

Determinants of European bank profitability: A note

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This note examines the determinants of bank performances across eighteen European countries between 1986 and 1989. The study replicates Bourke's methodology and finds that the results do conform to the traditional US concentration and bank profitability studies. Support is found for the expense preference expenditure theories, yet no support is found for the Edwards–Heggestad–Mingo risk avoidance hypothesis.

A recent study by Bourke (1989) on the determinants of international bank profitability, replicated and extended earlier research undertaken by Short (1979), and found support for the view that concentration was positively and moderately related to profitability. The results also provide some evidence for the Edwards–Heggestad–Mingo hypothesis [Edwards and Heggestad (1973) and Heggestad and Mingo (1976)] of risk avoidance by banks with a high degree of market power. Bourke uses a pooled time series approach to estimate a linear equation, regressing performance measures against a variety of internal (staff expenses, capital ratios, liquidity ratios) and external (concentration ratios, government ownership, interest rates, market growth and inflation) determinants of bank profitability. This note replicates Bourke's methodology in order to evaluate the determinants of European bank profitability.

A sample of European banks, 671 for 1986, 1,063 for 1987, 1,371 for 1988 and 1,108 for 1989, are taken across eighteen countries. (The country breakdown is shown in the appendix.) Standardized accounting data for the banks was obtained from International Bank Credit Analysis Ltd (IBCA), a

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London-based bank credit-rating agency and the variables used are as follows:

Dependent variables

(NPBT = Net profit before tax; NPAT = Net profit after tax),

BTCR = NPBT as per cent of capital and reserves,

ATCR = NPAT as per cent of capital and reserves,

BTCRTB = NPBT as per cent of capital and reserves and total borrowings,

BTTA = NPBT as per cent of total assets,

BTSETA = NPBT + staff expenses as per cent of total assets,

BTSEPLTA = NPAT + staff expenses + provision for loan losses as per cent of total assets.

Independent variables

GOVT = a binary variable representing government ownership; one when a bank is owned by a government, national or provincial, zero otherwise,

CONC = ten bank asset concentration ratio,

INT = the long-term bond rate for each country for each year (IMF),

MON = growth in money supply for each country for each year (IMF),

CRTA = capital and reserves as per cent of total assets,

CBINVT = cash and bank deposits + investment securities as per cent of total assets,

CPI = percentage increase in consumer price index for each country for each year (IMF),

SE = staff expenses as per cent of total assets.

As with previous studies, we estimate a simple linear equation using a pooled sample of European banks between 1986 and 1989. (Cross-sectional equations for individual years were estimated and yielded similar results, so these are not reported in the paper.)

Results are shown in tables 1 and 2. Table 1 estimates the relations between return on capital and various independent variables and these are more or less similar to the equations estimated by Short (1979). As with Bourke we find an 'almost total lack of correspondence' (p. 75) between our return on capital results and those of Short. For European banks we find a statistically significant positive relationship between return on capital and concentration and a positive relationship for nominal interest rates (which is used as a capital scarcity proxy variable). Unlike Short and Bourke, however, who both find a statistically significant inverse relationship between return on capital and government ownership, we find a statistically significant

Table 1

Estimates of the relationship between return on capital and selected independent variables for 1986–1989.

	Intercept	GOVT	CONC	INT	MON	R ²	F
1. <i>BTCR</i>	90.0629 (-0.74)	0.0007 (0.02)	0.0007 ^a (3.44)	0.0019 ^a (24.42)	-0.0007 ^a (-3.93)	27.6	246.25
2. <i>BTCR</i>	-0.2830 ^a (-3.10)	0.0070 (0.14)	0.0092 ^a (5.99)	-	-	1.1	18.59
3. <i>BTCR</i>	-0.1630 (-1.76)	-0.0297 (-0.64)	0.0071 ^a (4.80)	-	0.0025 ^a (16.53)	10.8	105.29
4. <i>ATCR</i>	-0.3090 ^a (-4.49)	0.0905 ^a (2.238)	0.0075 ^a (6.47)	0.0010 ^a (17.56)	-	10.9	125.60
5. <i>BTCRTB</i>	-0.8150 ^a (-5.41)	0.4050 ^a (5.34)	0.0168 ^a (7.01)	-	0.0003 (1.19)	2.2	20.32
6. <i>BTCRTB</i>	-0.6620 ^a (-5.47)	0.2990 ^a (4.54)	0.0156 ^a (7.77)	0.0003 ^a (2.61)	-	2.4	26.45

^aSignificant at the 5 per cent level.

t-Statistics in parentheses.

positive relationship, suggesting that state-owned banks generate higher returns on capital than their private sector competitors. In one way this result is surprising because it conflicts with earlier findings, but it is not unexpected because state-owned banks generally maintain lower capital ratios (because the government implicitly underwrites their operations) than their private sector counterparts. A simple explanation for our findings could be that, because our sample comprises a much larger proportion of state-owned banks, for example, over 200 in 1988, these results are more representative than the two aforementioned authors who only included the largest government-owned banks in their much smaller samples (e.g. Bourke used 200 banks over ten years, of which there were only thirty or so government-owned institutions). A paper by Marriott and Molyneux (1991), who used a sample of the 92 largest European banks between 1986 and 1988 to estimate similar equations, found that there was a strong statistically significant inverse relationship between return on capital and government ownership. In general, the limited evidence to date suggests that small samples that include only the largest banks tend to generate a negative relationship between government ownership and return on capital.

The results¹ shown in table 2 use asset-based returns and, in general, show that capital ratios and nominal interest rates are positively related to profitability. These findings are to be expected and are confirmed in the Bourke study. Government ownership also appears to have a positive impact on bank profitability. In the case of liquidity ratios, we find a weak inverse

¹The Breusch-Pagan heteroskedasticity test confirmed the absence of heteroskedasticity in the data. In addition, there appears to be no evidence of collinearity problems from a casual inspection of the results.

Table 2

Estimates of the relation between return on assets and selected independent variables for 1986-1989.

	Intercept	CRTA	CBINVTA	GOVT	CONC	INT	MON	CPI	S.E.	R ² (adj)	F
1. BTTA	-0.0146* (-6.18)	0.1200* (14.23)	-0.0122* (-4.66)	0.0056* (5.05)	0.0004* (12.07)	0.00002* (10.41)	-	-	-	13.6	97.39
2. BTTA	-0.0153* (-6.44)	0.1150* (13.35)	-0.0113* (-4.25)	0.0050* (4.47)	0.0004* (11.90)	-	-	0.0003* (3.32)	-	10.8	75.46
3. BTTA	-0.0153* (-6.43)	0.1190* (13.92)	-0.0125* (-4.70)	0.0052* (4.63)	0.0004* (12.92)	-	-	-	-	10.5	91.27
4. BTTA	0.0064* (4.22)	0.1200* (13.67)	-0.0107* (-3.93)	0.0021 (1.89)	-	-	-	-	0.00002* (12.14)	9.9	84.27
5. BTTA	0.0051* (6.35)	0.1120* (12.69)	-	-	-	-	-	-	-	4.9	160.99
6. BTSETA	0.0664* (2.96)	0.0930 (0.70)	-0.0353 (-0.85)	-0.0333 (-1.94)	-	-	-	-	-	0.1	1.65
7. BTSETA	-0.1570* (-3.25)	0.1390 (0.88)	-0.0420 (-0.81)	0.0051 (0.23)	0.0039* (5.56)*	-	0.00004 (0.53)	-	-	1.2	7.34
8. BTSETA	-0.0739 (-1.37)	0.2150* (2.36)	-0.0615 (-1.18)	-0.0236 (-1.00)	0.0036* (5.12)	-	0.00003 (0.38)	-0.0128* (-3.42)	-	1.7	8.09
9. BTSETA	-0.1160 (-3.10)	0.1250* (2.94)	-0.0344 (-0.83)	-0.0060 (-0.34)	0.00319* (5.94)	0.00006* (2.30)	-	-	-	1.4	9.70
10. BTSEPLTA	-0.1890* (-3.74)	0.0540* (2.32)	-0.1630* (-2.73)	0.0686* (2.41)	0.0059* (8.47)	-	-	-	-	3.4	20.86
11. BTSEPLTA	-0.2710* (-4.12)	0.1120* (2.55)	-0.1870* (-2.32)	0.1200* (3.49)	0.0068* (7.23)	-	0.00001 (0.10)	-	-	3.0	12.06
12. BTSEPLTA	-0.3410* (-3.98)	0.1090* (0.54)	-0.1750* (-2.16)	0.1200* (3.50)	0.0073 (7.21)	-	0.00001 (0.17)	0.0076 (1.27)	-	3.0	10.33
13. BTSEPLTA	-0.1860* (-3.68)	0.0520 (0.31)	-0.1620* (-2.70)	0.0695* (2.44)	0.0583* (8.30)	0.00005 (2.17)	-	-	-	3.4	16.96

*Significant at the 5 per cent level.

t-Statistics in parentheses.

relationship with profitability which is also to be expected as liquidity holdings (particularly those imposed by the authorities) represent a cost to the bank. Staff expenses indicate a strong positive relation with before-tax return on assets. This counter intuitive finding suggests that high profits earned by firms in a regulated industry may be appropriated in the form of higher payroll expenditures. In other words, expense preference behaviour appears to be taking place in European banking markets. A better test for the evidence of expense preference behaviour is reported in the following paragraph.

Concentration shows a positive, statistically significant correlation with pre-tax return on assets which is consistent with the traditional structure-conduct-performance paradigm. When the value added measure used to test for the expense preference theory (*BTSETA*) is introduced, we find a strong positive relationship for the concentration (*CONC*) variable. This needs further explanation. If support is to be shown for the expense preference theory, one would expect the sign on the *CONC* variable to be positive and strengthen. This is because, the measure of value added largely removes the possibility of either managerially induced expenditure or labour union-negotiated wage demands appropriating excessive proportions of net income. Our results appear to find evidence of expense preference behaviour in European banking. Another value added measure (*BTSEPLTA*) is used to test for the Edwards-Heggstad-Mingo risk aversion effect, using this as a dependent variable one would expect the sign on the *CONC* variable to be negative and the relationship strengthen, which illustrates that higher levels of concentration are associated with lower loan costs. We find no evidence of the risk aversion effect.

In general, our analysis of the determinants of European bank profitability conflict with the earlier findings of Short, yet our main results on asset-based returns confirm Bourke's findings, apart from the relationship between government ownership and profitability. The results are in agreement with the traditional concentration and bank profitability (structure-conduct-performance) studies for the US market, and we find no support for the Edwards-Heggstad-Mingo hypothesis. Support is found for the expense preference expenditure theories in European banking.

Appendix

Number of European banks in data sample, 1986–1989.

Country	1986	1987	1988	1989
Austria	27	41	47	48
Belgium	26	37	38	33
Denmark	22	25	27	26
Finland	9	10	12	12
France	96	142	179	138
Germany	115	149	162	149
Greece	9	9	10	3
Ireland	9	16	17	17
Italy	65	170	318	169
Liechtenstein	3	3	3	3
Luxembourg	61	84	87	74
Netherlands	23	30	36	29
Norway	26	28	29	27
Portugal	6	17	18	18
Spain	37	105	165	156
Sweden	19	22	24	23
Turkey	9	18	21	12
United Kingdom	109	157	178	171
Totals	671	1,063	1,371	1,108

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