Cost efficiency and profitability in European commercial banking: Implications for Antitrust analysis

Gilberto Turati

Università di Torino

A natural experiment ...

- Commission sent 1,500 cross-border payments of 100 euro each all over the 15 EU countries (2001)
- Results:
  - not all transfers arrived;
  - not all transfers that did not reach their destination were returned to sender
  - cost of transfers really high: average charge 24 euro; highest charge 61 euro from GR to DK
- Evidence of large inefficiencies and lack of competition?

The economic literature

- Assess the competitiveness of banking markets by using HHI, CR, H statistics or NEIO structural models

"Estimates of the H statistic over time indicate a significant increase in competition. Competition seems to be somewhat stronger in Europe than in countries like the US, Canada and Japan"

Bikker and Haaf (2002), JoB&F

Efficiency and competition

- Berger (1995), JoMCB: **Market Power** or **Efficient Structure** hypothesis?

- Market Power (MP):
  ↑ mkt. share => ↑ mkt. power => ↑ Π

  $\Pi_i = f_1(P_i, Z_1) + e_1$

  $P_i = f_2(MS, Z_2) + e_2$

Efficiency and competition

- Efficient Structure (ES):

  better technology and/or organisational advantages => $\downarrow$ costs => $\uparrow \Pi$

  => $\uparrow$ mkt. share

  $\Pi_i = f_3(EFF_i, Z_3) + e_3$

  $MS_i = f_4(EFF_i, Z_4) + e_4$

Efficiency and competition

Empirical results on a sample of US banks

1) EFF positively related to Π but …
2) … relationship between MS and EFF statistically insignificant

Aim of the present paper: test of the MP/ES hypotheses in the European banking markets during the ‘90s

Estimating efficiency

- Two SF cost function models following the intermediation approach:
  - 3 inputs (L, K, D) / 2 outputs (LO, OEA)
  - 3 inputs (L, K, D) / 3 outputs (LO, OEA, CC)
- For each model:
  - with and without year and country dummy vbs.
  - estimated by pooling all the data (P) and cross-sectionally (S)

Data

- Panel of about 250 commercial banks from France, Germany, Italy, Spain and UK, observed between 1992 and 1999

  (IBCA BankScope Database)

- Control for M&As, BS consolidation, subsidiary FB, quotation Stock Exchange

Efficiency scores

	Mean	*Std. Dev.*	*Skewness*	*Kurtosis*	*Min.*	*Max.*
Model 1						
EFF1-P	78.52	6.61	-1.96	13.11	29.79	94.92
EFF2-P	79.26	6.37	-2.10	14.20	31.77	94.98
EFF2-S	77.84	8.18	-1.95	8.11	16.70	95.26
Model 2						
EFF3-P	73.82	10.86	-1.61	7.87	11.85	95.66
EFF4-P	74.40	10.77	-1.79	8.79	10.82	95.98
EFF4-S	74.60	12.18	-1.52	3.99	7.05	94.70

Consistency conditions
(Berger et al., 1998, JoE&B)

			Model 1				Model 2	
		EFF1-P	EFF2-P	EFF2-S		EFF3-P	EFF4-P	EFF4-S
Model 1								
EFF1-P		1	0.967	0.853		0.875	0.843	0.702
EFF2-P		0.936	1	0.888		0.851	0.877	0.740
EFF2-S		0.843	0.906	1		0.740	0.771	0.795
Model 2								
EFF3-P		0.828	0.769	0.673		1	0.956	0.812
EFF4-P		0.768	0.824	0.736		0.916	1	0.854
EFF4-S		0.638	0.696	0.752		0.781	0.858	1
Upper triangle: Pearson correlation coefficients. Lower triangle: Spearman rank correlation coefficients.								
All correlations are significant at the 1% level.								

Reduced form model

↓ Π

↑ Π

Dep. Vb.: ROE			
		I	
	Coeff.	t-ratio	Sig. Lev.
EFF	-1.842	-8.113	***
TA	0.033	2.008	**
DGER	9.677	9.597	***
DITA	9.692	9.711	***
DUK	9.977	9.951	***
DSPA	9.805	9.816	***
DFRA	9.527	9.566	***
D93	0.173	1.673	*
D94	-0.089	-0.829	
D95	0.132	1.239	
D96	0.181	1.745	*
D97	0.343	3.425	***
D98	0.384	3.719	***
D99	0.350	2.904	***
DMA	-0.044	-0.180	
DQUO	-0.076	-1.062	
DCBS	0.189	2.303	**
DFBS	-0.883	-6.727	***
Nr. Obs.	1996		
Adj. R-sq.	0.071		
Model F	10		
Prob.	0.0000		
Log-L	-3156.4		

Testing ES hypothesis

No statistically significant effects but ...

Dep. Vb.: TA			
		I	
	Coeff.	t-ratio	Sig. Lev.
EFF	0.792	1.577	
DGER	3.029	1.376	
DITA	3.639	1.668	*
DUK	3.348	1.546	
DSPA	3.568	1.667	*
DFRA	3.145	1.438	
D93	0.051	0.365	
D94	0.058	0.421	
D95	0.086	0.623	
D96	0.100	0.722	
D97	0.167	1.195	
D98	0.180	1.280	
D99	0.208	1.369	
DMA	1.571	7.200	***
DQUO	1.914	15.441	***
DCBS	0.699	6.464	***
DFBS	0.354	1.990	**
Nr. Obs.	1996		
Adj. R-sq.	0.242		
Model F	40.91		
Prob.	0.0000		
Log-L	-3750.1		

Testing ES hypothesis

… ↑ TA in mod. III and IV

Dep. Vb.: TA			
		III	
	Coeff.	t-ratio	Sig. Lev.
EFF	0.755	2.689	***
DGER			
DITA	3.844	3.149	***
DUK	3.606	3.053	***
DSPA	3.817	3.276	***
DFRA	3.391	2.803	***
D93	0.031	0.185	
D94	0.038	0.236	
D95	0.061	0.375	
D96	0.072	0.446	
D97	0.143	0.864	
D98	0.181	1.089	
D99	0.168	0.907	
DMA	1.771	6.927	***
DQUO	1.775	12.330	***
DCBS	0.785	6.740	***
DFBS	0.336	1.926	***
Nr. Obs.	1996		
Adj. R-sq.	0.241		
Model F	32.61		
Prob.	0.0000		
Log-L	-2852.1		

Testing MP hypothesis (A)

↑ WD

Dep. Vb.: WD			
		I	
	Coeff.	t-ratio	Sig. Lev.
TA	0.070	8.586	***
EFF	1.840	7.910	***
DGER	-11.059	-10.844	***
DITA	-10.612	-10.486	***
DUK	-10.918	-10.755	***
DSPA	-10.888	-10.881	***
DFRA	-10.696	-10.548	***
D93	-0.169	-3.365	***
D94	-0.420	-8.698	***
D95	-0.375	-8.223	***
D96	-0.562	-11.765	***
D97	-0.707	-14.838	***
D98	-0.717	-14.547	***
D99	-0.904	-14.206	***
DMA	-0.191	-2.285	**
DQUO	-0.151	-4.108	***
DCBS	0.063	1.530	
DFBS	0.185	2.080	**
Nr. Obs.	1996		
Adj. R- sq.	0.316		
Model F	55.13		
Prob.	0.0000		
Log-L	-1661.6		

Testing MP hypothesis (B)

↑ Int. Mg.

↓ Int. Mg.

Dep. Vb.: Interest Net Margin			
		I	
	Coeff.	t-ratio	Sig. Lev.
TA	0.090	6.631	***
EFF	-1.694	-3.967	***
DGER	5.892	3.100	***
DITA	5.962	3.162	***
DUK	5.429	2.902	***
DSPA	5.968	3.240	***
DFRA	5.980	3.163	***
D93	-0.029	-0.399	
D94	-0.072	-1.030	
D95	-0.103	-1.469	
D96	-0.134	-1.911	*
D97	-0.217	-3.101	***
D98	-0.275	-3.884	***
D99	-0.361	-4.442	***
DMA	-0.018	-0.163	
DQUO	-0.256	-4.105	***
DCBS	0.013	0.213	
DFBS	-0.181	-1.916	*
Nr. Obs.	1996		
Adj. R-sq.	0.101		
Model F	14.11		
Prob.	0.0000		
Log-L	-2393.3		

Testing MP hypothesis (C)

↑ Op. Inc.

↓ Op. Inc.

Dep. Vb.: Operating Income			
		I	
	Coeff.	t-ratio	Sig. Lev.
TA	0.055	5.087	***
EFF	-2.663	-8.048	***
DGER	15.355	10.524	***
DITA	15.320	10.582	***
DUK	14.809	10.311	***
DSPA	15.074	10.645	***
DFRA	15.305	10.531	***
D93	0.098	1.584	
D94	-0.044	-0.682	
D95	-0.054	-0.855	
D96	-0.051	-0.817	
D97	-0.071	-1.136	
D98	-0.120	-1.783	*
D99	-0.129	-1.822	*
DMA	0.093	1.141	
DQUO	-0.070	-1.403	
DCBS	0.174	3.815	***
DFBS	-0.620	-4.527	***
Nr. Obs.	1996		
Adj. R-sq.	0.160		
Model F	23.38		
Prob.	0.0000		
Log-L	-2151.3		

Conclusions

- Contrary to Berger (1995) findings, efficiency is negatively related to profits
- Efficiency positively affects market shares (proxy TA) only in two out of four cases
- Efficiency and total assets positively affect WD but ...
- Interest Margin and Operating Income are positively affected by TA and negatively affected by EFF => evidence in favour of MP hypothesis?