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by

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An Examination of Entry and Competitive Performance in Rural Banking Markets

Robert M. Feinberg and Kara M. Reynolds**

Abstract

This paper explores the change in the level of competition in rural banking markets since the deregulation that occurred following passage of the Riegle Neal Act of 1994. Using an empirical model that utilizes both the number of banks and the value of deposits in a cross-section of rural markets, we decompose the impact of the entry of new banks into resulting changes in per capita demand and the costs/profits of local banks in both 1994 and 2004. We conclude that the banking market is more competitive today despite the fact that the number of banks may have declined; on average fewer banks are now needed to make rural banking markets competitive than were needed in 1994.

Key words: Entry, Banking

JEL classification: L11

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Introduction

The 1994 Riegle Neal Act ushered forth a new era in banking deregulation. As noted by former Federal Reserve Chairman Alan Greenspan in a 2005 speech, deregulation resulted in a 50 percent decline in the number of banks due to industry consolidation. However, this decline did not necessarily indicate that the level of competition declined; Greenspan (2005) went on in his speech to emphasize that despite the decline in the number of banks, measures of local market banking competition remained relatively stable between 1990 and 2005.

This paper explores the change in the level of competition in rural banking markets since passage of the 1994 Riegle Neal Act. Using an empirical model recently developed that utilizes the number of banks as well as the value of deposits in a cross-section of rural markets, we decompose the impact of the entry of new banks into resulting changes in per capita demand and the costs/profits of local banks in both 1994 and 2004. We conclude that the banking market is more competitive today; on average fewer banks are need to make rural banking markets "competitive" today than were needed in 1994.

Literature Review

There is a long empirical literature on entry – both determinants and effects – usually based on manufacturing industry data. Early banking entry papers include Hanweck (1971) and Rose (1977). More recently, Amel and Liang (1997) present interesting results on bank entry fairly closely related to this paper's focus. They jointly

explain bank profits and entry over the 1977-88 period for about 2,000 rural counties and about 300 urban markets (metropolitan statistical areas), and find that supranormal profits promote entry as does population and population growth, and that entry has the anticipated pro-competitive effect of reducing profits – though only in rural markets.

Most of the previous studies looked at bank entry in the pre-Riegle-Neal Act (banking deregulation) period. However, since then Berger et al (2004), Seelig and Critchfield (2003), and Keeton (2000) have all found – though with somewhat differing definitions of merger activity and samples – that merger activity generally tends to promote de novo entry. These findings are consistent with merger activity and/or the presence of "big banks" in a market as signaling to potential entrants the opportunities for supranormal profits to be earned.[1]

Others have recently studied market dynamics in local banking markets. Both Dick (2007) and Cohen and Mazzeo (2007b) find that the incumbent banks in markets tend to expand via new branches to aid in deterring new entry when demand grows. Similarly, Berger and Dick (2007) find that early entrants in banking markets seem to be able to entrench their positions and have persistently higher market shares.

The work by Bresnahan and Reiss (1991) stimulated a wave of empirical research on entry. They explain entry in terms of the cross-sectional response to market size and

[1] A similar result is found in a non-banking context by Toivanen and Waterson (2005) who explain patterns of fast food entry in the UK by market structure and find that the presence of a major rival increases entry (this presence is viewed as a proxy for future growth and a means of learning by the potential entrant).

interpret an increasing population to firm ratio as a strengthening of competition (requiring more competitive pricing); in other words, the fact that larger sales are required to offset the fixed costs of entry implies more competitive pricing. A discrete choice model relates these "entry thresholds" and how they change with subsequent entry to predictions about price behavior associated with increasing numbers of firms. Bresnahan and Reiss (1991) take the view that isolated rural markets are best suited to testing hypotheses regarding entry, generally because of the difficulty in accurately drawing market boundaries in metropolitan areas or even in rural counties adjacent to MSAs.

Cetorelli (2002) uses the Bresnahan and Reiss (1991) (BR) methodology to examine local banking markets and explain (equilibrium) market structure by population and other county economic characteristics; the paper analyzes numbers of banks in a large sample of non-metropolitan counties for 1999. While we would argue that contiguous rural counties may not represent the most appropriate geographic market definition for local banking, based on his estimated ordered probit coefficients, significant market power is suggested at least until the number of banks in a county reaches five in number.[2]

Cohen and Mazzeo (2007a) apply a variant of the BR approach to rural banking markets. They look at data for a large number of rural banking markets in 2000 and 2003 to examine the nature of competition within and across three types of institutions –

[2] Adams and Amel (2007) present further results on bank entry, also finding past entry to induce future entry, and also provides a nice literature review of the previous bank entry literature.

multimarket banks, single-market banks, and thrifts. As in this paper, they choose to define markets in terms of BLS "labor market areas" which combines contiguous counties depending on commuting patterns to better proxy geographical markets for financial services. Cohen and Mazzeo (2007a) find significant product differentiation (that competition within types is more aggressive than across types) and that variable profits are significantly reduced by the second firm in a given type, this reduction becoming smaller for subsequent entry.

We also use a variant of the BR approach. However, unlike Cetorelli (2002) we consider only rural counties at least one county removed from an MSA and not adjacent to any other sample county. We also consider the issue of banking competition in small rural markets in a somewhat different manner than Cetorelli (2002) and Cohen and Mazzeo (2007a), applying the methodology of Abraham et al (2007) which attempts to sort out the roles of increased competition and changes in fixed costs as the number of firms in a market increases.[3]

Abraham et al. (2007) extend the BR approach by incorporating information on quantity to analyze the level of competition in the U.S. hospital industry. They claim (p. 266) that using information about quantity "allows us to separate changes in fixed cost associated with entry from changes in the toughness of competition." They find, in their sample of hospital markets, that relatively few firms are required to bring competitive

[3] A somewhat similar approach was adopted by Asplund and Sandin (1999) in a study of local competition among Swedish driving schools.

behavior (by reducing variable profits and increasing market quantity), with limited effects beyond three firms in a market.

This paper applies the Abraham et. al. (2007) methodology to local banking markets in rural markets.[4] Our sample of markets is smaller than that used in other recent studies of banking entry, but more broadly representative of the nation; we consider 115 rural markets (across 44 states) in the U.S., and explain bank and thrift entry in 1994 and 2004, with particular interest in the implications of this entry on the nature of competition in these markets, and whether the nature of competition in local banking markets has changed ten years after the Riegle-Neal deregulation of branching.

Descriptive Statistics

The data sources used are the FDIC's Summary of Deposits Data, and the Federal Reserve System's National Information System, along with Census population, land area and retail sales estimates, and BEA personal income and wage estimates. Table 1 presents some descriptive statistics on the sample of 115 non-metropolitan BLS "labor market areas" (LMAs) for 1994 and 2004.[5] Initially, counties – no more than three from any one state -- were chosen from all those at least one county away from a metropolitan statistical area and not adjacent to another in the sample. Some of these were then

[4] An earlier paper, Feinberg (2007), used some of the data examined here to take a somewhat more descriptive look at rural bank entry issues.
[5] The sample of LMAs is presented in the appendix.

combined with one or two adjacent counties to correspond to the BLS labor market areas.[6]

The limit on the number of markets chosen per state was designed to ensure a broad geographic balance in the sample; the alternative – including all rural counties (as in Cetorelli (2002)) or all small rural labor market areas (as in Cohen and Mazzeo (2007a,b)) -- can lead to a disproportionate weighting on a small number of primarily rural states.[7] The choice of rural markets somewhat isolated from metropolitan areas (and from each other) was designed, as discussed in Bresnahan and Reiss (1991), to allow for more accurate measurement of market entry.[8] The choice of the two time periods, 1994 and 2004, allows us to examine the implications for competitive behavior in local banking markets of the surge in bank branching activity occurring after the passage of the Riegle-Neal Act in 1994.

Many of the markets are quite small, with an average population in 1994 of 27,710 (ranging in size from 1,390 to 137,710). The mean number of banking institutions per market was 5.3 in 1994 (rising slightly to 5.6 by 2004), varying between 1

[6] Four of these counties were in labor market areas which changed geographic boundaries between 1994 and 2004; these were dropped from the analysis.

[7] For example, 5 states (Texas, Georgia, Kansas, Kentucky, and Nebraska) have more than twenty-five percent of all rural counties in the US. Another grouping of 5 states (Kansas, Kentucky, Nebraska, Missouri, and Iowa), with collectively 6.0% of the nation's population, has more than twenty percent of all rural counties.

[8] Due to this relative isolation from nearby markets, we ignore market characteristics in neighboring regions – for work noting the impact of distance on lending decisions, see Degryse and Ongena (2005) and Agarwal and Hauswald (2006).

and 18;[9] while certainly distinctions remain, we consider both banks and thrifts as "banking institutions" and do not (as do Cohen and Mazzeo) address the issue of how closely competitive they are.[10] We do, however, consider credit unions as a competitive threat to both banks and thrifts, especially in small rural markets (and include a credit union variable as a demand shifter).

The average population per bank/thrift is only about 5,000. The data suggest surprisingly low thresholds for multiple banks and thrifts -- only below populations of around 2,300 does monopoly banking seem the norm. Five of the six markets with mean populations of 2,300 or less over the 1994-2004 period had monopoly banks or thrifts both years.[11] In contrast, of the 21 somewhat larger markets up to 10,000 in population, only 3 had monopoly banks in any of the three years. At the other end of the spectrum there are four relatively large markets which may be outliers in the sample, two in Hawaii, one in South Carolina, and one in California – all with at least 115,000 in population all three sample years, while the next largest is more than 20,000 smaller. However, results are not sensitive to the inclusion of both these very large and the very smallest rural markets.

In order to implement the Abraham et al methodology, a measure of output is needed; we choose bank/thrift deposits as this variable. While, on the one hand, this may

[9]There are 7 markets (in 1994) with one bank, 14 with two, 21 with three, 18 with four, 12 with 5, 13 with 6, 7 with seven, 5 with eight, 4 with nine, and 14 with ten or more banks.

[10] For a nice concise discussion of similarities (and some differences) between banks and thrifts, see http://www.frbsf.org/econrsrch/wklyltr/wklyltr98/el98-13.html

[11] An issue for future research is to investigate the role of other financial institutions, especially credit unions, in these monopoly banking markets.

be viewed as an input into (part of) what banks are selling – loans, on the other hand, to the extent we view the output of banks as a bundle of services (one of which is providing a depository role), this seems not a bad proxy.

Methodology

As noted above, we utilize an econometric model derived in Abraham, et. al. (2007). In the following paragraphs, we provide a brief outline of the model.

The market demand for banking services is defined by the equation

$$Q=d(P,X)S(Y) \tag{1}$$

where per capita demand, $d(P,X)$, is a function of price and exogenous demand shifters (X) such as per capita income. The total market size, $S(Y)$, is an increasing function of population. Each banks' costs are characterized by constant average variable costs, $AVC(W)$ and a fixed cost, $F(W)$, both of which depend upon cost shifters, W. The equilibrium market price, $P_N(X,W,\theta_N)$, depends upon demand and cost conditions and the toughness of competition, as represented by θ_N. The equilibrium market price determines the equilibrium values of per-capita quantity, fixed costs, and variable profit margin (price minus average variable costs, per unit of quantity), or $d(P_N,X)$, $F_N(W)$, and $V_N(P_N,W)$, respectively.

We observe the number of banks (N) and the quantity of deposits (Q) for each market. A bank will enter the local market only if it can earn non-negative profits. The Nth firm in the market earns profits equal to:

$$\Pi_N = V_N \frac{S}{N} d_N - F_N \tag{2}$$

The total quantity of deposits in the market is equal to:

$$Q_N = Sd_N \tag{3}$$

Following Abraham, et. al. (2007), we utilize the following specifications:

$$S = \exp(Y\lambda + \varepsilon_S) \tag{4}$$

$$d_N = \exp(X\delta_x + W\delta_W + \delta_N + \varepsilon_d) \tag{5}$$

$$V_N = \exp(X\alpha_x + W\alpha_W + \alpha_N + \varepsilon_v) \tag{6}$$

$$F_N = \exp(W\gamma_W + \gamma_N + \varepsilon_W) \tag{7}$$

In these equations the parameters δ_N, α_N, and γ_N are coefficients on dummy variables for the market structure, or the number of banks in the market. They capture the differences in per capita quantity, average variable profit margins and fixed costs between markets with one firm and markets with *N* firms.

Substituting equations [4]-[7] into equation [2], we find that the Nth firm will enter when:

$$Y\lambda + X(\delta_x + \alpha_x) + W(\delta_x + \alpha_x - \gamma_w) + \delta_N + \alpha_N - \gamma_N - \ln N + \varepsilon_S + \varepsilon_d + \varepsilon_v - \varepsilon_F > 0\,. \tag{8}$$

Denote $\mu_x = \delta_x + \alpha_x$, $\mu_w = \delta_w + \alpha_w - \gamma_w$, and $\mu_N = \gamma_N - \alpha_N + \ln(N) - \delta_N$. Furthermore, allow ε_π to equal the sum of the error terms in equation [8]. Because the number of firms will be the max $\{N{:}\Pi_n>0\}$, we can rewrite the empirical model as:[12]

[12] As is typical in the literature following on Bresnahan and Reiss, we create a residual category of markets; we choose this to be markets with 7 or more banks. While the exact cutoff is arbitrary, our main results are not very sensitive to this choice.

$$N = \begin{cases} 1 & if \quad Y\lambda + X\mu_x + W\mu_w + \varepsilon_\pi < \mu_2 \\ 2 & if \quad \mu_2 < Y\lambda + X\mu_x + W\mu_w + \varepsilon_\pi < \mu_3 \\ 3 & if \quad \mu_3 < Y\lambda + X\mu_x + W\mu_w + \varepsilon_\pi < \mu_4 \\ 4 & if \quad \mu_4 < Y\lambda + X\mu_x + W\mu_w + \varepsilon_\pi < \mu_5 \\ 5 & if \quad \mu_5 < Y\lambda + X\mu_x + W\mu_w + \varepsilon_\pi < \mu_6 \\ 6 & if \quad \mu_6 < Y\lambda + X\mu_x + W\mu_w + \varepsilon_\pi < \mu_7 \\ 7+ & if \quad \mu_y < Y\lambda + X\mu_x + W\mu_w + \varepsilon_\pi \end{cases} . \tag{9}$$

If ε_π is normally distributed, then equation [9] can be estimated as a standard ordered probit.

The quantity equation is obtained by substituting equations [4] and [5] into equation [3]:

$$\ln Q_N = Y\lambda + X\delta_X + W\delta_W + \delta_N + \varepsilon_Q \tag{10}$$

where $\varepsilon_Q = \varepsilon_S + \varepsilon_d + \varepsilon$, and ε captures measurement error. Joint estimation of the quantity equation and the entry equation allows for separate identification of the impact of the explanatory variables and market structure on per capita demand (δ) from variable profits and fixed costs (α-γ).

The errors in the ordered probit and quantity equations are highly correlated. Therefore, we assume a variance components model in which:

$$\varepsilon_\pi = v_\pi + \rho\eta \tag{11}$$

$$\varepsilon_Q = v_Q + \eta \tag{12}$$

where ρ is the degree of correlation between the entry equation and quantity equation. We assume that v_π and v_Q are independently and normally distributed with means of zero and standard deviations of σ_π and σ_Q, respectively. Furthermore, we assume that η is independent of both v_π and v_Q, and is normally distributed with a mean of zero and a standard deviation of σ_η.

The model is estimated using maximum simulated likelihood. Guassian quadrature techniques are utilized to integrate the likelihood function over the distribution of η. To identify the selection model inherent in the entry equation, we include the state-level regulatory climate (as of 1994) and the physical size of the market, which we expect to affect fixed costs of entry but not variable profits or demand.

Econometric Results and Interpretation

As noted earlier, we consider two time periods in our analysis: (1) 1994, when state-level regulation was still likely to be a major determinant of entry patterns, and potential competition from entry was likely to be less significant; and (2) 2004, when -- a decade past the Riegle-Neal Act -- bank branching and entry were virtually unregulated and one might expect to see more competition resulting in local markets.

As listed in Table 1, we include a number of potential demand shifters in the model, including income per capita, retail activity (retail sales per capita), and the presence of competition from local credit unions. We include the average wage in the market as a potential cost shifter. We expect fixed costs to increase with the physical size of the market (land area). Intuitively, the cost of serving the market may increase with the physical size as banks are forced to invest in more branches. As noted above, the final explanatory variable we include is a measure of the regulatory environment of the state, which we view as a proxy for fixed costs of entry, but not affecting quantity

demanded or variable profits.[13] Results from the maximum likelihood estimation of the model are included in Table 2.

As expected, the parameter estimates associated with market population are highly significant and positive. The coefficients indicate that a one percent increase in market population increased the quantity of deposits in the market by approximately 0.7 percent in 1994 and by 0.8 percent in 2004. The remaining parameter estimates associated with equation [10] are listed in Table 2 in the per capita quantity (δ) section. The single variable cost shifter included in the model, average wage, has the expected negative impact on per capita quantity in both years, with a one percent increase in the average wage raising prices and, thus, decreasing per capita quantity by just over one percent. Two of the primary demand shifters, income and retail sales per capita, have significant positive impact on per capita demand in both years. As one might expect, as income levels and retail activity in a market increase so do the per capita quantity of bank deposits.[14]

Only a few of the coefficient estimates associated with variable profits are significant, in part reflecting the positive correlation between per capita personal income and per capita retail sales. Variable profits increase with the income per capita of the market in 1994, and with retail sales per capita in 2004, as demand for banking services grows. The negative coefficient on retail sales per capita in 1994 (while surprising) is far smaller than the anticipated positive coefficient on per capita income.. None of the cost shifters, variable or fixed, prove to be significant.

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[13] This is set equal to 1 if the state (based on Appendix Table B6 in Berger et al. (1995)) allowed all of the following: limited branching, statewide branching, limited multibank holding companes, statewide multibank holding companies, interstate multibank holding companies.

[14] The counter-intuitive ***positive*** effect of credit union presence in 1994 may reflect an endogeneity between local banking demand growth and credit union entry.

Tables 3 and 4 analyze the market structure dummies by calculating entry threshold ratios and the per firm population thresholds, respectively. The threshold ratios from the 1994 sub-sample suggest that the third firm requires about 60 percent more per firm population than the second to be profitable, and the fourth firm requires a 50 percent increase in per firm population when compared to the third. The 5/4 and 6/5 thresholds continue to decrease and reach closer to one (though with a little turbulence along the way), suggesting that the market is becoming more competitive.

If one assumes that fixed costs are constant in the number of firms in the market, the reduction in the threshold ratio suggest that competition is pushing prices lower and lower, with the market reaching closer to a competitive equilibrium. However, banks (in markets at mean values of all explanatory variables) continue to have market power at least through the entry of the seventh bank.

The threshold ratios from 2004 do not provide as clear a pattern. The third bank requires 60 percent more per firm population when compared to the second and the fourth bank requires 95 percent more per firm population than the third. The threshold ratios fluctuate, though – as in 1994 – seem to be declining towards 1 by the seventh bank in the market.

The benefit of the Abraham et. al. method is that we do not have to assume that fixed costs are constant in the number of firms that enter the market, thus providing a more accurate depiction of the level of competition in the market place. Note that the decreasing thresholds that we found in 1994 could be because even though there were no changes in the competitive conditions as firms entered the market, the fixed costs increase with the number of banks in the market at a decreasing rate. Similarly, the

fluctuating threshold ratios we found in 2004 could be due to interactions between the rate that fixed costs increase and the rate at which markets reach a competitive equilibrium.

Table 5 and 6 decompose the threshold ratio into the per-capita demand effect and the variable profit/fixed effect for 1994 and 2004, respectively. Note that the overall threshold effect is the product of the per-capita quantity effect and the average profit effect. These results indicate that in 1994, the third firm requires a per-firm market size only 83 percent as large as the second firm. In other words, per-capita demand increases by approximately 17 percent with the entry of the third firm. Per capita demand increases by an additional 13 to 16 percent with the entrance of the fourth and fifth firm, and by the sixth firm only increases about three percent. At the same time, the decomposition indicates that entrants are decreasing average variable profits as a fraction of fixed costs. These effects are consistent with modest reductions in price, thus suggesting that competition is increasing up until the entry of the sixth firm.[15]

The effects for 2004 initially suggest that with deregulation, potential competition has disciplined markets such that 2-firm markets are reasonably competitive – entry of a 3rd has no substantial impact on per capita demand (or price). The 23 percent increase in per capita demand predicted from the entry of a 4th firm seems to be an anomaly, especially as the 5th firm again has no significant impact on per capita demand. It must be acknowledged that our confidence in the local market definition for banking markets is stronger for 1994 than for 2004, as large internet banks began to make inroads into deposit-taking by then.

[15] The greater increase in per capita demand (of 15%) associated with the 7th firm is hard to explain and may reflect differences we were unable to control for between the smaller and larger of our markets.

Conclusion

Other work has examined determinants of entry in local banking markets. In this paper we apply to this sector a promising new extension to the Bresnahan/Reiss framework. Examining rural markets in both 1994 and 2004, we find in the earlier period demand effects of entry consistent with modest reductions in price, suggesting increasing competition, up until the entry of the sixth firm. In contrast, two-firm markets seem relatively competitive in 2004.

While our results are not as clear-cut as we would have liked, they are suggestive of greater competition in banking markets post-Riegle-Neal. Whether this increase in competition is in fact due to the greater threat of entry associated with the Riegle-Neal Act or to the rise of Internet banking is a topic for another day.

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Table 1
Descriptive Statistics (n=115)

	Mean	Min	Max
1994			
Number of Banks	5.30	1.00	18.00
Deposits ($millions)	268.96	7.00	1,186.00
Population (thousands)	27.71	1.39	137.71
Credit Union Presence	0.30	0.00	1.00
Average Wage (thousands)	19.03	13.11	34.12
Income per Capita (thousands)	16.02	10.37	26.97
Retail Sales Per Capita (thousands)	5.34	1.37	11.56
2004			
Number of Banks	5.56	1.00	19.00
Deposits ($millions)	376.98	7.00	2,468.00
Population (thousands)	29.79	1.22	162.97
Credit Union Presence	0.39	0.00	1.00
Average Wage (thousands)	26.31	17.36	49.08
Income per Capita (thousands)	23.30	16.34	39.94
Retail Sales Per Capita (thousands)	8.12	2.15	26.82
Land Area (Thousand Square Miles)	2.32	2.28	41.08
State Regulatory Measure	0.46	0.00	1.00

Table 2
Maximum Likelihood Parameter Estimates

	1994		2004	
Parameter	Estimate	Std. Error	Estimate	Std. Error
Market Size (λ)				
Market Population	0.6946*	0.0091	0.7798*	0.0077
Per Capita Quantity (δ)				
Constant	3.3726*	0.1110	1.2765*	0.1114
Average Wage	-1.1524*	0.0314	-1.1406*	0.0332
Income per Capita	0.6740*	0.0370	1.4783*	0.0315
Retail Sales Per Capita	0.3580*	0.01562	0.0860*	0.0130
Credit Union Presence	0.0808*	0.0119	-0.0064	0.0104
δ_2	0.3152*	0.0225	0.5182*	0.0193
δ_3	0.4962*	0.0211	0.4694*	0.0187
δ_4	0.6459*	0.0233	0.7289*	0.0235
δ_5	0.8218*	0.0258	0.7537*	0.0240
δ_6	0.8501*	0.0264	0.8642*	0.0292
δ_7	1.0135*	0.0292	1.0320*	0.0292
Variable Profits: Demand Shifters (α_x)				
Credit Union Presence	-0.0197	0.1004	-0.0442	0.1202
Income per Capita	1.2156*	0.2870	0.2696	0.3910
Retail Sales Per Capita	-0.4437*	0.1274	0.4497*	0.1698
Variable Profits: Cost Shifters (γ_w-α_w)				
Average Wage	0.0990	0.2624	0.0702	0.3893
Fixed Costs (γ_w)				
State Regulatory Measure	0.1131	0.0852	-0.0233	0.1123
Land Area	0.0170	0.0444	0.0255	0.0547
Entry Effects (γ_n-α_n)				
γ_2-α_2	1.7841*	1.0287	3.0804*	1.5123
γ_3-α_3	2.0311*	1.0330	3.1726*	1.5283
γ_4-α_4	2.3379*	1.0431	3.8025*	1.5471
γ_5-α_5	2.6385*	1.0568	3.9685*	1.5584
γ_6-α_6	2.7056*	1.0654	4.3486*	1.5763
γ_7-α_7	2.9728*	1.0730	4.6064*	1.5875
Standard Errors and Correlations				
σ_{vQ}	0.0424*	0.0020	0.0403*	0.0019
$\sigma_{v\pi}$	0.2389*	0.0036	0.2194*	0.0032
σ_η	0.3575*	0.0416	0.4410*	0.0524
ρ	-0.0979	0.4382	-0.4156	0.4193

Table 3
Threshold Ratios

	1994		2004	
Ratio	Estimate	Std. Error	Estimate	Std. Error
s_3/s_2	1.5981*	0.2461	1.5860*	0.2630
s_4/s_3	1.6343*	0.1897	1.9475*	0.2819
s_5/s_4	1.4698*	0.1507	1.3960*	0.1629
s_6/s_5	1.2511*	0.1042	1.5939*	0.1914
s_7/s_6	1.3382*	0.1231	1.2472*	0.1115

Table 4
Per Firm Population Thresholds
Threshold Ratios

	1994	2004
Ratio	Estimate	Estimate
2	1,632	1,144
3	2,142	1,514
4	3,044	2,594
5	4,013	3,277
6	4,595	4,816
7+	5,705	5,607

Table 5
Threshhold Ratios' Decomposition (1994)

Component	3/2	4/3	5/4	6/5	7+/6
Per-Capita Quantity	0.834	0.861	0.839	0.972	0.849
Fixed Cost and Profit	1.915	1.898	1.752	1.287	1.576
Overall	1.598	1.634	1.470	1.251	1.338

Table 6
Threshhold Ratios' Decomposition (2004)

Component	3/2	4/3	5/4	6/5	7+/6
Per-Capita Quantity	1.050	0.771	0.976	0.895	0.846
Fixed Cost and Profit	1.510	2.525	1.431	1.780	1.475
Overall	1.586	1.948	1.396	1.594	1.247