

## Market definition of the UK deposit saving account market.

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#### Abstract

This study examines the definition of the UK deposit savings account market. A testing procedure is used to ascertain if the law of one price and the assumption of a unified national market may or may not be rejected. The existing UK and European literature on the definition of financial services markets is developed by using both product specific interest rate data and by incorporating non-price characteristics of financial services products in the testing procedure. This study indicates a unified UK market may be rejected for deposit saving accounts. Such a result is consistent with previous surveys of customers' preferences (Kwast et al, 1998 and Cruickshank, 2000), which provide an indication of demandside conditions in this market. The conclusions also provide empirical support for a number of theoretical perspectives including the development of two-tier banking markets across Europe (see for example Goodhart, 1987, Williams and. Gardener, 2000).

#### Introduction

In this study, the variation of interest rates across the UK market for deposit savings accounts, provided through the branch networks of depository institutions, is examined. The analysis develops the existing UK and European literature by employing interest rate and non-price characteristics of comparable deposit savings accounts or products in the assessment of market definition. The research also draws from previous UK research (Heffernan, 1990, 1993) by moving away from defining markets as a collection of similar institutions, such as banks or building societies discretely, and assessing all the providers of a broadly homogeneous product as participants of a market. An empirical testing procedure, drawn from the US antitrust literature (see Heitfield, 1999) is used to test the hypothesis that equal dispersion of interest rates of deposit savings accounts exists in the UK, consistent with a unified market and the law of one price. It is proposed that the rejection of this hypothesis, indicates the UK deposit savings account market, may not be a geographically unified market, and may display regional and local market characteristics.

Initially, it may appear strange to suggest that the pricing of UK deposit savings accounts is geographically dispersed, particularly when interest rates are set centrally by depository institutions across their branches networks. Additionally, it could be assumed that under conditions of rationality and perfect information differences in deposit prices would be bid away by arbitrageurs. This normative view has a degree of support within the literature, for example, Cruickshank (2000) suggested that in "… a competitive market, significant price differentials between similar products distributed in similar ways are not sustainable. If they

did exist, consumers would switch to the cheaper product, and the more expensive would lose sales" (p.105).

This perspective also has a number of critics, with some commentators suggesting the future market structure of European banking markets may mirror developments within the USA (see Goodhart, 1987, and Williams and Gardener, 2000). It is proposed that a two-tier market for banking services may develop within Europe, where both ".... pan-national commercial banks, which provide universal banking to their customers who include corporate clients and high net worth individuals" (Williams and Gardener, 2000, p.3) will operate across an international market and coexist with local and regional banking networks which will persist in the provision of banking services to small companies and lower net worth private individuals.

Another perspective, pertinent to the definition of retail banking markets, has been provided by demand-side survey work. There is increasing international evidence that deposit customers have a preference to obtain banking services locally, are reluctant to change accounts frequently and make a high proportion of their purchases of financial services from a single source. For example, Kwast *et al* (1998) reports that in the US, 97.5 per cent of households use a 'local' depository institution, with 75 per cent of deposit services obtained within 10 miles of their home or workplace, and at least 50 per cent of financial services purchases are made from the primary financial institution. In a similar vein, the Cruickshank Report (2000) presents a number of similar findings from a survey of the UK market, further suggesting that nearly two-thirds of people have had the same current account for over 8 years. Heffernan (1993) additionally comments, that in the context of UK retail banking, "... gathering the information needed to find a bargain product may be difficult, and there are transactions costs associated with the frequent switching of accounts. Such constraints must contribute to consumer inertia" (p.328). Considering such evidence, assumptions, such as there is "... no evidence that prices of personal banking services vary materially in different regions of the country" (Cruickshank, 2000, p.104), demand greater empirical investigation. It is suggested that through the provision of greater empirical knowledge of the definition and extent of the UK deposit market, clarification of these issues may be of assistance both in terms of future regulation and competition policy.

#### The Research Background

There have been only a limited number of market definition studies of UK or European banking markets. An example is the study undertaken by Kleimier and Sander (2000) who suggest that evidence for integration of European banking markets, an implicit goal of European re-regulation (particularly after 1992 and the introduction of the 2nd Banking Directive) is limited. Kleimier and Sander conclude that overall, money market interest rates do not indicate a global or European-wide integration, yet suggest the development of supranational financial markets within the broader European Union and the continuance of national financial markets.

Most studies of market definition in banking markets have considered US markets, which have significant regulatory differences to the UK banking market. The rationale for most of the US studies have been encouraged by the continuing merger movement of US depository institutions and the possible implications for the future competitiveness of US banking markets. For example, Jackson (1992) uses econometric time series techniques to test if, one, a national market exists in the US banking industry and, two if the US definition of the banking 'product' is too broad. Through employing bank-specific interest rate data for three types of deposit product on services, Jackson reports that time deposit accounts display national market characteristics, whilst other deposit accounts, such as instant access deposit accounts, display more regional market characteristics. Such a finding indicates that both the US antitrust definition of a banking market based around counties, and the broad definition of the banking 'product' being all services provided by banks, may be misplaced. Redescki (1998) employing regression analysis of deposit interest rates and concentration measures arrives at broadly similar conclusions, using a distinct data set. In turn, the work by Redescki (1998) has been reassessed and criticised by Heitfield (1999), who provides results consistent with smaller geographic deposit markets.

While the aforementioned studies have tested the hypothesis that difference between markets in terms of the magnitude and/or variation of bank specific interest rates may indicate distinct markets, other hypotheses, related to the broader question of regional finance markets have been suggested. Following Dow and Rodrĩgues-Fuentes (1997), work in this field which is pertinent to this study, may be broadly divided into studies which have considered regional credit markets and factors determining regional credit availability and studies which have considered interest rate differentials between regions. The only study which has considered the interest differentials for the UK was provided by McKillop and Hutchinson (1990), who suggest that interest rates of loans for small enterprises may be higher in Northern Ireland and the interest rates charged for personal banking services across the regions of the UK are approximately equal. Other studies which have considered the availability of credit (for example, Dow, 1992, and McKay and Molyneux, 1996) has indicated that regional disparities occur both within the UK and across Europe.

Other US studies of market definition in banking that have considered distinct hypotheses include Jackson (1997), who uses US deposit interest rate data to test for the persistence of price rigidity or 'sticky' prices and Amel and Hannan (1999) who test a related hypothesis that commercial banks alone are not representative of the banking 'product' market. Overall, while agreement appears to exist as to the importance of the definition in terms of product characteristics, little consensus is present as to the influence or importance that location of depository institutions, or their branches, may have in market definition in UK retail banking markets.

#### The UK Market for Deposit Savings Accounts?

The sample for this study includes 83 retail banks and building societies (both existing and converted) which have operated in the UK deposit savings market throughout 1999. The data set includes both the location of the branch networks of sample institutions and the annualised interest rates offered on 290 deposit accounts offered by the sample institutions, in all months of 1999. The branch data was collated both with reference to the Building Societies Year Book for building societies (both mutual and converted) and with reference to individual depository institutions, who kindly forwarded their branch details. The annualised interest rate

data was compiled from the Moneyfacts magazine, which provides an extensive sample of banking prices and charges on a monthly basis.

The institutions in the sample provide a wide range of deposit saving account products which differ in terms of access, quantities deposited and additional services associated with the deposit product. It is possible that such heterogeneity in the characteristics of the UK deposit market may disguise both discrete product markets, potentially low levels of competition and a number of smaller regionally based deposit markets, existing within the overall UK market. Such firm and product differences preclude the direct testing of 'difference' in interest rates between different areas. To accommodate such heterogeneity in product characteristics, a range of non-price characteristics of deposit savings account are defined and are included in the testing procedure.

The choice of banking service was taken to provide a widely, available savings product with broadly homogenous characteristics of high liquidity and a higher return than current accounts. This definition of the deposit account, broadly<sup>1</sup> adopts the characteristics definition of financial markets (Heffernan, 1990, 1993). The product characteristics defined for use within the testing procedure are deemed to have an influence on the quality or nature of the product and may have a significant influence on the interest rate of the product, yet are assumed not to change the broad function of the product from being a deposit savings account. As the study attempts to clarify the geographical extent of the UK deposit savings market, only products offered by branches are considered. Comparable products offered

<sup>&</sup>lt;sup>1</sup> It is the aim of the study to consider only those financial products which have both similar levels of risk which is not explicitly considered, as depository institutions are assumed to be secure. The level of return denoted by

through alternative distribution networks, which are not closely related to particular locations, such as postal and internet accounts are not considered within the study<sup>2</sup>.

With reference to this sample it is proposed that an assumption of a unified UK deposit market, whilst plausible with reference to the larger retail banks and a limited range of deposit services, deserves greater attention. Deposit services in the UK are provided by retail banks, building societies, which have in many cases a greater regional focus of operation, and the smaller regionally based banks, including subsidiaries of the larger clearing banks, from Northern Ireland, Scotland and northern England. Such differences are also reflected by differences in the average size of branch networks provided by different types of depository institutions, which operate in the UK. For example, it is estimated, from the sample used in the study, that on average, community<sup>3</sup> building societies have a branch network of approximately 15 branches, non-community building societies have an average branch network of 418 branches. Similarly, major high street banks, have an average network of 1834 branches, whilst other branching banks operating in the UK retail deposit savings market have an average branch network of 194 branches.

Differences also exist in the distribution of branches by institution type across the constituent parts of the UK; this distribution is displayed in Table 1. It can be observed that in some areas, such as Wales and south West England, a relatively high proportion of branches are provided

<sup>2</sup> It is recommended that further work that may consider competition in this market would include such accounts provide services through these alternative distribution channels such as the postal service and the internet. <sup>3</sup> Definition of the service of the

interest rates is allowed to vary within the model.

<sup>&</sup>lt;sup>3</sup> Definitions of financial institutions are made following Heffernan, (2000) where community building societies

by the large high street banks, whilst in other areas (such as Northern Ireland and Scotland) most branches are provided by other banks. Other substantial variations include the distribution of building society and converted building society branches, which have a relatively strong presence in some regions, such as the Midlands.

	Big F retail l		Other Banks	<b>Building</b> Societies	Converted Building society	Community Building Society	Region Total
South West England	Count	830	89	201	204	51	1375
	row %	60	6	15	15	4	100
Southern England	Count	862	144	201	322	38	1567
8	row %	55	9	13	21	2	100
Outer London	Count	614	157	152	267	11	1201
	row %	51	13	13	22	1	100
Inner London	Count	605	198	112	227	9	1151
	row %	53	17	10	20	1	100
East Midlands	Count	645	121	197	212	69	1244
	row %	52	10	16	17	6	100
West Midlands	Count	606	121	250	180	69	1226
	row %	49	10	20	15	6	100
East Anglia	Count	514	69	177	142	3	905
	row %	57	8	20	16	0	100
North West England	Count	750	358	251	241	20	1620
	row %	46	22	15	15	1	100
Yorkshire	Count	536	216	165	191	15	1123
	row %	48	19	15	17	1	100
North & North East	Count	453	97	106	162	47	865
England	row %	52	11	12	19	5	100
Wales	Count	632	165	127	107	19	1050
	row %	60	16	12	10	2	100
Scotland	Count	190	891	84	185	38	1388
	row %	14	64	6	13	3	100
Northern Ireland	Count	0	263	17	46	13	339
	row %	0	78	5	14	4	100
Channel Islands	Count	21	2	0	1	0	24
	row %	88	8	0	4	0	100
Group Total	Count	7258	2891	2040	2487	402	15078
	row %	48	19	14	16	3	100

 Table 1:
 Distribution of Branches by Institution Type and Region

are defined as any depository institution that places a geographic restriction on who qualifies as a customer. For

The distribution of interest rates is considered over all of the 123 post-code areas of the UK. As any depository institution may have a number of branches in any post-code area, it is assumed that every deposit savings account may be offered repeatedly at a number of branches. Whilst this approach assumes institutions and products may be included multiple times, it is considered that this may give an indication of the differing concentrations of branches that individual institutions operate in differing post-code areas.

As interest rates on most deposit saving account products also vary with the quantity of funds deposited, interest rates are provided for 7 representative levels of deposit (£1, £501, £1001, £2501, £5001, £10001, and £25001). The testing procedure is further expanded by considering deposit saving accounts, which have different levels of notice or liquidity. Four groups of accounts will be considered including instant access accounts with 0 days notice, short term accounts with between 1 and 50 days notice, medium term accounts with between 51 and 150 days notice and long term accounts with greater than 150 days notice. It is hoped that by employing these further definitions, the possible variations of interest rates resulting from product differentiation may be reduced by narrowing the product definition of the savings account products considered.

#### **The Testing Procedure**

The basis of the testing procedure rests on the assumption that within a perfectly integrated market all firms will obey the 'law of one price'. It is assumed that if products are similar in function, such products should behave as substitutes for one another. Therefore in a single market, products which act as substitutes should display little variation in price. This said,

example a 50 mile radius.

within the UK, suppliers of deposit savings accounts, offer the same interest rate across their entire branch networks. While this practice, has been interpreted by some commentators as an indication of quite large market areas (for example, Redecki, 1998), others (for example, Heitfield, 1999), correctly suggest that *all* prices of substitutes should be similar within a market, to provide an indication of similar demand and supply conditions and therefore suggest an integrated market. Following Heitfield (1999), all testing will be directed at the possible rejection of a larger geographic market. Such an approach is adopted, as persistent 'systematic' differences in the variation of interest rates paid for similar products sold at different locations will provide evidence that such locations are in distinct markets. Conversely, the provision of similar level of dispersion in interest rates at different locations may<sup>4</sup> imply the locations are in the same market.

A linear regression model estimated using an Ordinary Least Squares estimator, which includes four types of variable. A description of all the variables, used in the model, is contained in Table 2. The variable types include, one, interest rates offered on individual saving deposit accounts provided through individual branches, two, firm characteristics, three, product characteristics and four, geographical location indicators. Following Heitfield (1999) the natural logarithm of interest rates offered on individual products will be used in the model, to ensure that the regression model does not predict negative interest rates. Post-code areas are individually represented by dummy variables (indicating whether an individual product is offered in a region or area or not).

<sup>&</sup>lt;sup>4</sup> It is acknowledged that some markets, which have common characteristics, yet are quite separate, may also produce similar prices.

Variable Type	Variable Name	Variable Description
Interest rate ( <i>IR</i> )	IR	The level of interest offered for different quantities of deposit on instant access deposit savings accounts.
Geographical variable ( <i>Geog</i> )	Post Code	The post-code areas of the UK; used as a proxy for a sub regional area, such as the nearest city or large town.
Firm Variables ( <i>Firm</i> )	Institution type Total products Network Size	A dummy variable which denotes whether the branch supplying deposit products is a building society (mutually owned) or a bank or converted building society (owned by shareholders). The number of instant access products offered by the institution. The total number of branches of a institution.
Product Characteristic Variables ( <i>Product</i> )	Min. Investment Bonus Annual Charge Segmentation Affiliation Branch Charge ATM charge Min. Cheque Constraint Max Deposit Days Notice Interest paid	The minimum amount required in order to open an instant access deposit savings account. Is there a bonus for limited withdrawals from the account? Is there an annual charge for the use of the account? Is access to the account limited by area? Is the account affiliated to some other interest such as religious or sporting groups? Is there a charge for the use of a branch for transactions? Is there a charge for the use of a branch for transactions? Is there a charge for the use of automatic telling machines for transactions? The minimum size of transaction that may be undertaken with an instant access account. Is there a maximum limit to deposits in an account? How many days notice (excluded for instant access accounts) The number of times interest is paid every year. (not included in the instant access regressions)

Table 2:	Variables	included	in the	model
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Three firm characteristics are included in the model to accommodate firm differences, which may lead to possible heterogeneity within the sample. These characteristics include, the ownership form of the institution, i.e. whether the firm is owned by its customers (a mutual building society), or is owned by shareholders; the number of all<sup>5</sup> saving products offered by the institution and the size of the branch network operated by the institution. These variables are included to accommodate possible differences in firm objectives, degree of product

differentiation and commitment to the market and the scale of different market participants, respectively. A wide range of product characteristics are considered in the model to accommodate possible heterogeneity of deposit accounts and the perceived quality of saving deposits accounts.

From this model, an F test is used to test a restriction placed upon the model in relation to the geographical level of market considered. The hypothesis to be tested is that variation across post code areas of the UK is equal. Through estimating and comparing two regression equations, one, which is unrestricted (equation 1) and includes all independent variables (firm and product characteristics and geographical variables), the other regression equation (equation 3), which is restricted will include only the firm and product characteristics independent variables, a test of equal variance across post-code areas may be undertaken. Estimation of each regression equation is undertaken for the 7 deposit quantities and the 4 periods of notice. The overall, unrestricted model may be written as:

$$LogIR_n = \beta_1 + \chi_j Product + \phi_k Firm + \gamma_f Geog + \varepsilon$$
(1)

for n = 8, j = 10, k = 3 and f = 123. If no variation in interest rates exists across post-code areas, the restriction (2) will hold.

$$\gamma_1 = \gamma_2 = \gamma_3 = \dots = \gamma_f = 0 \tag{2}$$

<sup>&</sup>lt;sup>5</sup> Including saving deposit accounts offered through alternative distribution channels.

Therefore the restricted regression equation would be written as:

$$LogIR_n = \beta_1 + \chi_j Product + \phi_k Firm + \varepsilon$$
(3)

for n = 8, j = 10 and k = 3, where  $\beta$ ,  $\chi$ ,  $\phi$  and  $\gamma$  are coefficients to be estimated,  $\varepsilon$  represents the error term and (2) is the restriction to be estimated. The results from this procedure are presented in Table 3. As may be observed in all cases, the hypothesis that variation in interest rates of saving deposit accounts is equal across post-code areas is rejected.

		t Access Accor f observations:		Short Term Accounts(1-50 days) Number of observations: 7,044			
Value of	F test	R <sup>2</sup> change	Significance	F test	R <sup>2</sup> change	Significance	
deposit							
£1	7.349	0.012	0.000***	5.077	0.032	0.000***	
£501	12.998	0.039	0.000***	3.943	0.151	0.000***	
£1001	10.452	0.021	0.000***	12.275	0.038	0.000***	
£2501	4.461	0.008	0.000***	4.256	0.045	0.000***	
£5001	7.424	0.025	0.000***	10.77	0.100	0.000***	
£10001	5.677	0.012	0.000***	9.717	0.104	0.000***	
£25001	6.897	0.020	0.000***	9.925	0.105	0.000***	
	Medium Tern	n Accounts (51	1-150 days)	Long Term Accounts (>150 days) Number of			
	Number o	f observations:	15,260	observations: 3,154			
Value of	F test	R <sup>2</sup> change	Significance	F test	R <sup>2</sup> change	Significance	
deposit		_	-			_	
£1	7.087	0.014	0.000***	6.761	0.011	0.000***	
£501	17.639	0.040	0.000***	4.687	0.019	0.000***	
£1001	11.232	0.024	0.000***	5.611	0.013	0.000***	
£2501	7.952	0.010	0.000***	6.141	0.010	0.000***	
£5001	7.871	0.006	0.000***	3.724	0.012	0.000***	
£10001	3.755	0.009	0.000***	4.324	0.011	0.000***	
£25001	10.583	0.024	0.000***	3.396	0.033	0.000***	

 Table 3
 Interest rate variation across post-code areas is equal

\*\*\* denotes significant at 99 % confidence.

#### Conclusions

Within this study, the geographic extent of the UK deposit saving accounts market is examined. As it is increasingly accepted that such a market definition is often a matter of degree, as markets both overlap, geographically and in terms of possible substitutes, this problem lends itself to the use of statistical techniques, as used in this study. The variation of interest rates between post-code areas is examined, using a linear regression model. The testing procedure indicates if equal variation of interest rates may or may not be rejected across post-code areas. This hypothesis is rejected suggesting the influence of geographical factors in market definition may be influential and an integrated UK deposit savings account market does not appear to exist. Such an approach, whilst robust to this limited hypothesis, may only be employed to indicate whether a larger market definition may be rejected, and not to indicate if a market definition is too narrow.

Such a result is consistent with the previous surveys of customers preferences (Kwast *et al*, 1998 and Cruickshank, 2000), which provide an indication of demand-side conditions in this market. Similarities are also found with the proposed two-tier market structure of European banking markets (Goodhart, 1987), where low-yield retail banking markets continue to display regional and local characteristics. These results may also be interpreted as contradictory to the assumption of a unified UK market in retail banking services, adopted in the Cruickshank Report on Competition in UK retail banking. Further, it may be stated that although depository institutions set their interest rates centrally for their entire branch network, creating substantial supply side linkages between distinct geographic markets, the

regional focus of the branch networks, particularly of, the smaller market participants, appears to lead to significant differences in interest rates developing across the UK.

The results reported in this study differ from previous work conducted in the UK. The conclusion that equal variation between interest rates in different parts of the UK may be rejected, provides a distinct result to McKillop and Hutchinson (1990) who suggested interest rates for personal banking services charged across the regions of the UK are approximately equal. Additionally, while the results of this study concur with some findings from the USA<sup>6</sup> (for example Heitfield, 1999), differences are found with other studies, such as Jackson (1992), as no perceived differences in terms of variation of interest rates of deposit account with different length of notice are identified in the UK. Such a finding indicates the UK long-term deposit savings account market may be less integrated that the US banking market for long-term deposit accounts.

In conclusion, it is suggested that the rejection of a unified UK retail banking market for deposit savings accounts, has implications for the both the analysis of competition in this area, which has previously assumed a unified national or pan-national market (for example Heffernan, 1993, Ashton, 2000, Molyneux *et al*, 1994, and Bikker and Groeneveld 1998 have all assumed unified national markets exist), and for the future regulation of the sector. It is proposed that the market definition of UK and European banking markets, which has appreciated far less attention than US banking markets, is an area which demands further empirical work.

<sup>&</sup>lt;sup>6</sup> It should be stated that the USA has a distinct regulatory framework and all comparisons should be treated with care.

#### References

Ashton, J. K. (2000). "A General Test of Competitive Conditions in the UK Building Society Mortgage Market: 1990-1996", *The Service Industries Journal*, vol.20, no.1, pp.86-94.

Bikker, J. A. and H. J. Groeneveld, (1998). "Competition and Concentration in the EU banking industry", *DNB Staff Reports*, De Nederlandsche Bank NV, no.26, (October).

Cruickshank, D. (2000). "Competition in UK banking. A Report to the Chancellor of the Exchequer", The Stationary Office, London.

Dow, S. C. (1992). "The Regional Financial Sector: A Scottish Case Study", *Regional Studies*, vol.26, no.7, pp.619-631.

Dow, S. C. and C. J. Rodrīgues-Fuentes, (1997). "Regional Finance: A Survey", *Regional Studies*, vol.31, no. 9, pp.903-920.

Goodhart, C. A. E. (1987). "Structural change in the British capital markets", in Goodhart, C. A., E. D. Currie, and C. T. Llewellyn, (ed.s), *The Operation of and Regulation of Financial Markets*, (Macmillan, London).

Heffernan, S. A. (1990). "A Characteristics Definition of Financial Markets", *Journal of Banking and Finance*, vol.14, pp.583-609.

Heffernan, S. A. (1993). "Competition in British Retail Banking", *Journal of Financial Services Research*, vol. 7, pp.309-332.

Heffernan, S. A. (2000). "Competition in British Retail Banking, 1993-1999", *Department of Banking and Finance Discussion Paper*, City University Business School, May.

Heitfield, E. A. (1999). "What do interest rate data say about the geography of retail banking markets?", *The Antitrust Bulletin*, Summer, pp.333-347.

Jackson, W. E. III. (1992). "Is the Market Well Defined in Bank Merger and Acquisition Analysis", *The Review of Economics and Statistics*, vol. 74, no.4, pp.655-61.

Jackson, W. E. III (1997). "Market Structure and the Speed of Price Adjustments: Evidence of Non-Monotonicity", *Review of Industrial Organization*, vol.12 pp.37-57.

Kwast, M. L., M Starr-McCluer and J. D. Wolken (1998). "Market definition and the analysis of antitrust in banking", *The Antitrust Bulletin*, Winter, pp.973-995.

Mackay, R. R. and P. Molyneux, (1996). "Bank Credit and the Regions: A Comparison within Europe", *Regional Studies*, vol.30, no.8, pp.757-763.

McKillop D. G. and R. W. Hutchinson, (1990). Regional Financial Sectors in the British Isles, Gower, Aldershot.

Molyneux, P., D. M. Lloyd-Williams, and J. Thornton, (1994). "Competitive conditions in European banking", *Journal of Banking and Finance*, vol.18, pp.445-459.

Moneyfacts Magazine, (1999). various editions, Moneyfacts Publications, Stalham.

Radecki, L. J. (1998). "The Expanding Geographic Reach of Retail Banking Markets", *Economic Policy Review*, Federal Reserve Banks of New York, June, pp.15-34.

Williams, J. and E. P. M. Gardener, (2000). "Efficiency and European Regional Banking", *Institute of European Finance Research Papers in Banking and Finance*, School for Business and Regional Development, University of Wales, Bangor.

Abbey National	Earl Shilton Building Society	Nationwide Building Society	
Alliance and Leicester	First Trust Bank	Newbury Building Society	
Bank of Cyprus	Furness Building Society	Newcastle Building Society	
Bank of Ireland	Halifax	Northern Bank	
Bank of Scotland	Hanley Economic Building Society	Northern Rock	
Barclays	Harpenden Building Society	Norwich and Peterborough Building Society	
Barnsley Building Society	HFC Bank	Nottingham Building Society	
Bath Building society	Hickley and Rugby Building Society	Nottingham Imperial Building Society	
Birmingham Midshires Building Society	Hoare and Co.	Portman Building Society	
Bradford and Bingley Building Society	Holmesdale Building Society	Principality Building Society	
Bristol and West Building Society	HSBC	Progressive Building Society	
Brittannia Building Society	Ipswich Building Society	Royal Bank of Scotland	
Buckinghamshire Building Society	Kent Reliance Building Society	Saffron Walden and Essex Building Society	
Cambridge Building Society	Lambeth Building Society	Scarborough Building Society	
Chelsea Building Society	Leeds and Holbeck Building Society	Scottish Building Society	
Cheltenham and Gloucester Building Society	Leek Building Society	Shepstead Building Society	
Chesham Building Society	Lloyds/TSB	Skipton Building Society	
Cheshire Building Society	Londonderry Provident Building Society	Stafford Railway Building Society	
Chorley and District Building Society	Loughborough Building Society	Staffordshire Building Society	
Clay Cross Building Society	Manchester Building Society	Stroud and Swindon Building Society	
Clydesdale Bank	Mansfield Building Society	Tipton and Cosely Building Society	
Co-operative Bank	Market Harborough Building Society	Ulster Bank	
Courtts	Marsden Building Society	Universal Building Society	
Coventry Building Society	Melton Mowbray Building Society	Vernon Building Society	
Darlington Building Society	Mercantile Building Society	West Bromwich Building Society	
Derbyshire Building Society	Monmouthshire Building Society	Woolwich	
Dudley Building Society	National Counties Building Society	Yorkshire Building Society	
Dunfermline Building Society	National Westminster Bank		

# Appendice 1 Market participants.