.21</b>	<b>0.029</b>
<b>C&amp;I Loan/Deposit Ratio 94</b>	<b>0.157</b>	<b>0.190</b>	<b>0.033</b>	<b>2.01</b>	<b>0.048</b>
Change in C&I Loan/Dep. Ratio	0.020	0.014	-0.006	-0.41	0.681
% Change in C&I Loan/Dep. Ratio	43%	33%	-10%	-0.54	0.588
<b>C&amp;I Loans/Loans Ratio 87</b>	<b>0.238</b>	<b>0.282</b>	<b>0.044</b>	<b>1.81</b>	<b>0.073</b>
C&I Loans/Loans Ratio 94	0.262	0.259	-0.003	-0.15	0.879
<b>Change in C&amp;I Loan/Loans Ratio</b>	<b>0.024</b>	<b>-0.023</b>	<b>-0.047</b>	<b>-2.48</b>	<b>0.015</b>
<b>% Change in C&amp;I Loan/Loans Ratio</b>	<b>29%</b>	<b>5%</b>	<b>-24%</b>	<b>-1.93</b>	<b>0.056</b>
Share of County Deposits 1987	0.398	0.444	0.046	0.82	0.413
Share of County Deposits 1994	0.396	0.450	0.054	0.91	0.364
Change in County Share	-0.001	0.006	0.007	0.47	0.641
% Change in County Share	-5%	0%	5%	0.89	0.377

Note: Boldface means significant at the 10% level or better.

## References

- Ashcroft, B. 1988. External Takeovers in Scottish Manufacturing: The Effect on Local Linkages and Corporate Functions. *Scottish Journal of Political Economy* 35:129-148.
- Ashcroft, B., and J.H. Love. 1989. Evaluating the Effects of External Takeover on the Performance of Regional Companies: The Case of Scotland, 1965 to 1980. *Environment and Planning A* 21:197-220.
- Begg, I. 1993. The Service Sector in Regional Development. *Regional Studies* 27:817-825.
- Boggs, B., D. Sorenson, and A. Isserman. 1988. *Commercial Bank Lending Patterns and Economic Development in West Virginia*. Berea, KY: Mountain Association for Community Economic Development.
- Dunham, C. 1986. Interstate Banking and the Outflow of Local Funds. *New England Economic Review* March/April: 7-19.
- Glasmeyer, A., and M. Howland. 1994. Service-Led Rural Development: Definitions, Theories, and Empirical Evidence. *International Regional Science Review* 16:197-229.
- Goe, W. Richard. 1990. Producer Services, Trade and the Social Division of Labour. *Regional Studies* 24:327-342.
- Hansen, N. 1994. The Strategic Role of Producer Services in Regional Development. *International Regional Science Review* 16:187-196.
- Harris, R.I.D. 1988. Market Structure and External Control in the Regional Economies of Great Britain. *Scottish Journal of Political Economy* 35:334-360.
- Isserman, A. 1994. A Family of Geographical Control Group Methods for Regional Research. *Research Paper 9436* Regional Research Institute, West Virginia University
- Isserman, A., and P. Beaumont. 1989. Quasi-experimental Control Group Methods for the Evaluation of Regional Economic Development Policy. *Socio-Economic Planning Sciences* 23: 39-53.
- Isserman, A., and T. Rephann. 1995. The Economic Effects of the Appalachian Regional Commission: An Empirical Assessment of 26 Years of Regional Development Planning. *Journal of the American Planning Association* 61,3:345-364.
- Leigh, R., and D.J. North. 1978. Regional Aspects of Acquisition Activity in British Manufacturing Industry. *Regional Studies* 12:227-245.
- Love, J.H. 1989. External Takeover and Regional Economic Development: A Survey and Critique. *Regional Studies* 23:417-429.
- Markley, Deborah. 1987. Impacts of Banking Deregulation on Rural Capital Markets: Evidence from Virginia and Tennessee. *Review of Regional Studies* 17,3:14-22.
- Myrdal, Gunnar. 1957. *Economic Theory and Underdeveloped Regions*. London: Gerald Duckworth.
- Schackmann-Fallis, K.P. 1989. External Control and Regional Development Within the Federal Republic of Germany. *International Regional Science Review* 12:245-261.

- Rephann, T., and A. Isserman. 1994. New Highways as Economic Development Tools: An Evaluation using Quasi-experimental Matching Methods. *Regional Science and Urban Economics* 24,6: 723-751.
- Rosenbaum, P. 1989. Optimal Matching for Observational Studies. *Journal of the American Statistical Association* 84,408: 1024-1032.