

# SCALE ECONOMIES AND RETURNS TO SCALE AT BLACK-OWNED BANKS

DANIEL T. BARKLEY  
WOODLER HENRY  
JORDAN A.D. SMITH

## **ABSTRACT**

*In this paper we examine economies of scale and returns to scale at the nations Black-owned banks (BoBs) between 2000 and 2005. Scale economies are measured with various expense-to-output ratios and returns to scale are measure using a Cobb-Douglas Production Function. Our results show that Black-owed banks experienced scale economies and increasing returns to the scale.*

## **I. Introduction**

Recently, the several of the nation's leading Black-owned banks (BoBs) have undergone interstate bank mergers in hope of improving the efficiency of their operations through achieving economies of scale. When there are economies of scale, increasing the size of operations decreases the average cost of production (Baye 2006, p. 188).<sup>1</sup> Merger and acquisitions in this segment of the banking industry is not new: Brimmer (1992) identified over ten BoB-to-BoB mergers between 1975 and 1989.<sup>2</sup> What is different about the recent round of consolidations is not only the size of the transactions but the economic implications. Whereas previous BoB consolidations did not significantly alter the scale or efficiency of operations, the latest mergers and

---

DANIEL T. BARKLEY, PH.D. , WOODLER HENRY & JORDAN A.D. SMITH  
UNIVERSITY OF CALIFORNIA, IRVINE, AFRICAN AMERICAN STUDIES, 340 KRIEGER HALL,  
IRVINE, CALIFORNIA 92697  
EMAIL: [dtbarkle@uci.edu](mailto:dtbarkle@uci.edu)  
PHONE: (949) 824-7408  
FAX: (949) 824-3885

acquisitions have produced relatively large and viable banks.<sup>3</sup> Several BoBs appear to have taken advantage of changes in federal banking legislation that make it easier for banks to operate across state borders.<sup>4</sup> The Boston Bank of Commerce, currently named OneUnited Bank, acquired the Miami-based Peoples National Bank of Commerce in 1998 and Founders National Bank of Los Angeles in 2001. OneUnited Bank became one of the nation's largest BoBs in 2003 with assets of nearly \$500 million when it paid an estimated \$12 million for with Family Saving Banks of Los Angeles. In February 2003, Citizens Trust Bank of Atlanta acquired the Birmingham-based Citizens Federal Savings Bank. With nearly \$360 million in assets, Citizens Trust is one of the largest Black-owned banks in the U.S. At the time of this writing, New York's Carver Savings Bank, the nation's largest BoB was engaged in a bid to acquire Community Capital Bank.

However, not all BoBs have been receptive to consolidation. Although mergers and acquisitions may be justified economically, many of the country's Black banks have tended to remain small and focused on their communities--"doggedly provincial" as one former BoB chairman put it.<sup>5</sup> Moreover, the institutional structure of many Black banks makes it difficult for deals to get done. Most Black-owned banks are family owned or linked to an individual's identity.<sup>6</sup> Consequently, a merger or acquisition seemingly threatens to change or eliminate a way of life for the owners. Indeed, recent mergers and acquisitions have been contentious episodes even amongst the publicly traded BoBs.<sup>7</sup> Nevertheless, more consolidation seem inevitable as competition from large mainstream banks and financial institutions compel BoBs to not only expand their customer based but streamline their operations and offer their customers a broader range of services such as debt cards, online banking, and ATM access (McKinney, 2004). Jim Young, president and CEO of Citizen's Trust Bank believes that the recent BoB mergers have set the stage for future consolidations:

*"A precedent has already been set in the past few years with at least four minority-owned banks engaging in consolidation through acquisition and mergers. For a long time there were no merger or acquisitions in this segment of the banking industry. But now that it has been done, I think other [BoB] presidents and their board of directors recognize the efficiency of growth through acquisitions."*<sup>8</sup>

Numerous studies of mainstream bank mergers have shown such cost reductions to be small and economies of scale in banking to be non-existent (Humphrey, 1990; Rhoades, 1993; Rhoades, 1994; Kwan and Wilcox 2002).<sup>9</sup> The evidence for Black-owned banks is different. Black-owned banks appear to be in position to benefit from larger size. In the past, a major obstacle to Black business development was the lack of human capital (Conrad 2005, p. 242). However, as output expands, a larger proportion of banking operations may be performed by less skilled labor as tasks are subdivided and made more routine (Bell and Murphy, 1968, p. 139). Management specialization is also an important source of scale economies: A bank manager who can supervise 20 workers is underutilized in at a bank with only ten employees (McConnell and Brue, 2003). The bank's effective management staff could double with no increase in

supervisory costs (Thompson 1981, p. 272). The ability to efficiently spread scarce management expertise over banking operations is particularly relevant to BoBs.<sup>10</sup> Furthermore, cross-state mergers may help reduce some of the 'dilemmas of black banking' by spreading the lending risks associated with high unemployment, low family incomes, and high rate of business failure, over a larger and more diversified portfolio of assets (William, Gilbert, and Yeager, 2001). Furthermore, greater size may put Black-owned banks in a better position to handle loan losses. Ziorklui (1994) found that provisions for loan losses negatively impacted the return on assets (R.O.A.) for smaller BoBs but had no significant impact on the ROA for larger BoBs.

Some BoBs may grow without mergers or acquisitions.<sup>11</sup> Historically, BoB size has been limited in part by the small number of Black-owned firms it could service. But recent Census Bureau statistics show Black businesses are among the fastest growing segments of the entire U.S. economy -- both in terms of the number of businesses and revenues.<sup>12</sup> Alas, BoBs portend to become beneficiaries of the "Paradise Principle": the more they meet the credit needs of Black businesses, the greater the probability BoBs will not only survive but grow.<sup>13</sup> Part of the rationale for establishing Black banking banks was that these institutions provided financial services that were unavailable to Black consumers and Black businesses at mainstream banks (Dymski and Weems, 2005, p. 249). Yet, because of the greater risks in extending credit to individuals who suffer from above average unemployment or to businesses which have high rates of bankruptcy, BoBs have played a limited role in stimulating economic growth in the communities they serve (Brimmer 1992). Moreover, BoBs are facing increasing competition from large mainstream banks that are in search of increased market share (McKinney, 2004; Dymski and Weems, 2005, p. 248-249). These circumstances tend to challenge the notion of Black-owned banks as viable business entities.

The viability of black-controlled banks has long been recognized to depend operating efficiently and scale economies (Spellman, Osborne, Bradford, 1977). Ziorklu (1993, 5) found that larger BoBs with total assets over \$50 million, outperformed smaller BoBs with total assets less than \$50 million in terms of returns on assets. Wilson (1998, 686, 690) notes that the ability of BoBs to advance the economic development and political empowerment of the African American community depends on their assets and deposits, their number and size. He predicts that "[A]s Black-owned financial institutions increase in number, size and influence, their ability to participate in the 'mainstream' financial commercial market will be vastly enhanced." In term of profitability, Dymski and Weems (2005, p. 249) note that the "larger better capitalized black banks" out perform "smaller undercapitalized black banks." Further, they maintain that "black-owned banks can survive if they attain adequate scale." Attaining economies of scale implies that banks that operate at the least-cost will maximize their profits and thereby enhance their viability.

The principal purpose of this study is to examine whether scale economies and returns to scale exist among Black-owned banks. This study is different from previous studies in that it is the first one focusing Black banks only. In addition there has not been any published study of scale economies and returns to scale of BoBs applying various

expense-to-asset ratios, translog cost functions and Cobb-Douglas production function. In our study uses all three of the aforementioned methodologies. Section II, present a relevant literature review on scale economies and banking. Section III presents the Methodology and Data sources. Section IV estimates economies of scale with the average costs of production. Section V uses the Cobb-Douglas production function to estimate returns to scale and Section VI provides a brief summary and conclusion.

## **II. Literature Review**

Numerous studies of mainstream bank mergers have shown such cost reductions to be small and economies of scale in banking to be non-existent (Humphrey, 1990; Rhoades, 1993; Rhoades, 1994; Kwan and Wilcox 2002).<sup>14</sup> Scale efficiencies in the banking industry suggests that the average costs curve has a relatively flat U-shape, with medium sized firms being slightly more scale efficient than very large or very small firms (Humphrey 1990). The point where average costs change from falling to rising defines the minimum efficiency scale (M.E.S.) or the optimal bank size. The location of the M.E.S is a primary uncertainty expressed in the literature. Studies that included banks with less than \$1 billion in assets usually found average cost to be minimized between \$75 and \$300 million in assets (Berger, Hunter and Time 1993, p. 223). Studies on scale economies in the banking industry frequently apply a quadratic (translog) cost function. Here, the total cost is regressed on output variables such as loans, loan<sup>2</sup>, deposits, deposits<sup>2</sup>, federal funds sold, and federal funds sold<sup>2</sup> (Mayo, 1984). Scale economies (diseconomies) are indicated by negative (positive) regression coefficients of the quadratic terms of the output variables. Firms experience economies (diseconomies) when the average cost declines (rises) as the output level increases. Tseng's (1999, p. 84) application of the translog cost function to California banks yielded mixed results with only federal funds sold demonstrating significant scale economies. Calculating average cost as the ratio of non-interest expenses to total assets, Wilcox (2005) found considerable economies of scale in credit unions' noninterest expenses for asset sizes up to at least \$9 billion.

## **III. Methodology and Data**

We constructed four expense-to-output ratios that approximate average costs: Total Expenditures/ Assets, Wages/ Assets, Capital/ Assets and FTE/ Assets for 36 Black-owned banks from 2000 to 2005. This "intermediation approach" which treats labor and capital as input costs and total assets as outputs, is common throughout the literature. We also applied the most frequently used translog cost function (Mayo, 1984; Tseng, 1999). However, we found the translog framework to be inappropriate since none of the estimated average cost curves for Black-owned banks turned out to be U-shaped.<sup>15</sup> We relied on the Cobb-Douglas production function to estimate returns to scale. The Cobb-Douglas format imposes a constant elasticity of scale, which assumes scale economies are not exhausted as bank size increases. This assumption is consistent with the expense-to-output analysis of the previous section which shows declining average cost of production for all bank sizes. Our Cobb-Douglas model considers banks as financial intermediaries that use capital and labor to transform deposits into assets. This

particular framework seems appropriate given the unique and critical role deposits play in the Black banking industry (Brimmer 1992).<sup>16</sup>

We restrict our attention to Black-owned banks (BoBs) rather than minority-owned banks (MoBs) because mergers and acquisitions among the former have and probably will continue to change the scale of operations in these financial institutions. Moreover, there are several logical problems with aggregating all minority-owned banks. First of all, Black-owned banks comprise a relatively small economic sector. According the Federal Reserve's list of minority owned banks (in 2001) there were only four Black-owned banking office for every one million blacks. By contrast, per population of one million there were seven Hispanic-owned bank offices, eight offices of Native American and fifteen offices Asian American banks. Additionally, the Hispanic-owned banking industry appears to be oligopolistic with 77% of all offices operated by just three institutions, the largest of these, Banko Popular is based in Puerto Rico(Dymski and Weems, p. 249). Although the first Chinese American banks had the same community based origins as did the first Black-owned banks, it may be inappropriate to aggregate different ethnic banks when analyzing the scale of their operations.<sup>17</sup> Banks with assets larger than \$585 million (in 2005 dollars) may use different technologies and employ fundamentally different strategies than do smaller banks (DeYoung and Hasan 1998, pp. 569-570).<sup>18</sup> In 2005, the East West Bank, one of the largest Chinese American-owned banks in the U.S. had roughly \$8.26 billion in assets, more than the combined assets of all of the nation's Black-owed banks (\$6.53 billion).<sup>19</sup>

## Data

Our primary data set consist of 216 observations on 36 Black-owned banking institutions at the year-end 2000, 2001, 2002, 2003, 2004, and 2005. Banks had to meet a number of conditions to be included in the data set. We only included banks identified by the Federal Reserve Bank and/ or *Black Enterprise* as being black-owned banking institutions.<sup>20</sup> We also required that banks in the sample be operational in each of the six years, 2000-2005. A list of the Black-owned banks included in the sample is presented in the appendix (Table A1). We obtained data for the variables from the Federal Deposit Insurance Corporation's (FDIC) website. With any exceptions explicitly stated in the text all money values are deflated to 2000 dollars using the GDP chain index deflator.<sup>21</sup>

Table 1 displays the descriptive statistics for the Black-owned banks. All of the variables in Table 1 were constructed using data from FDIC's online website.

**TABLE 1**  
**DESCRIPTIVE STATISTICS OF BLACK-OWED BANKS, 2000 – 2005 AND 2005**

<b>Variable</b>	<b>Description</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Mean</b>	<b>Standard Deviation</b>
		<b>2000-2005</b>	<b>2000-2005</b>	<b>2005</b>	<b>2005</b>
<b>Assets</b>	Sum of all assets owned by the bank including cash, loans, securities, bank premises. This does not include off-balance sheet accounts	\$132,422.10	\$117,435.30	\$146,857.10	\$136,042.10
<b>FTE</b>	Number of full-time employees on payroll of the bank and its subsidiaries	61.31	50.85	57.53	50.13
<b>Wages</b>	Salaries and benefits paid to employees	\$2,814.91	\$2,320.11	\$3,053.08	\$2,684.13
<b>Capital</b>	Capital expense of bank premises and equipment.	\$985.56	\$857.26	\$989.59	\$916.03
<b>Total Expenditure</b>	Non-interest expense; including salaries and benefits, premises and	\$5,606.80	\$4,318.26	\$5,927.60	\$4,840.87

	equipment expenses				
		N = 216	N = 216	N = 36	N = 36

Source: FDIC <http://www2.fdic.gov/idas/main.asp>

Money values are in thousands of U.S. dollars and deflated to 2000 dollars using the GDP chain index deflator.

#### IV. Economies of Scale

Scale economies when average costs fall as plant size (or output capacity) increases; spreading salaries, capital costs and other expenses over larger output, lowers the average costs of production. However, past a certain size, firms may experience diseconomies of scale: an increase in the average costs as size increases. Conventional wisdom attributes diseconomies of scale to added costs associated with bureaucratic red tape and costly layers of management (Thompson, 1981, p. 274). As firms increase size, they initially experience scale economies (falling average costs) and then diseconomies of scale (rising average costs). Consequently, the average cost curve for the banking industry is believed to be “U-shaped”: falling average costs (economies of scale) followed by increasing average cost (diseconomies of scale) as output capacity increases (Humphrey (1990, 38). The point where average costs change from falling to rising defines the minimum efficiency scale (M.E.S.) or the optimal bank size.

Economies of scale can be seen in Figures 1 through 4 by observing falling average costs as total assets increases. The figures consistently show larger BoBs operating more efficiently than smaller BoBs. Indeed, Figures 1 through 4 show declining average costs over all bank sizes. Clearly, BoBs have *not* exhausted economies of scale nor are they experiencing diseconomies of scale. The M.E.S. or optimal BoB size appears to be well beyond \$600 million in total assets.<sup>22</sup> Commercial banking has long been recognized as labor intensive industry with labor specialization as a key source of economies of scale (Bell and Murphy, 1968). This circumstance is particularly relevant because Black-owned banking operations tends to be more labor intensive than the banking industry as whole. Black banks have traditionally serviced a relatively high volume of small transactions (Brimmer 1971, p. 386; Emeka, 1973, p. 109).<sup>23</sup> Moreover, BoBs are heavily dependent upon deposits as a source of funds and larger share of BoBs’ deposits consists of checking accounts and other transaction deposits (Brimmer 1992). Although some BoBs have been able to cleverly market one-on-one attention to customers who do not want to be treated impersonally, ‘high touch’ banking services tend to generate substantially higher processing costs. A similar phenomenon is evident on the assets side. Walter E. Grady, president of Seaway National Bank of Chicago, notes that the disparity between deposits and the amount of money BoBs lend also results in a relatively high volume of small transactions:

*"Black-owned financial institutions have a low loan-to-deposit ratio because, if they are located in any black community, their base is likely to be low-to-moderate income families, usually with impaired credit, in areas where there is low employment and the housing costs about \$50,000. It might take 20 loans to get \$400,000."*<sup>24</sup>

Yet, Figure 1, Figure 2 and Figure 4 suggest that larger BoBs are better able to organize their workers in ways that give them relatively lower average costs. Larger banks are in a better position to specialize because they can hire experts in various areas of expertise such as lending and securities investments. Specialization breeds expertise and expertise enhances efficiency (Aldaeff, 1968, p. 86).<sup>25</sup> Capital is not traditionally seen as a source of economies of scale in banking.<sup>26</sup> However Figure 3 shows average capital cost falling as bank size increases. No doubt expenditures on capital associated with the provision of debit cards, credit cards, online banking and ATMs have helped BoBs lower their average cost of capital. Online banking is particularly cost effective for Black banks because it allows them to simultaneously serve many customers without any added costs. Such internet services are ideally suited for the relatively large number of small transactions common at many BoBs. These technologies not only boosts the revenues earned from service fees they spreads the costs of providing such services over a greater customer base, thus reducing the cost per unit of operation (McKinney, 2004, p. 5).

FIGURE 1  
TOTAL EXPENDITURES/ ASSETS VS ASSETS  
2000 – 2005

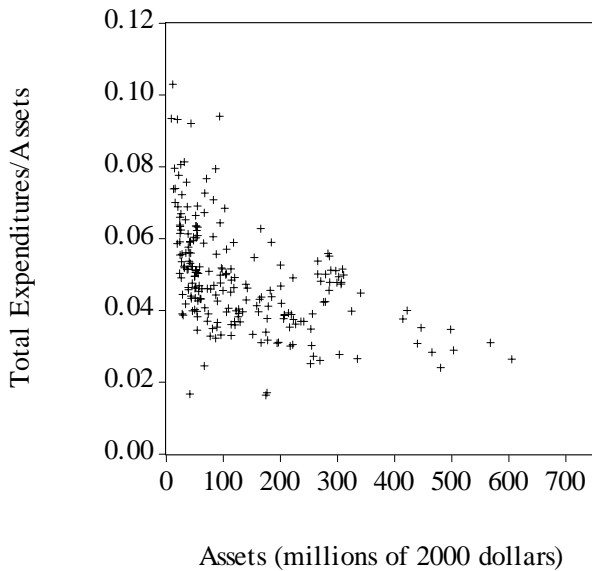


FIGURE 2  
WAGES/ ASSETS VS. ASSETS  
2000 – 2005

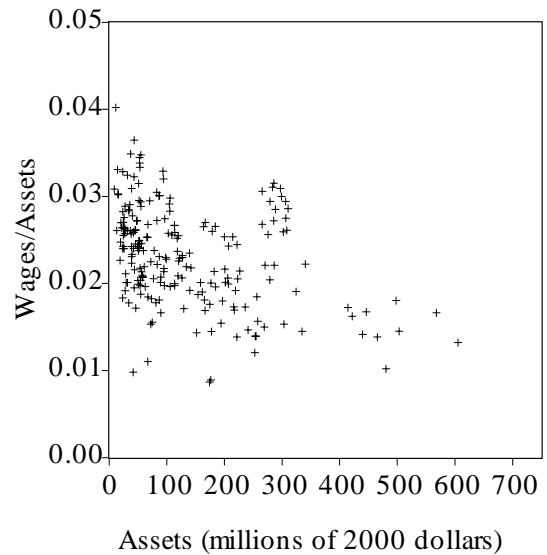


FIGURE 3  
CAPITAL/ ASSETS VS. ASSETS  
2000 – 2005

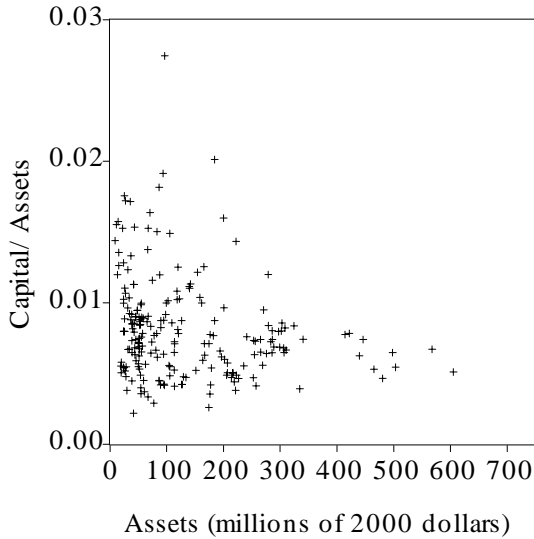
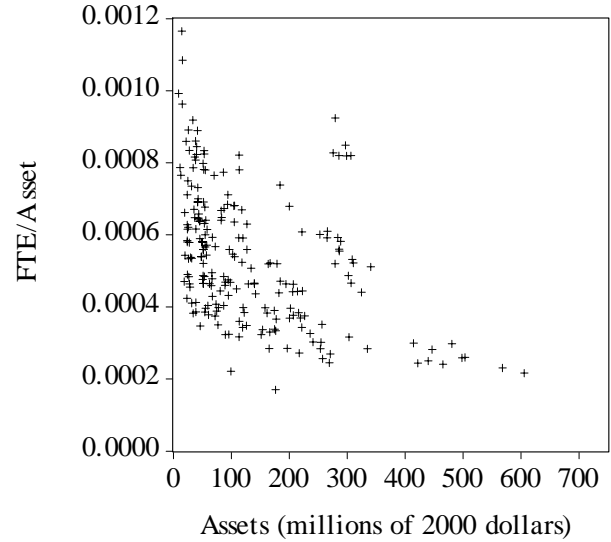


FIGURE 4  
FTE/ ASSETS VS. ASSETS  
2000 – 2005



## Returns to Scale

Returns to scale refers to a technical property of production that predicts what will happen to output if the quantity of all input factors increase by some amount of scale. Returns to scale are relevant to BoBs because they can predict the likely impact of mergers on bank assets. In particular, a merger or acquisition that increases the quantity of labor and capital but increases total assets by more than the quantity of inputs is said to have created increasing returns to scale. Conversely, a merger or acquisition that increases the quantity of labor and capital but increases total assets by less than the quantity of inputs is said to have created decreasing returns to scale. Finally, a merger or acquisition that increases the quantity of labor and capital and increases total assets by the same amount as the quantity of inputs is said to have created constant returns to scale.

The Cobb-Douglas production function is a common way to estimate returns to scale:

$$Q = \lambda L^\alpha K^\beta \quad (1)$$

where  $Q$  represents output,  $L$  is units of labor inputs and  $K$  is units of capital inputs,  $\lambda$  is a constant,  $\alpha$  is the elasticity of output with respect to labor and  $\beta$  is the elasticity of output with respect to capital. Returns to scale are identified by the values of  $\alpha$  and  $\beta$ :

$$\alpha + \beta > 1, \text{ increasing returns to scale} \quad (2)$$

$$\alpha + \beta < 1, \text{ decreasing returns to scale;} \quad (3)$$

$$\alpha + \beta = 1, \text{ constant returns to scale.} \quad (4)$$

Taking the natural logs of equation (1) yields:

$$Q = \lambda + \alpha L + \beta K \quad (5)$$

The log-linear Cobb-Douglas production function enables us to estimate values of  $\alpha$  and  $\beta$  for BoBs with ordinary least squares regression:

$$\text{Assets} = \text{Constant} + \alpha \text{Wages} + \beta \text{Capital} + \varepsilon \quad (6)$$

where “Assets” is defined as natural total assets, “Wages” is the natural log of wages and “Capital” is the natural log of capital expenditures. Equation (6) was applied to a cross-section of BoBs for 2000 – 2005 inclusive. Multiple cross sectional analysis has a number of advantages. First, cross-sectional regression analysis avoids the econometric complications associated with panel data.<sup>27</sup> Secondly, panel analysis constrains  $\alpha + \beta$  to be constants over the entire 2000 – 2005 time period. This restriction prevents us from determining if returns to scale became more pronounced or obscure over time. Table 2 presents the least squares regression result of equation (6). Accordingly, the sum coefficient of Wages and Capital ( $\alpha + \beta$ ) indicate that Black-owned banks experienced increasing returns for every year except 2000. However, the coefficient of Capital is only statistically significant (at 5% level) for 2002. These results are at odds with economic theory underlying the Cobb-Douglas Production function and suggest that specification may suffer from *multicollinearity*. Multicollinearity is a condition wherein high correlation among the independent variables distorts the standard errors of the coefficients, making it difficult to determine whether the independent variables are linearly related to the dependent variable. Ostensibly, multicollinearity makes interpreting the coefficients problematic (Keller and Warrick 2003, 675).

**TABLE 2**  
REGRESSION RESULTS  
COBB-DOUGLAS REGRESSION RESULTS  
 Dependent Variable is Assets

	2000	2001	2002	2003	2004	2005
Constant	4.00* (6.91)	3.69* (9.55)	3.68* (9.05)	3.16* (8.27)	3.11* (6.98)	3.49* (9.13)
Wages	.96* (4.90)	.86* (6.69)	.78* (6.33)	1.07* (8.70)	.98* (7.55)	1.05* (3.56)
Capital	0.02 (.12)	.17 (1.5)	.27** (2.28)	.0004 (.0026)	.11 (.95)	-0.008 (-.072)
$\alpha + \beta =$	.98	1.03	1.05	1.07	1.09	1.05

Adj. R <sup>2</sup>	.856	.935	.922	.935	.916	.993
F-statistics	105.94*	254.32*	208.73*	235.88*	194.18*	245.24*
Obs.	36	36	36	36	36	36

The *t*-statistics are in parenthesis.  
*value* < .10

\**p*-value < .01; \*\**p*-value < .05; \*\*\**p*-value < .01

Although there is no direct econometric diagnostic test for multicollinearity, the large standard errors for coefficients of Capital along with the relatively high Adj. R<sup>2</sup> and large F-statistics suggest the possibility of multicollinearity (Keller and Warrick 2003, 675-78). Multicollinearity can also be inferred through a correlation matrix of the independent variables. A high value of (about .8 or .9) indicates a high correlation between two independent variables (Kennedy, 1994, p. 180). Table 3 presents a correlation matrix that shows the correlation coefficient between Wages and Capital is .94. This result suggests that our least squares regression results are confounded by the high correlation between Capital and Wages.

**TABLE 3**

CORRELATION COEFFICIENT MATRIX

	Wages	Capital
Capital	0.94	
FTE	0.92	0.85

One way of dealing with multicollinearity is to use independent variable(s) that are not correlated with one another.<sup>28</sup> Unfortunately, finding uncorrelated independent variables is rare. Consequently, virtually all multiple regression models have some amount of multicollinearity. Alternatively, the effects of multicollinearity can be minimized by selecting meaningful independent variables that are relatively less correlated. Relative to wages, we found the natural log of FTE to be significantly less correlated with fixed capital (.85 versus .94). Moreover, FTE is a reasonable proxy for wages since it is highly correlated with wages (.92). Substituting FTE for Wages in equation (6) yields:

$$\text{Assets} = \text{Constant} + \alpha \text{Wages} + \beta \text{FTE} + \epsilon \quad (7)$$

**TABLE 4**

REGRESSION RESULTS

COBB-DOUGLAS REGRESSION RESULTS

Dependent Variable is Assets

	2000	2001	2002	2003	2004	2005
Constant	6.66* (18.24)	6.14* (14.11)	6.20* (13.25)	6.51* (14.52)	6.12* (12.77)	6.12* (16.18)

FTE	.72* (5.73)	.46* (2.89)	.58* (3.71)	.86* (5.76)	.79* (4.62)	.73* (5.68)
Capital	.29* (2.84)	.53* (3.77)	.45* (3.16)	.24*** (1.78)	.35** (2.44)	.40* (3.77)
$\alpha + \beta =$	1.01	.99	1.03	1.10	1.14	1.13
Obs.	36	36	36	36	36	36
Adj. R <sup>2</sup>	.878	.878	.878	.893	.862	.895
F-statistics	124.88*	127.37*	127.53*	148.25*	110.74*	151.59*

The *t*-statistics are in parenthesis.  
value < .10

\**p*-value < .01; \*\**p*-value < .05; \*\*\**p*-value < .01

Table 4 shows results of the least-squares estimation of equation (7). The coefficients for both FTE and Capital are statistically significant for each year. Black-owned banks experienced increasing returns to scale in every year except 2001. Moreover, the returns to scale appear to becoming more pronounced over time. Table 5 shows that between 2000 and 2003, the coefficients  $\alpha + \beta$  averaged 1.01, however, between 2003 and 2005 the coefficients averaged 1.12. Undoubtedly, some of this improvement in returns to scale can be attributed to the 2003 BoB mergers which created the second (OneUnited Bank) and third (Citizens Trust Bank) largest Black-owned banks. Labor productivity also appears to be related to returns to scale. For the years 2000 – 2002, capital expenditures averaged \$898 million and FTE averaged 61.38 for all BoBs. Over the next three years, capital expenditures averaged \$1.027 billion while the FTE averaged 60.87. In other words, a 12 percent increase in capital expenditures combined with roughly the same amount of labor, increased returns to scale by almost 12 percent. Table 5 also shows that as BoB operations became more capital intensive, labor's contribution to output increased and capital's contribution decreased. Labor's contribution to output between 2003 to 2005 averaged 0.79 up from 0.59 over the previous three year period while capitals contribution fell from to 0.33 in the later period from 0.42 in the early period. These results suggest that BoBs have shifted some cost savings in labor into expenditures on capital which ultimately boosted the relative productivity of labor.

**Table 5**

	<u>Returns to Scale, FTE and Capital Expenditures</u>	
	<u>2000 – 2002</u>	<u>2003 – 2005</u>
Returns to Scale, $\alpha + \beta$	1.01	1.12
Labor's Contribution, $\beta$	0.59	0.79
Capital's Contribution, $\alpha$	0.42	0.33
Full-time Equivalent, FTE	61.38	60.87
Capital Expenditures, K	\$898 million	\$1.027 billion

## Conclusion

Given the competitive nature of the banking industry, the future viability of Black banks will increasingly depend upon their ability to offer customers a variety of service at low costs. Economies of scale and increasing returns provide Black-owned banks with a powerful incentive to merge and grow in order to achieve lower costs. Our results show that lower average costs of operations at larger BoBs is directly linked to their size. Lower costs also mean higher retained earnings. Retained earnings are a source of capital that can be used to promote economic development in urban minority communities.

## REFERENCES

Alhadeff, David A. 1968. *Monopoly and Competition in Banking*. Berkeley: University of California Press.

Bates, Timothy. 1973. *Black Capitalism: A Quantitative Analysis*. New York, Praeger Publishers.

Baye, Michael. 2006. *Managerial Economics and Business Strategy*. New York: McGraw-Hill.

Bell, Federick W. and Neil B. Murphy. 1968. "Cost in Commercial Banking: A Quantitative Analysis of Bank Behavior and its Relation to Bank Regulation." Federal Reserve Bank of Boston.

Berger, Alan N, William C. Hunter and Stephen G. Timme. 1993. "The Efficiency of Financial Institutions: A Review and Preview of Research Past, Present and Future." *Journal of Banking and Finance* 17: 221 – 249.

*Black Enterprises* "Top 25 Black Owned Banks" [on-line]. Available on from the World Wide Web: <http://www.blackenterprise.com>.

Brimmer, Andrew, F. 1971. The Black Banks: An Assessment of Performance and Prospects. *Journal of Finance*, No. 2 Proceedings of the Twenty-Ninth Annual Meeting of the American Finance Association Detroit, Michigan December 28-30, 1970. (May 1971), pp. 379-405.

Brimmer, Andrew, F. 1992. "The Dilemma of Black Banking: Lending Risks vs. Community Service." *Review of Black Political Economy* 20: 5-16.

Conrad, Cecilia, A. 2005. "Black-owned Businesses: Trends and Prospects." Pp. 237 - 245 in *African Americans in the U.S. Economy*, edited by Cecilia Conrad, John Whitehead and James Stewart, New York: Rowman & Littlefield Publishers, Inc.

Dymski, Gary and Robert Weems. 2005. "Black-owned Banks: Past and Present." Pp. 246 - 251 in *African Americans in the U.S. Economy*, edited by Cecilia Conrad, John Whitehead and James Stewart, New York: Rowman & Littlefield Publishers, Inc.

DeYong, Robert and D.E. Nolle. 1996. "Foreign-owned Banks in the U.S.: Earning Market Share Or Buying Power?" *Journal of Money, Credit, and Banking* 28: 622 – 636.

DeYoung, Robert and Iftekhar Hasan. 1998. "The Performance of De Novo Commercial Banks: A Profit Efficiency Approach." *Journal of Banking and Finance* 22: 565-587.

Emeka, Mauris L. 1973. "Some Common Problems of Black Banks in 1972." *Review of Black Political Economy* 3: p.100.

Humphrey, D.B. 1990. "Why Do Estimates of Scale Economies Differ?" *Economic Review*, Federal Reserve Bank of Richmond, September/ October, 38 – 50.

Kwan, Simon and James A. Wilcox. 2002. "The Hidden Costs Reductions in Bank Mergers Accounting for More Productive Banks." Pp.109 – 124 in *Research In Finance*, edited by Andrew Chen, New York: Elsevier Press.

Keller, Gerald and Brian Warrick. 2003. *Statistics for Management and Economics*, Pacific Grove, California: Thompson Learning, Inc.

Marlowe, Gertrude W. 2003. *A Right Worthy Grand Mission*. Washington, D.C.: Howard University Press.

Mayo, J.W. 1984. "Multiproduct Monopoly Regulation and Firm Costs." *Southern Economic Journal* 51: 208-218.

McConnell, Campbell and Stanley Brue. 2003. *Microeconomics* New York: McGraw-Hill.

McKinney, Jeffrey. 2004. "Merger By Design: In an Economic Environment with Shrinking Profit Margins, the Key to Survival is Grow by Acquisition." *Black Enterprise*, June 2004. [online] Available from: ([http://www.findarticles.com/p/articles/mi\\_m1365/is\\_11\\_34/ai\\_n6181257](http://www.findarticles.com/p/articles/mi_m1365/is_11_34/ai_n6181257)).

Thompson, Arthur. 1981. *Economics of the Firm: Theory and Practice*. Englewood, Cliffs, New Jersey: Prentice-Hall.

Tseng, K.C. 1999. "Bank Scale and Scope Economies in California." *American Business Review*, (January 1999): 79 – 85.

Emmons, William, Alton Gilbert and Timothy Yeage. 2001. "The Importance of Scale Economies and Geographic Diversification in Community Bank Mergers." [online] Federal Reserve Bank (St. Louis) Working Papers. Available from (<http://research.stlouisfed.org/wp/20012001-024.pdf>)

Rhoades, Stephen, A. 1993. Efficiency Effects of Horizontal (in-market) Bank Mergers. *Journal of Banking and Finance* 17: 411 – 422.

Rhoades, Stephen , A. 1994. “A Summary of Merger Performance Studies in Banking, 1980 -93 and an Assessment of the Operating Performance and Event Study.” Staff Study 167, Board of Governors of the Federal Reserve System (July 1994).

Spellman, Lewis, J. Alfred E. Osborne and William D. Bradford. 1977. “The Comparative Operating Efficiency of Black Savings and Loan Associations.” *The Journal of Finance* 22: 565-574.

Ziorklu, Sam. 1993. “Performance of Black-owned Banks: Comparative Analysis.” *Review of Black Political Economy* 23: 5 – 23.

Wilcox, James A. 2005. “Economies of Scale and Continuing Consolidation of Credit Union.” *FRBSF Economic News Letter* 2005-29, November 4, 2005 [on line]. Available at <http://www.frbsf.org/publications/economics/letter/2005/el2005-29.html>

Wilson, Amos. 1998. *Blueprint for Black Power: A Moral, Political, and Economic imperative for the Twenty-First Century*, New York :Afrikan World InfoSystems.

## Appendix

**Table A1  
Black-owned Banks**

<b>Bank</b>	<b>Headquarters City, State</b>
Carver Federal Savings Bank	New York, NY
OneUnited Bank	Boston, MA
Citizens Trust Bank	Atlanta, GA
Seaway National Bank	Chicago, Ill.
Industrial Bank N.A.	Washington, D.C.
Liberty Bank and Trust Company	Baton Rouge, La.
City National Bank of New Jersey	Newark, NJ
Broadway Federal Bank FSB	Los Angeles, CA.
M&F Bank	Durham, N.C.
The Harbor Bank of Maryland	Baltimore, MD
Independence Federal Savings Bank	Washington, D.C.
First Independence National Bank of Detroit	Detroit, MI
Tri-State Bank of Memphis	Memphis, TN.
Capitol City Bank & Trust Company	Atlanta, Ga.
Illinois Service Federal S&L Association	Chicago, Ill.
Highland Community Bank	Chicago, Ill.
Douglass National Bank	Kansas City, MO.
Mutual Community Savings Bank Inc. SSB	Durham, N.C.
Dryades Savings Bank FSB	New Orleans, La.
Consolidated Bank and Trust Company	Richmond, Va.
Legacy Bank Inc.	Milwaukee, WI
United Bank of Philadelphia	Philadelphia, Pa.
First Tuskegee Bank	Tuskegee, AL.
Citizens Savings Bank& Trust Company	Nashville, TN
Commonwealth National Bank	Mobile, AL.
Community Bank of Lawndale (Chicago)	Chicago, Ill.
United Bank and Trust Co (NOLA)	New Orleans, La.
Gateway National Bank (St. Louis)	St. Louis, MO.
Millenia Community Bank (Greenville, NC)	Greenville, N.C.
American State Bank (Tulsa)	Tulsa, O.K.
South Carolina Community Bank	Columbia, S.C.
Memphis First Community Bank	Memphis, TN.
Citizens Saving Banks and Trust (Nashville)	Nashville, TN.
Unity National Bank (Houston)	Houston, TX.
First State Bank (Danville, VA)	Danville, VA.
North Milwaukee State Bank	Milwaukee, WI

Compiled from

Federal Reserve Statistical Release "Minority-owned Banks" <http://federalreserve.gov/Releases/mob/>;  
*Black Enterprise* "2005 B.E. Banks" <http://www.blackenterprise.com/lists/BE100s.asp?Source=Banks05>

**Table A2**

Translog Cost Function

Dependent Variable is Total Expenditures (Year = 2005; N = 36)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CONSTANT	806.8426	1059.587	0.761469	0.4532
FEDFUND	-0.207386	0.196089	-1.057613	0.3000
LOANS	-0.017670	0.070606	-0.250258	0.8044
DEPOSTS	0.067007	0.055358	1.210433	0.2370
FEDFUND*LOANS	4.04E-06	4.22E-06	0.957750	0.3470
FEDFUND*DEPOSTS	-2.31E-06	3.43E-06	-0.673952	0.5063
LOANS*DEPOSTS	9.22E-07	9.48E-07	0.972684	0.3397
LOANS <sup>2</sup>	-7.20E-07	5.59E-07	-1.288299	0.2090
DEPOSITS <sup>2</sup>	-3.62E-07	4.72E-07	-0.768302	0.4492
FEDFUNDS <sup>2</sup>	1.25E-05	8.83E-06	1.420224	0.1674
R-squared	0.807454	F-statistic	12.11477	
Adjusted R-squared	0.740804	Prob(F-statistic)	0.000000	

**TABLE A3**

Translog Cost Function

Dependent Variable is Total Expenditures (Year = 2004; N = 36)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CONSTANT	697.8686	489.8015	1.424799	0.1661
FEDFUND	0.104445	0.188250	-0.554819	0.5838
LOANS	0.009488	0.019405	0.488954	0.6290
DEPOSITS	0.035654	0.018890	1.887448	0.0703
FEDFUND*LOANS	4.24E-06	2.68E-06	1.578951	0.1264
FEDFUND*DEPOSTS	-9.33E-06	2.77E-06	-3.363826	0.0024
LOANS*DEPOSTS	2.85E-07	1.92E-07	1.486245	0.1492
LOANS <sup>2</sup>	-2.25E-07	1.20E-07	-1.869426	0.0729
DEPOSITS <sup>2</sup>	-3.22E-08	9.05E-08	-0.355474	0.7251
FEDFUNDS <sup>2</sup>	0.000140	2.59E-05	5.404404	0.0000
R-squared	0.960117	F-statistic	69.54560	
Adjusted R-squared	0.946312	Prob(F-statistic)	0.000000	

**TABLE A5**

Translog Cost Function

Dependent Variable is Total Expenditures (Year = 2003; N = 36)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CONSTANT	541.6207	613.2904	0.883139	0.3853
FEDFUND	0.167469	0.164919	1.015461	0.3192
LOANS	-0.035050	0.028675	-1.222343	0.2325
DEPOSTS	0.070662	0.027712	2.549857	0.0170
FEDFUND*LOANS	-6.33E-06	7.70E-06	-0.822452	0.4183
FEDFUND*DEPOSTS	1.56E-06	6.52E-06	0.238796	0.8131
LOANS*DEPOSTS	9.78E-07	4.16E-07	2.353286	0.0264
LOANS <sup>2</sup>	-5.43E-07	2.76E-07	-1.965689	0.0601
DEPOSITS <sup>2</sup>	-3.67E-07	1.79E-07	-2.052973	0.0503
FEDFUNDS <sup>2</sup>	-1.43E-06	1.45E-05	-0.098106	0.9226
R-squared	0.957036		F-statistic	64.35099
Adjusted R-squared	0.942164		Prob(F-statistic)	0.000000

**TABLE A5**

Translog Cost Function

Dependent Variable is Total Expenditures (Year = 2002; N = 36)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CONSTANT	321.6153	606.4498	0.530325	0.6004
FEDFUND	0.037365	0.142973	0.261343	0.7959
LOANS	-0.025652	0.040340	-0.635895	0.5304
DEPOSITS	0.068759	0.033783	2.035320	0.0521
FEDFUND*LOANS	-1.69E-06	3.96E-06	-0.425948	0.6737
FEDFUND*DEPOSTS	-6.17E-07	3.22E-06	-0.191789	0.8494
LOANS*DEPOSTS	1.69E-07	1.01E-06	0.166655	0.8689
LOANS <sup>2</sup>	-1.12E-07	6.21E-07	-0.180842	0.8579
DEPOSITS <sup>2</sup>	-3.05E-08	4.20E-07	-0.072641	0.9426
FEDFUNDS <sup>2</sup>	6.06E-06	6.47E-06	0.935686	0.3580
R-squared	0.935598		F-statistic	41.96791
Adjusted R-squared	0.913304		Prob(F-statistic)	0.000000

**TABLE A6**

Translog Cost Function

Dependent Variable is Total Expenditures (Year = 2001; N = 36)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CONSTANT	700.8384	533.1365	1.314557	0.2001
FEDFUND	0.001928	0.089641	0.021514	0.9830
LOANS	-0.017743	0.026955	-0.658246	0.5162
DEPOSTS	0.052707	0.022249	2.368976	0.0255
FEDFUND*LOANS	-5.66E-06	1.77E-06	-3.209271	0.0035
FEDFUND*DEPOSITS	4.18E-06	1.31E-06	3.191239	0.0037
LOANS*DEPOSITS	2.25E-06	5.49E-07	4.094166	0.0004
LOANS <sup>2</sup>	-1.45E-06	3.31E-07	-4.390562	0.0002
DEPOSITS <sup>2</sup>	-7.99E-07	2.21E-07	-3.609990	0.0013
FEDFUNDS <sup>2</sup>	-4.08E-06	4.09E-06	-0.998958	0.3270
R-squared	0.953765		F-statistic	59.59343
Adjusted R-squared	0.937760		Prob(F-statistic)	0.000000

**TABLE A7**

Translog Cost Function

Dependent Variable is Total Expenditures (Year = 2000; N = 36)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CONSTANT	806.8426	1059.587	0.761469	0.4532
FEDFUND	-0.207386	0.196089	-1.057613	0.3000
LOANS	-0.017670	0.070606	-0.250258	0.8044
DEPOSTS	0.067007	0.055358	1.210433	0.2370
FEDFUND*LOANS	4.04E-06	4.22E-06	0.957750	0.3470
FEDFUND*DEPOSITS	-2.31E-06	3.43E-06	-0.673952	0.5063
LOANS*DEPOSITS	9.22E-07	9.48E-07	0.972684	0.3397
LOAN S <sup>2</sup>	-7.20E-07	5.59E-07	-1.288299	0.2090
DEPOSITS <sup>2</sup>	-3.62E-07	4.72E-07	-0.768302	0.4492
FEDFUNDS <sup>2</sup>	1.25E-05	8.83E-06	1.420224	0.1674
R-squared	0.807454		F-statistic	12.11477
Adjusted R-squared	0.740804		Prob(F-statistic)	0.000000

## Notes

---

<sup>1</sup> “Returns to scale” is a similar phenomenon that describes what happens to output when the scale of inputs increase. Economies of scale and returns to scale are different terms and cannot be used interchangeably. [http://wikipedia.org/wik/Economies\\_of\\_scale](http://wikipedia.org/wik/Economies_of_scale).

<sup>2</sup> During this period, ten failing BoBs were merged into black-owned institutions (Brimmer 1992, Table 1). In response to threatening economic conditions of the Great Depression four Richmond, Virginia Black-owned banks merged to form Consolidated Bank and Trust in 1931. Combining the resources of the city’s African American community enabled Consolidated Bank and Trust to survive the Great Depression (Marlowe, 2003).

<sup>3</sup> Of the 34 BoBs that changed ownership between 1975 and 1989, 19 were acquired or merged with white-owned banks and 10 merged with existing BoBs. All of the ten BoB-to-BoB mergers involved a failing institution, while none of the white transactions involved failing a BoBs (1992).

<sup>4</sup> The Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 (effective as of September 29, 1995) allows full nationwide banking across the country, regardless of state law. After June 1, 1997, the Act allowed national banks to operate branches across state lines [online]. Pennsylvania Association of Community Bankers, Available from ([http://www.pacb.org/banks\\_and\\_banking/geography.html](http://www.pacb.org/banks_and_banking/geography.html))

<sup>5</sup> Clyde Oden, Chairman of the Family Savings Bank of Los Angeles, see “Boston Bank to Buy Family Savings” *Los Angeles Times*, July 30, 2002.

<sup>6</sup> These comments are attributed to Carver Federal Savings Bank CEO Deborah Wright, “Through the Fire” *Black Enterprise*, June 2006, p. 186.

<sup>7</sup> For example: Bank of Boston Commerce Bank’s attempt to acquire New York’s Carver Federal Savings Bank, see “Through the Fire” *Black Enterprise*, June 2006, pp. 181-82; Carver Federal Savings Bank attempt to buy Washington D.C.-based Independent Federal Saving Bank in 2004, see *Black Enterprise*, June 2006, pp. 184-85; Boston Bank of Commerce purchase of Family Savings Bank of Los Angeles, see “Boston Bank to Buy Family Savings” *Los Angeles Times*, July 30, 2002

<sup>8</sup> “Merge by Design: in an economic environment with shrinking profit margins, the key to survival is growth by acquisition.” *Black Enterprise Magazine*, November 2005.

<sup>9</sup> Rhoades (1994) summary of 39 studies concludes there is little evidence to support the view that mergers improve bank performance.

<sup>10</sup> Carver Federal Savings Bank CEO Deborah Wright comments highlight an example of management specialization: “It’s been a very interesting process to recruit people to work for a black institution. The person has got to know what they’re doing because there is no one else here who can do it for them. We don’t have the luxury of having six guys who know the same thing. The guy who runs the division has to be the guy.” With over \$567 million in total assets, Carver was the nation’s largest BoB in 2005. “Through the Fire” *Black Enterprise*, June 2006, p. 186.

<sup>11</sup> OneUnited Banks Chairman Kevin Cohee believes that minority banks must strike broader partnerships “in order to obtain economies of scale as well as to help people in our communities achieve their aspirations. You’ve had a bunch of small banks trying to fulfill the needs of their communities, but it was very, very hard without scale.” “Boston Bank to Buy Family Savings” *Los Angeles Times*, July 30, 2002.

Commenting on Carver Federal Savings Bank bid to acquire Community Capital Bank, Carver CEO Deborah Wright notes “It [the acquisition] allows us to spread costs of overhead over a larger base...” “Through the Fire” *Black Enterprise*, June 2006, p. 186.

---

<sup>12</sup> Among the other Census findings regarding black-owned businesses:  
-- Grew four times faster than U.S. firms on average between 1997 and 2002. U.S. firms grew an average 10%.  
-- Generated revenues of roughly \$89 billion in 2002, up 25 percent from 1997, and faster than the U.S. average revenue growth of 22 percent. Available online at [http://www.census.gov/Press\\_Release/](http://www.census.gov/Press_Release/).

<sup>13</sup> Mark Twain provides an illustrative example of the “Paradise Principle”. New England missionaries who went to Hawaii in the early 19<sup>th</sup> Century s having “gone to do good and stayed to do well.” While their primary mission was to spread Christianity, they quickly gained control of the Island’s agricultural resources and other forms of wealth. This fortuitous conjuncture of spiritual uplift and wealth accumulation is described by Brimmer (1992, p. 8) as the “Paradise Principle”.

<sup>14</sup> Rhoades (1994) summary of 39 studies concludes there is little evidence to support the view that mergers improve bank performance.

<sup>15</sup> Tables A2-A7 present the least squares result of applying the translog cost function specified in Tseng, 1999 to Black-owned banks for each year 2000-2005. The insignificant coefficient on one or both quadratic terms confirms that the average cost curve for BoBs is not U-Shaped.

<sup>16</sup> BoBs are much more dependent on deposits s a source of funds than is the banking system as a whole. Moreover, a larger share of their deposits consists of checking accounts and other transaction deposits. These tend to generate substantially higher processing costs (Brimmer, 1992).

<sup>17</sup> A bank’s size can limit the production methods, risk strategies, distribution channels, and managerial talent that it has its disposal and estimates of efficiency can be very sensitive to bank size (DeYoung and Nolle, 1996).

<sup>18</sup> Carver Federal Savings Bank’s 2004 assets of \$625 million (\$2000 dollars) was the only observation larger than \$585 million.

<sup>19</sup> FDIC <http://www2.fdic.gov/idasp/main.asp>

<sup>20</sup> Federal Reserve Statistical Release “Minority-owned Banks” <http://federalreserve.gov/Releases/mob/>; *Black Enterprise* “2006 B.E. Banks” <http://www.blackenterprise.com/lists/BE100s.asp?Source=Banks06>

<sup>21</sup> GDP chain index deflator <http://www.gpoaccess.gov/usbudget/fy05/hist.html>

<sup>22</sup> This result makes the translog cost function specification a poor approximation when applied to Black banks since it forces large and small banks to lie on a symmetric U-shaped ray of average costs and disallows other possibilities such as an average cost curve that falls up to some output and remains constant thereafter (Berger, Hunter and Timme 1993, p. 223).

<sup>23</sup> In a comparison of Black-owned banks and with similar sized banks, Brimmer (1971, p. 386) found that “a major share of higher operating costs experienced by the black banks can be traced to the high costs of handling a relatively large number of small accounts.” Emika (1973, p. 109) concurs: “There is a lot of activity [at BoBs] and therefore a lot of employee time being spent but the flow of deposits is all too fluid for the bank to get much use out of them.”

<sup>24</sup> *Black Enterprise* June 1996, Vol. 26 Issue 11, p. 160 by Mathew Scott and Wendy C. Pelle.

<sup>25</sup> In the early 1990s, New Jersey’s City National Bank became a seller of the Federal National Mortgage Association (NMA) loans. It also sold residential loans on a servicing released basis to General Electric. City National’s President, Louis E. Prezeau notes that “We’ve reinforced our loan servicing department, which has been geared to servicing commercial loans. We’ve hired mortgage servicing staff and increased our commercial lending

---

staff." As a result, City National's loans jumped from \$24.9 million in 1994 to \$45.6 million in 1995 (*Black Enterprise* June 1996, Vol. 26, Issue 11, p. 160).

<sup>26</sup> Scale economies associated with capital is derived from the inability to employ capital at low levels. Accordingly, economies of scale arise in manufacturing and public utilities in other mass-production industries where large capital expenditures can be spread over large output.

<sup>27</sup> Panel regression results can be biased due to serial autocorrelation.

<sup>28</sup> Another possibility is to transform the dependent variable to a log, square, square root, or reciprocal (Keller and Warrick, 2003, p. 679). Transforming the dependent variable in this case complicates the empirical measurement of scale economies.