Should the joint provision of credit insurance with unsecured lending be prohibited? An examination of the UK payment protection insurance market

by

John K. Ashton
Norwich Business School and the ESRC Centre for Competition Policy, University of East Anglia

and

Robert S. Hudson
Newcastle University Business School, Newcastle University

Abstract: This paper examines the joint pricing of credit insurance and unsecured lending. This case has wide regulatory implications following concerns that the sale of credit insurance as an add-on product has been detrimental to customers. A theoretical model is developed in which banks set prices for customers who have varying decision making ability. The model predictions are tested empirically. It is concluded that banks cross-subsidise unsecured lending by setting high credit insurance premiums. The form of sales and profit maximisation by banks are central to causing the cross subsidy with the effect being far less pronounced for mutually owed banks.

Keywords: Interest rate setting, Universal Banking, Insurance premium setting, credit insurance, add-on goods, joint pricing.

Acknowledgements: We would like to thank Moneyfacts PLC for kindly providing the data for this study. Further we are grateful for helpful comments provided by Tony Croasdale, Andros Gregoriou, Michael Imerman, Bruce Lyons, Mathias Siems, Bill Stein and participants of seminars at the University of Ulster (2008) and University of East Anglia (2009), the Wolpertinger Conference at Oporto University (2008), the 31st UK Insurance Economists conference at Nottingham University (2009), the 16th Global Finance Conference (2009) organised with the University of Hawaii, the British Accounting Association Conference at the University of Dundee (2009), the Financial Management Association Conference, Reno (2009) and the 7th Infiniti International Finance Conference, Trinity College, Dublin (2009). The support of the Economic and Social Research Council is also gratefully acknowledged. All errors remain the responsibility of the authors.

Contact details:
John K. Ashton, ESRC Centre for Competition Policy, University of East Anglia, Norwich, NR4 7TJ, UK, j.ashton@uea.ac.uk
Robert S. Hudson, Newcastle University Business School, University of Newcastle, Newcastle upon Tyne, UK robert.hudson@ncl.ac.uk
January 2010
Should the joint provision of credit insurance with unsecured lending be prohibited? An examination of the UK payment protection insurance market
1. **Introduction**

In January 2009 the UK competition law judgement body, the Competition Commission (CC), prohibited the joint sale of credit or payment protection insurance with unsecured lending after 2010 (CC 2009). This recommendation was successfully appealed by Barclays bank in October 2009 on the grounds that prohibiting the sale of credit insurance reduced customer convenience. The proposed prohibition of joint sales of credit insurance with unsecured lending was a clear step back from the de-regulation movement allowing the joint provision of banking and insurance services throughout the EU and US. This study examines whether this regulatory decision to introduce a blanket ban on the joint provision of consumer lending and credit insurance was justified or alternatively whether the appeal of this prohibition was appropriate. The potential prohibition poses a range of research questions. First is credit insurance used to cross-subsidise credit as alleged in the UK? Second, have all banks acted to the determent of customers or have the actions of a few banks lead to a prohibition across this entire sector? Third, if cross-subsidies exist may these be eliminated through greater financial education? Lastly if the joint sale of credit insurance and lending is viewed to be so problematic in the UK, should other nations also prohibit this practice?

This study advances answers to these questions, through modelling the joint provision of credit insurance and unsecured lending and providing an empirical assessment of the joint pricing of these financial services. A cross subsidy from credit insurance to unsecured lending is both predicted and empirically identified for profit maximising or proprietary banks. It is predicted that customers with different levels of financial comprehension are affected differently by this cross subsidy. While these circumstances indicate greater financial education will assist individual customers, financial literacy alone will not eliminate the use of cross subsidies. Mutual and proprietary banks are also predicted and observed to set prices for these jointly issued
financial services distinctly. Only proprietary banks consistently act to the detriment of customers in the joint provision of credit insurance and unsecured lending. Lastly, deciding whether prohibition of joint credit insurance and unsecured lending sales should be extended internationally is dependent on how the interests of banks, less informed and informed customers are relatively weighed.

This investigation is important as the market for credit insurance is substantial. In 2006 it is estimated that 20 million credit insurance policies were in operation in the UK (OFT 2006). The most common form of payment protection insurance is for unsecured personal loans, accounting for 45% of the overall UK credit insurance market, and valued at £2,013m in 2006 (CC 2007). The unsecured personal loans examined in this study are the most common form of borrowing in the UK (Department of Business, Enterprise and Regulatory Reform; hereafter BERR, 2007).

The key contribution of this work is to examine the stated research questions surrounding the prohibition of the joint provision of banking and insurance products. The paper is structured in five parts. After this introduction a review of the key academic and regulatory literatures is provided. In section 3 a model is elaborated and applied to the circumstances emerging in the UK personal unsecured lending and credit insurance markets. Section 4 provides a discussion of the empirical assessment and section 5 provides a summary of the research and conclusions.

2. Literature Review

Past research of the joint provision of banking and insurance services has been considered within two broad literatures. First, a substantial literature has emerged examining the deregulation and diversification of financial services. Second, the value for money offered by credit insurance and the methods by which it is distributed have been repeatedly considered by regulators.
The deregulation and diversification of financial services

Insurance and banking products have been provided jointly by financial services providers since the Second Banking Coordination Directive (1989) and Financial Services Modernization Act (1999) in the EU and US respectively (Fields et al 2007). This legislation allowed banks to merge with insurers and other financial firms and offer banking and insurance products individually and jointly. Schmid and Walter (2009) estimate 24.6% of worldwide financial sector mergers between 1985 and 2004 involved such cross market aspects. This diversification was justified in terms of potential cross selling advantages, managerial over estimates of benefits, (Schmid and Walter 2009), potential information processing gains (Kanatas and Qui 2003) and efficiency improvements (Yeager et al 2007, Stiroh and Rumble 2006). Over time the market valuation of such financial firm diversification strategies has shifted. In the early 2000s announcing a bank and insurer merger was considered to have positive wealth effects for bank profitability and share prices (Al Manum et al 2004, Baele et al 2007). More recently financial firm diversification is linked to lower market valuations than experienced by specialised financial firms (Laeven and Levine 2007, Schimd and Walter 2009).

Recent research also indicates the diversification movement has transformed banking business resulting in greater reliance on non-interest and fee based income, revenue diversification, higher risk adjusted profits (Stiroh and Rumble 2006) and potentially greater risk diversification (Fields et al 2007). The increasing importance of fee based income for financial firms is also linked to a higher volatility in income, increasing cross subsides between fee based services and interest margins (Lepetit et al 2008) and, more recently, limited profitability and productivity gains (Yeager et al 2007).

Past academic research specifically considering credit insurance has been limited with most contributions focusing on mortgage credit insurance. This literature has
examined the determinants of credit insurance take-up, perceptions of and satisfaction with these products, and the competitiveness of credit insurance markets. For the UK Pryce and Keoghan (2001) indicated that while premium size has a limited influence on credit insurance purchase decisions the decision to take out mortgage credit insurance is rational. Further UK survey evidence indicates mortgage credit insurance is very expensive, limited in coverage and has regressive elements (Burchardt and Hill 1998). More recently (De Meza et al. 2007) indicates the approach adopted by credit insurance sales persons can influence purchase decisions.

US assessments have focused on the sales of credit insurance, with coercive and involuntary tying arrangements a primary concern. This emphasis arises from the widespread use and high profitability of credit insurance in the US. Early survey evidence indicated most customers do not perceive sales to be coercive yet felt obliged to purchase credit insurance (Polden 1983). Subsequently Durkin (2002) indicated cross selling lends itself to coercive sales and credit insurance sales have focused on older and lower socio-economic groups; groups particularly prone to coercion (Barron and Staten 1995). Other US contributions have emphasised the limited competitiveness of mortgage credit insurance markets, overpriced policies (Allen and Chan 1998) and requirements to re-examine the legal treatment of credit insurance policies (Spahr and Escolas 1986).

Other contributions have also considered the implications of joint provision of banking and insurance products for bank costs and revenues. For South Africa, Okeashalem (2008) indicates bank product bundling increases fee levels. In European banking higher fee level incomes are associated with lower interest rate margins (Lepetit et al. 2008) and revenue from non-traditional business may compensate for lower interest rate margins (Valverde and Fernández 2007).

Similarly the ownership and subsequent objective function of banks may also influence the form of joint selling. Mutual banks are effectively owned by their customers,
while proprietary banks are owned by shareholders. These different ownership rights can lead to different bank behaviors (Rasmusen, 1988, Llewellyn, 1991). While evidence of differential pricing between proprietary and mutual banks is limited, Ashton and Letza (2003) and Heffernan (2003) indicate proprietary banks have offered lower returns on deposits and higher interest rates for loans in the UK.

2.2 Regulatory literatures
Credit insurance has been the focus of repeated US, UK and EU regulatory investigations. In the US regulatory attention has focused on the ‘packing’ of credit insurance within credit services such as home and consumer loans. Key concerns include mis-selling of credit insurance, misleading advertising, including insurance within a credit agreement without explanation and not fully revealing insurance costs within total loan costs (Federal Trade Commission; hereafter FTC, 2001). Low payout ratios for credit insurance also occur with most lenders and insurers retaining more than 40% of premiums (FTC 2001). Recent cases have resulted in large fines for banks and finance companies which have offered credit insurance with consumer loans in a manner against consumer interests. In total 8% of all consumer complaints received by the Federal Reserve concern additional fees and charges, including credit insurance, making this one of the most persistent sources of consumer complaints for US financial regulators (Federal Reserve 2007).

In the UK, credit insurance problems are raised within the UK Consumer Credit Act (2006) and by three regulatory agencies. The provision of credit insurance with lending between 2000 and 2005 was examined by the UK competition law enforcement and consumer protection agency, the Office of Fair Trading (OFT 2006). This agency reported consumers receive poor value from credit insurance due to a low claims ratio of 18%; relative to other forms of insurance (e.g., car insurance was 84% over the same
period, CC 2008) and high commissions paid to credit insurance distributors (59% of premiums, OFT 2006). Subsequently credit or payment protection insurance provision was referred to the Competition Commission which ruled joint sales of credit insurance with loans should be prohibited, premiums should be paid through instalments rather than as a single premium, improved customer information is required and credit insurance should be unbundled from other financial services (CC 2009). The prohibition on joint sales was successfully appealed by Barclays bank in October 2009 on the grounds that this action resulted in a loss of convenience for consumers.

The UK financial regulator, the Financial Services Authority (FSA) has also examined credit insurance repeatedly since 2005 (FSA 2007c). Areas investigated include firms’ selling practices, the provision of product and price information, the training and competence of sales staff and the firms’ internal systems and controls. These issues were assessed using supervisory investigations and mystery shopping studies (FSA 2005, 2006, 2007a, 2007b). The firms investigated were selected from all credit insurance distributors including retailers, car dealerships, brokers, banks and building societies.

The FSA identified problems with firms which do not sell financial services as their main line of business, and especially car dealerships which sell credit insurance alongside car finance. Other persistent concerns include limited information given to consumers, a lack of awareness of product exclusions and a failure to indicate the voluntary nature of credit insurance. Whilst evidence of pressured selling has been rare, firms often present the acceptance of both the loan and credit insurance as the norm requiring an explicit rejection of credit insurance by customers (FSA 2007b). In response to these concerns 16 firms have been publically censured or fined between £14,000 and £7m by the FSA between 2006 to 2008. The fines were imposed following evidence of assumptive sales techniques where customers’ needs where not given sufficient weight, poor information provision and poor record keeping.
Lastly the cost of credit insurance has also been raised by the European Commission (2005, 2008) as part of the on-going harmonisation of consumer protection laws. European credit market concerns include the removal of barriers to information provision for credit decision making, the form of interest rate setting and distinct debt collection practices (DTI 2003). Subsequently a European wide approach for calculating the total cost of credit including add-on costs such as credit insurance (European Commission 2005, 2008) should be included in the national law of member states by 2010. Further discussion of credit insurance within European interest rate regulation is provided by Soto (2009).

3. Optimal Unsecured Lending Interest Rates and Insurance Premiums

In this section a model of the joint sale and purchase of unsecured personal lending with credit insurance is developed. Within this framework unsecured lending is viewed to be a base good and credit insurance is viewed to be an add-on good. To investigate whether all customers are treated similarly it is assumed markets are populated either by homogenous customers or alternatively customers which possess different decision making abilities (see Salop and Stiglitz 1977, Varian 1980) and are termed sophisticated and naïve. This step is undertaken as financial services markets are characterised by limited consumer comprehension both in the UK and US (Agarwal et al. 2008, Campbell 2006, FSA 2006, Hilgert and Hogarth 2003).

A growing theoretical literature examines circumstances where customers’ suboptimal choices when jointly purchasing additional or add-on products leads to cross-subsidies. This literature (Della Vigna and Malmendier 2004, Ellison 2005, Gabaix and Laibson 2006) considers circumstances where a customer once deciding to purchase a good, incurs further costs by purchasing an add-on or additional good. A consistent
finding has been the potential for cross subsidy between products and the development of ‘loss leader’ forms of pricing (Ellison 2005, Lal and Matutues 1994). These situations occur when naive, myopic or less sophisticated customers with weaker decision making abilities generate cross-subsidies for more sophisticated or informed customers with more refined decision making abilities. Given the existence of naive customers, banks can use shrouding techniques, including small print and selectively informative advertising, to conceal the true attributes of add-on goods from consumers (Gabaix and Laibson 2006).

These contributions indicate two forms of exploitation, i) the exploitation by firms of naive customers, and ii) the exploitation of firms by sophisticated customers. As all groups other than naïve customers benefit from this system and naïve customers have limited comprehension of the detriment they face, this cross subsidy is persistent. Conversely if markets are characterised by only sophisticated customers, artificially high pricing of add-on products and cross subsidy of base products should not persist over time. Currently empirical assessments of firm responses to non-standard customer preferences is a neglected area (Della Vigna and Malmendier 2004).

To examine whether all banks\(^1\) supplying these markets adopt similar pricing approaches it is assumed banks either maximise profits or consumer benefits to reflect proprietary and mutual ownership respectively. It is assumed there is no interaction between banks and the sale of unsecured lending and credit insurance is undertaken within a monopoly framework. This approach is assumed in previous examinations of retail financial services pricing with heterogeneous customers (Kahn et al 1999, Ashton and Hudson, 2008) and reflects the limited competition observed in this market (OFT 2006, CC 2009). The model is developed over three cases:

\(^1\) A range of financial firms provide these services jointly; hereafter we refer to these institutions collectively as banks.
• Case A: when unsecured lending and credit insurance are sold independently by profit maximising banks.

• Case B: when unsecured lending and credit insurance are sold jointly by profit maximising banks.

• Case C: when unsecured lending and credit insurance are sold independently and jointly by mutually owned banks which do not maximise profits.

Throughout D indicates demand, $u_l$ indicates unsecured lending, $i$ indicates credit insurance, $v$ and $p$ indicate value and premium, and $u$ and $s$ indicates naïve and sophisticated customers respectively\(^2\).

### 3.1 Case A: Unsecured lending and credit insurance are sold independently by profit maximising banks

Homogenous customers are assumed to all have the same level of decision making ability and have a demand for unsecured loans represented by:

$$D_u = D_u(r_u, x_u)$$

(1)

where $r_u$ is the bank’s unsecured loan rate, $x_u$ is a vector of other variables which influence the demand for unsecured loans. Similarly the demand for credit insurance is written as:

$$D_i = D_i(i_p, x_i)$$

(2)

where $i_p$ is the bank’s insurance premium and $x_i$ is a vector of other variables influencing the demand for credit insurance. Profits for unsecured loans provided by profit maximising proprietary banks are:

---

\(^2\)Naïve customers are assumed to have less comprehension of the regulatory system and to be more easily influenced by shrouding product terms. In particular, they are more easily persuaded to buy credit insurance from the company that advanced them an unsecured loan, have less comprehension of the true value of insurance benefits and hence are less sensitive to their price.
\[ (r - r - c_{ul})D_{ul}(r_{ul}, x_{ul}) \]  

(3)

for homogenous customers where \( r \) is the market rate of interest, \( c_{ul} \) is the bank’s net expenses per unit of unsecured loan. Similarly the bank’s profits from credit insurance for homogeneous customers are:

\[ (i_p - i_c)D_{ul}(i_p, x_{ul}) \]  

(4)

where \( i_p \) is the insurance premium, \( c \) is the net expenses per unit of insurance sold, and \( i_c \) is the discounted expected value of the benefits from the policy. The optimal loan rate \( r^*_{ul} \) to maximize profits, will satisfy the first order condition:

\[ D_{ul}(r^*_{ul}, x_{ul}) + (r^*_{ul} - c_{ul}) \frac{\partial D(r^*_{ul}, x_{ul})}{\partial r_{ul}} = 0 \]  

(5)

Thus

\[ r^*_{ul} = \frac{-D_{ul}(r^*_{ul}, x_{ul})}{\frac{\partial D(r^*_{ul}, x_{ul})}{\partial r_{ul}}} + r + c_{ul} \]  

(6)

An analogous equation can be derived for the optimal insurance premium to maximise profits but this has not been shown to conserve space.

When \( k^* \) is the proportion of sophisticated customers the bank’s profits from unsecured loans are:

\[ (r - r - c_{ul}) \left[ k' D_{ul}(r_{ul}, x_{ul}) + (1 - k') D_{ul}(r_{ul}, x_{ul}) \right] \]  

(7)

These sophisticated customers have a demand for unsecured loans represented by \( D_{ul} = D_{ul} (r_{ul}, x_{ul}) \). Distinctly naive customers have a demand for unsecured loans represented

---

\(^3\) Note \( \frac{\partial D(r^*_{ul}, x_{ul})}{\partial r_{ul}} \leq 0 \)
by \( D_u = D^a_u \). The optimal loan rate \( r^*_u \) will, therefore, satisfy the first order condition\(^4\):

\[
r^*_u = \frac{-k' D_u^r (r^*_u, x^*_u) - (1 - k') D_u^s (r^*_u, x^*_u)}{(r^*_u - r - c_u) \left[ k' D_u^r(r^*_u, x^*_u) + (1 - k') D_u^s (r^*_u, x^*_u) \right]} + r + c_u
\]

(8)

In this case \( r^*_u \) can be larger or smaller than the optimum interest rate when customers are homogeneous (equation 6). Therefore if unsecured loans are sold independently it is not inevitable that sophisticated customers are subsidised by naive customers.

When credit insurance is sold independently and \( k^s \) is the proportion of sophisticated customers the bank’s profits from credit insurance are:

\[
\left[ i^p - i - c \right] k' D^r(i^p, x^r) + (1 - k') D^s(i^p, x^s)
\]

(9)

where \( c \) is the bank’s net expenses per unit of credit insurance; sophisticated customers have a demand for unsecured loans: \( D^r = D^r(i^p, x^r) \) and naïve customers have a demand for unsecured loans: \( D^s = D^s(i^p, x^s) \). Equation (9) is closely analogous to equation (7) and the optimal insurance premium to maximise profits \( r^*_p \) is the first order condition analogous to equation (9). Similarly, if credit insurance is sold independently sophisticated customers are not necessarily cross-subsidised by naïve customers.

### 3.2 Case B: Unsecured lending and credit insurance are sold jointly by profit maximising banks

Most credit insurance is sold at the point of sale (CC 2009) and customers will only buy credit insurance if they have taken out a loan. Alternatively customers may decide not to take out insurance at all or refuse the insurance available at the point of sale and search

\^4 Note \( \frac{\partial D^r(r^*_u, x^r_u)}{\partial r^*_u} < 0 ; \quad \frac{\partial D^s(r^*_u, x^s_u)}{\partial r^*_u} < 0 \).
the market for the best available policy. These situations are considered for both homogenous and sophisticated and naive customers.

If a bank sells both unsecured loans and credit insurance to homogenous customers its profit is the sum of (3) and (4):

\[
(r_u - r - c_u)D_u(r_u \cdot x_u) + (i_p - i - c)D_i(i \cdot x_i)
\]  

(10)

When unsecured loans and credit insurance are marketed independently the demand function for the credit insurance \(D_i(i \cdot x_i)\) will be independent of that for unsecured loans \(D_u(r_u \cdot x_u)\). This implies \(r_u^*\) and \(i_p^*\) are found independently by setting the partial derivative of (10), with respect to \(r_u\) and \(i_p\), equal to zero respectively. In this case, no cross subsidies between the two products will emerge.

In practice credit insurance is often jointly marketed to customers who have already taken out an unsecured loan. This implies that the demand function for credit insurance is not independent of the demand function for unsecured loans. If we assume individuals will only buy credit insurance when they have previously accepted an unsecured loan from the same bank the conditional demand function is:

\[
D_i(i \cdot x) = p(i_p) \cdot D_u(r_u \cdot x_u)
\]  

(11)

where \(p\) is a function of \(i_p\) and \(0 \leq p(i_p) \leq 1\) for all \(i_p\). \(p(i_p)\) can be viewed as analogous to the conditional probability distribution function of purchasing credit insurance after taking out a loan. Substituting (11) into (10) gives a profit of

\[
(r_u - r - c_u)D_u(r_u \cdot x_u) + (i_p - i - c) p(i_p) D_u(r_u \cdot x_u)
\]  

(12)

If the bank wishes to find \(r_u^*\) this must satisfy the first order condition:

\[
r_u^* = -\frac{\partial D_u(r_u \cdot x_u)}{\partial r_u} p(i_p) (i_p - i - c) + r + c_u
\]  

(13)
We can see that $r_i$ is lower when goods are sold jointly in (13) rather than independently in (4) when $(i_p - i_s - c_s) > 0$ (the insurance is not sold at a loss). Therefore the optimal interest rate set for unsecured loans is less when unsecured loans are sold jointly with credit insurance rather than independently. Thus homogenous customers purchasing credit insurance jointly with unsecured loans subsidize customers which only accept unsecured loans.

When customers vary in decision making ability the joint profit from unsecured loans and credit insurance will be the sum of (7) and (9):

$$\left(r_u - r_c \right) k \cdot D_s(r_u, x_u) \cdot \left[1 - k \right] D_s(r_u, x_u) + \left[1 - i_s - c_s \right] k \cdot D_s(i_s, x_i) \cdot \left[1 - k \right] D_s(i_s, x_i)$$

(14)

Again the various demand functions in equation (14) are not necessarily mutually independent influencing how banks set optimal unsecured loan rates and credit insurance premiums. When credit insurance and unsecured lending are sold together to naive and sophisticated customers the bank will maximise profits by setting $i_n$ and $i_s$ to maximize (14) and the demand functions for credit insurance $D_s(i_s, x_i)$ and unsecured loans $D_s(r_u, x_u)$ will not be independent. We examine these dependence relationships below. Initially naive customers can find the best deal on an unsecured loan rate as effectively as sophisticated customers but as they are unaware of the credit insurance’s costs and value they are more likely to buy credit insurance. In this case:

$$D_s(r_u, x_u) = D_s(i_s, x_i) = D_s(r_u, x_u)$$

(15)

Further, as the demand function for credit insurance from naive customers is greater than that from sophisticated customers, i.e. $D_s(i_s, x_i) > D_s(i_s, x_i)$; for all $i_p$, we establish:

$$D_s(i_s, x_i) = p^*(i_p) D_s(r_u, x_u) \quad D_s(i_s, x_i) = p^*(i_p) D_s(r_u, x_u)$$

Where $0 \leq p^*(i_p) \leq p(i_p) \leq p^*(i_p) \leq 1$ for all $i_p$ leads to

$$\left(r_u - r_c \right) D_s(r_u, x_u) + \left[1 - i_s - c_s \right] k \cdot p^*(i_p) D_s(r_u, x_u) \cdot \left[1 - k \right] p^*(i_p) D_s(r_u, x_u)$$

(16)
If the bank wishes to find $r^*_u$ to optimize its profits

$$r^*_u = -\frac{D_u(r^*_u, x_u)}{\partial D_u(r^*_u, x_u)} \bigl(\hat{i}_u - r - c\bigr) \left[ k' p'(\hat{i}_u) + (1 - k') p'(\hat{i}_u) \right] \frac{\partial D_u(r^*_u, x_u)}{\partial r^*_u} + r + c_u$$  \hspace{1cm} (17)

As

$$k' p'(\hat{i}_u) + (1 - k') p'(\hat{i}_u)$$  \hspace{1cm} (18)

subject to $0 \leq p'(\hat{i}_u) \leq p(\hat{i}_u) \leq 1$; $0 \leq k' \leq 1$; increases with the proportion of naive customers, the proportion of naive customers is negatively related to the unsecured interest rate. The expected profit contributed by each sophisticated and naive customer per unit of unsecured loan is $(r_u - r - c) + p(\hat{i}_u)(\hat{i}_u - r - c)$ and $(r_u - r - c) + p'(\hat{i}_u)(\hat{i}_u - r - c)$ respectively. That is the profit from the loan element plus the expected profit on the credit insurance that may be sold as an add on. As the expected profits from naive customers are greater than from sophisticated customers there is a subsidy from naive to sophisticated customers.

3.3 Case C: when unsecured lending and credit insurance are sold independently and jointly by mutually owned banks which maximise customer welfare.

For mutual banks which do not maximise profit and choose to maximise customer welfare, unsecured lending and credit insurance may reasonably be sold at marginal cost i.e. $(r_u - r - c) = 0$ for loans and $(\hat{i}_u - r - c) = 0$ for credit insurance. In this case, expected profits from mutual banks are:

- for homogenous customers:
  $$\begin{align*}
  (r_u - r - c) + p(\hat{i}_u)(\hat{i}_u - r - c) &= 0 \\
  \end{align*} \hspace{1cm} (19)$$

- for sophisticated customers:
  $$\begin{align*}
  (r_u - r - c) + p'(\hat{i}_u)(\hat{i}_u - r - c) &= 0 \\
  \end{align*} \hspace{1cm} (20)$$

\footnote{Note $\frac{\partial D_u(r^*_u, x_u)}{\partial r^*_u} \leq 0$. Thus $r^*_u \geq r \geq 0$.}
\[ (r_u - r - c_u) \cdot p^u (i_u - i - c_u) = 0 \]  

(21)

The mutual banks may not wish to gain from using a cross subsidy between credit insurance and unsecured lending for homogenous customers and customers with differing levels of sophistication. While there are no clear incentives for mutual banks to cross subsidise unsecured lending from credit insurance, it is possible that mutual banks may still chose to levy cross-subsidies.

### 3.4 Model predictions

Three predictions are forwarded from this model. Initially cross subsidies only develop when unsecured lending and credit insurance are marketed jointly by proprietary banks and customers purchase credit insurance after accepting an unsecured loan. These cross subsidies occur in both markets populated by homogenous customers and by customers with differing decision making abilities. Therefore when confronting cross subsidy concerns the joint marketing of financial services by profit maximising firms must be amended regardless of whether customers are homogenous or are characterised by differing decision making abilities.

Second, the aggregate level of customers’ decision making ability will influence the relative costs of unsecured lending and credit insurance. As the proportion of naïve customers rises, the costs of unsecured lending will decline and the jointly marketed credit insurance premiums will rise for profit maximising banks. Subsequently it is important for naïve customers to transform themselves into more sophisticated customers through greater financial education.

Lastly, proprietary and mutual banks are expected to behave distinctly in markets with joint selling of credit insurance and unsecured lending. Mutual banks are less likely to engage in behaviors leading to the cross subsidy of unsecured lending by credit insurance.
4. Data and Empirics

In this section the predictions from Section 3 are examined using a descriptive assessment and three statistical investigations. The data is provided by Moneyfacts PLC, and represents the cost of a £5000 unsecured loan repaid over a 36 month period with and without credit insurance. A range of firms provide these services, including retail banks and building societies (hereafter termed banks); all these institutions are subject to common regulatory demands when operating in these UK markets. The cost of the unsecured loan is calculated from the banks’ posted rates of interest. The cost of the credit insurance is determined from a single premium levied before the start of the loan and the cost added to the principal of the unsecured loan. The loan interest rate and insurance premium do not consider adjustments to accommodate individual customer risks. Subsequently a minority of customers with poor credit ratings will pay substantially more for loans and as credit insurance covers repayment of the loan, insurance premiums.

The data is recorded monthly for 10 years, from 1 January 1998 to 31 December 2007 for 84 banks offering 211 joint credit and insurance products. This data represents the vast majority of UK joint credit insurance and unsecured personal lending products over the sample period and includes offerings to different market segments such as car purchase or existing customers. Of these 84 banks, 31 offer lending services on behalf of a financing bank and only 53 banks offer products independently. The institutional unit of analysis is assumed to be the financing bank, as all products financed by a particular supplier are influenced by this bank. This assumption reflects established industry practice where the financing firm frequently sets the cost of third party lending.

4.1 Descriptive Data

This section outlines the key features of the data set. Table 1 considers all banks which offer credit insurance and unsecured loans jointly. Panel A of Table 1 indicates the
duration that banks have offered these financial services. On average products have had a market life of just under four years with a number of products featuring for the entire ten year sample period and other products existing for as little as two months. On average banks have operated in this market for around five years with some participants operating throughout the entire period and one participant operating for only six months.

Panel B of Table 1 shows the average number of products on sale by year. The number of products slightly increases during the middle of the sample period. Panel C of Table 1 indicates the average number of products offered by banks. The average number of products offered by individual banks is only 2.19 although one bank offers an average of over 10 products. This indicates a skewed distribution with many banks only offering one product and others offering multiple products.

**INSERT TABLE 1**

Panel D of Table 1 shows the variability of costs over the product range of individual banks that simultaneously offer more than one product. For loans the average difference between the maximum and minimum cost is £190.70 (about 3% of the relevant 36 month cost) with the largest difference being £3147.84 (57.75% of 36 month costs) and the smallest being zero. For insurance the variations in cost are proportionately greater across product ranges. The average difference is £142.60 or 21.84% of the total insurance (36 month) costs and the largest difference is £1001.52 which is no less than 296% of total insurance costs.

Table 2 shows how monthly loan and insurance costs vary over time. Total monthly lending and insurance costs fall from an average of £199 in 1998 to £186.75 in 2007. Average monthly loan costs without insurance also decline from £173.14 in 1998 to £162.37 in 2007. By contrast, little decline is evident in the average monthly cost of insurance which was £25.73 in 1998 and £24.97 in 2007. When the cross-sectional
variation in monthly costs is examined insurance costs are observed to be more variable than loan costs.

**INSERT TABLE 2**

### 4.2 The Testing Framework

The possible cross subsidy between credit insurance and unsecured lending and the differential in the pricing of unsecured lending and credit insurance by proprietary and mutual banks are examined using three forms of analysis. First, a regression based test of cross subsidy is employed. Second a non-parametric ranking assessment of the relative costs of loans and insurance is considered. Lastly pricing differences between mutual and proprietary providers are assessed using a non-parametric test.

**4.2.1 Banks set loan and credit insurance costs in a manner consistent with cross subsidy from credit insurance to loans.**

In section 3 we predict that cross subsidies flow from credit insurance to unsecured loans. Further these cross subsidies should be more pronounced for proprietary rather than mutual banks. The regression test for cross subsidies is based on the expected relationship between the loan cost and the credit insurance premium. This premium should reflect the expected claim amount payable from the credit insurance policy. This value will be proportionate to the remaining monthly loan payments and is therefore directly proportionate to the unsecured loan costs excluding insurance. If there is no cross subsidy between credit insurance and unsecured loans we would therefore expect that insurance cost would be proportionate to loan cost. Conversely if a cross subsidy does occur, this relationship will be positive (see Appendix A for a formal explanation of this expected relationship) Subsequently we examine this relationship using the following regression equation:

\[ C_t = \alpha P_t + \nu_t + \nu_t \]

(22)
where $C_{it}$ is loan cost, $P_{it}$ is the insurance cost as a percentage of total loan and insurance costs, $\omega_i$ represents the individual time invariant random or fixed effects and $\nu_{it}$ denotes the remaining error for $i$ firms and $t$ time periods. When the coefficient $\alpha$ is positive a greater proportion of total variation in loan costs can be explained by variation in the cost of credit insurance; a circumstance consistent with cross subsidy of unsecured loans by credit insurance. When the coefficient $\alpha$ is not significantly different from zero, no cross subsidy is indicated.

The choice of regression model to be estimated is determined by reference to Hausman tests which indicate if time invariant effects are uncorrelated with the independent variables. Following Baltagi (1995) if this hypothesis is rejected then it appropriate to employ a fixed effects ‘within’ estimator; in other cases, a random effects estimator is employed. F and Wald tests are reported as diagnostic statistics for fixed and random effects estimators respectively. To accommodate concerns with the robustness of these findings and potential omitted variable problems 95% confidence intervals are also obtained for the coefficient ($\alpha$) estimates using a bootstrapping approach with 2000 repetitions.

**INSERT TABLES 3 and 4**

The results of the regression test are shown in Table 3 both over time and for all banks, mutually owned banks and proprietary banks. For all observations a significant positive coefficient $\alpha$ ($\alpha=27.71$) is reported. This provides evidence of relatively overpriced credit insurance, under priced unsecured lending costs and that a cross subsidy flows from credit insurance into unsecured loans.

When we consider this relationship over time, the coefficients ($\alpha$) are not stable, increasing initially, but ultimately declining. This indicates levels of cross subsidy are reducing with time. Mutual and proprietary banks also provide distinct results throughout the sample period. The coefficients $\alpha$ are lower and not always statistically significant for
mutual banks. This evidence is consistent with mutual and proprietary banks setting interest rates and premiums using different approaches and mutual banks being less inclined to cross subsidise unsecured loans using high priced credit insurance.

Another formal test of the cross subsidy hypothesis is made by comparing the rankings of the relative costs of credit insurance and unsecured lending by bank. Table 4 shows the average percentage of total costs contributed by credit insurance. If there is no cross subsidy the bank with the highest insurance costs should also have the highest loan costs. In other words the rankings of banks when sorted by total insurance cost and by total loan cost should not be significantly different if the existence of cross subsidy is to be rejected. The non-parametric rank sum test rejects the hypothesis that banks with the highest insurance costs also have above average loan costs at the 1% level (test statistic = 2.71). Thus strong evidence of cross subsidy between credit insurance and unsecured loans is presented, as banks with high insurance costs have relatively low loan costs.

A second non-parametric test, reported in Table 4, tests for differences between mutual and proprietary banks. The non-parametric rank sum test rejects the hypothesis that insurance costs have the same percentage of total costs in both mutual and proprietary banks at the 5% level (test statistic = 2.1). This provides evidence that bank ownership significantly affects the pricing of credit insurance and unsecured lending.

4.3 Implications of the results
Initially the results indicate the need to offer unsecured loans and credit insurance independently. We find that cross subsidies from credit insurance to unsecured loans do occur and therefore the prohibition of joint selling loans and credit insurance advocated by the Competition Commission (CC 2009) is justified. This long recognised solution
(Shogren 1990) is favoured as it removes the incentive of banks to cross-subsidise loans from insurance.

Secondly, the incidence and extent of cross-subsidies from credit insurance alters over time. This may indicate customers are becoming aware of concerns with credit insurance and adapting their behaviors correspondingly⁶. It is expected that ensuring premiums are payable in instalments rather than as a single premium at the inception of the loan as advocated by the Competition Commission (2009) will assist such learning by providing repeated opportunities to assess the suitability of credit insurance policies.

Lastly it is important to determine whether the policy of prohibiting the joint sale of credit insurance with loans is a measured response which could be applied internationally. Within this assessment it is important to consider the interests of all customers and not just those customers less able to make informed decisions (Thaler and Sunstein 2003). Following Camerer et al (2003) the policy effect of prohibiting joint sales of credit insurance with unsecured lending is:

\[
\text{Policy Effect} = kB - (1-k)C - I + \delta \Pi
\]  

(23)

where \( k \) is the proportion of naive consumers, \( B \) denotes the benefit of the policy change to naive consumers, \( C \) is the cost to rational consumers, \( I \) is the implementation costs and \( \delta \Pi \) is the change in the profit of firms due to the policy. The policy change would be beneficial if the expression has a positive value.

Prohibiting the joint sales of loans and credit insurance would have a number of consequences. We report that naïve customers lose out from current arrangements and prohibiting joint sales should improve this situation. Alternatively, customers with more

⁶ In recent years the scale of the US credit insurance market has declined (Durkin 2002); a fall closely linked with media criticism of coercive sales techniques. Media exposure of the credit insurance problems has also been identified in the UK. Using a commonly used UK newspaper database (Proquest) which records articles published in ten major national daily and weekly newspapers, the number of articles published on the topic of 'payment protection insurance' has tripled in recent years, from an average of 120 articles annually between 2000 and 2004, to 314 articles annually in the 2005 to 2007 period. The tenor of these articles has become increasingly critical and focused on regulatory concerns and firm fines.
refined decision making skills who are not easily persuaded to purchase credit insurance jointly with a loan would lose out by paying more for unsecured loans. Individuals may also suffer through not having purchased credit insurance if they encounter circumstances that would have allowed a claim. Further there may also be a loss of convenience for customers wishing to purchase credit insurance with their unsecured loan. Prohibiting the joint sale of credit insurance and unsecured credit would also reduce bank profits. Requiring that credit insurance policies be sold independently may lead to adverse selection if credit insurance is sold primarily to customers making an informed decision to purchase this insurance. Lastly implementing such regulation will involve non-trivial compliance costs.

This form of policy calculus leads us to accept circumstances where large benefits for individuals who are boundedly rational are possible while imposing little harm on those who are fully rational (Camerer et al 2003). Judging whether such a change is ultimately justified in this case rests on both how we weigh the interests of customers less able to undertake purchase decisions, the adverse effects of this decision on the majority of customers and the importance of corporate concerns.

5. **Conclusions**

In this concluding section we briefly summarise the study findings and provide recommendations for further work. Within this study we develop a model to show how banks price unsecured loans and credit insurance both independently and jointly. The model indicates profit maximising banks set loan and credit insurance costs consistent with cross subsidies following from credit insurance to unsecured loans when these financial services are sold jointly. Secondly, these cross subsidies should be more pronounced for profit maximising rather than mutual banks. Third in the presence of
naïve and sophisticated customers with differing levels of decision making ability, it is predicted that sophisticated customers will gain from the poor decision making of naïve customers. These cross subsidies do not necessarily appear when banks do not profit maximise.

The key implication of the model findings is the importance of challenging the joint sale of credit insurance with unsecured lending by proprietary banks. This practice rather than the presence of customers with differing decision making abilities leads to the cross subsidy of unsecured loans by credit insurance. While improved financial literacy will decrease the proportion of customers losing out from this cross subsidy, financial education in isolation will not remove the presence of cross subsidy in the joint sale of financial services.

The predicted cross subsidy is examined using both regression and non-parametric techniques. The regression analysis indicates the degree of cross subsidy between credit insurance and unsecured lending is persistent, albeit decreasing over time. This finding is also confirmed by non-parametric tests. Both approaches indicate proprietary and mutual banks set unsecured loan and credit insurance costs distinctly and that mutual banks are less prone to set proportionately high credit insurance premiums.

To conclude, financial services deregulation and subsequent joint provision of credit insurance and lending have adverse outcomes for consumers. Clearly further research is needed. Extensions to the model could explore the role of competition and bank reputation; the empirical assessment could be complimented by future assessments of loan level data. Lastly other retail financial services where the scale of add-on costs are substantial such as current or checking accounts and mortgages require similar investigation.
References


Table 1: Descriptive Statistics

Panel A. The duration individual products and banks have existed within the sample period (months).

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Products</td>
<td>45.47</td>
<td>120</td>
<td>2</td>
<td>36.54</td>
</tr>
<tr>
<td>Banks</td>
<td>70.04</td>
<td>120</td>
<td>6</td>
<td>43.12</td>
</tr>
</tbody>
</table>

Panel B: Average Number of Products on the Market by year

<table>
<thead>
<tr>
<th>Year</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Products</td>
<td>78</td>
<td>79</td>
<td>93</td>
<td>101</td>
<td>92</td>
<td>100</td>
<td>105</td>
<td>107</td>
<td>100</td>
<td>80</td>
</tr>
</tbody>
</table>

Panel C: The average number of products offered by individual banks.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banks</td>
<td>2.19</td>
<td>10.45</td>
<td>1</td>
<td>1.93</td>
</tr>
</tbody>
</table>

Panel D: Statistics for the variability in costs over the product range for firms offering more than one product.

<table>
<thead>
<tr>
<th></th>
<th>Average</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan only (£)</td>
<td>£190.70</td>
<td>£3147.84</td>
<td>0.36</td>
<td>273.38</td>
</tr>
<tr>
<td>Loan only (%)</td>
<td>3.36</td>
<td>57.75</td>
<td>0.01</td>
<td>4.98</td>
</tr>
<tr>
<td>Insurance Only (£)</td>
<td>142.60</td>
<td>1001.52</td>
<td>0.36</td>
<td>178.18</td>
</tr>
<tr>
<td>Insurance only (%)</td>
<td>21.84</td>
<td>296.14</td>
<td>0.06</td>
<td>34.70</td>
</tr>
<tr>
<td>----------------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Average</td>
<td>199.00</td>
<td>196.75</td>
<td>191.91</td>
<td>188.26</td>
</tr>
<tr>
<td>Maximum</td>
<td>229.41</td>
<td>229.41</td>
<td>227.81</td>
<td>209.72</td>
</tr>
<tr>
<td>Minimum</td>
<td>178.48</td>
<td>176.34</td>
<td>169.95</td>
<td>167.92</td>
</tr>
<tr>
<td>Average</td>
<td>173.14</td>
<td>170.69</td>
<td>167.52</td>
<td>164.61</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>5.60</td>
<td>5.97</td>
<td>5.11</td>
<td>4.6</td>
</tr>
<tr>
<td>Maximum</td>
<td>186.07</td>
<td>186.07</td>
<td>184.60</td>
<td>180.82</td>
</tr>
<tr>
<td>Minimum</td>
<td>161.61</td>
<td>160.11</td>
<td>157.75</td>
<td>155.75</td>
</tr>
<tr>
<td>Average</td>
<td>25.73</td>
<td>25.96</td>
<td>24.37</td>
<td>23.70</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>7.28</td>
<td>7.96</td>
<td>5.98</td>
<td>4.59</td>
</tr>
<tr>
<td>Maximum</td>
<td>48.91</td>
<td>49.58</td>
<td>49.58</td>
<td>39.78</td>
</tr>
<tr>
<td>Minimum</td>
<td>14.09</td>
<td>14.08</td>
<td>8.55</td>
<td>8.27</td>
</tr>
<tr>
<td>Average</td>
<td>7164.16</td>
<td>7082.88</td>
<td>6908.88</td>
<td>6777.38</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>401.01</td>
<td>466.67</td>
<td>364.89</td>
<td>277.66</td>
</tr>
<tr>
<td>Maximum</td>
<td>8258.76</td>
<td>8258.76</td>
<td>8201.16</td>
<td>7549.92</td>
</tr>
<tr>
<td>Minimum</td>
<td>6425.28</td>
<td>6348.24</td>
<td>6118.20</td>
<td>6045.12</td>
</tr>
<tr>
<td>Average</td>
<td>6237.84</td>
<td>6148.15</td>
<td>6031.32</td>
<td>5924.1</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>199.00</td>
<td>214.81</td>
<td>185.14</td>
<td>165.84</td>
</tr>
<tr>
<td>Maximum</td>
<td>6698.52</td>
<td>6698.52</td>
<td>6645.60</td>
<td>6509.52</td>
</tr>
<tr>
<td>Minimum</td>
<td>5918.04</td>
<td>5763.96</td>
<td>5679.00</td>
<td>5607.00</td>
</tr>
</tbody>
</table>

Table 2: Unsecured Loan and Credit Insurance Costs by Year
### Table 3a  The relationship between loan cost and the percentage of total costs that are insurance costs

<table>
<thead>
<tr>
<th></th>
<th>Obs.</th>
<th>Average Fixed or Random Effects</th>
<th>Standard Error</th>
<th>Coefficient α</th>
<th>Standard Error</th>
<th>95% Lower Boundary</th>
<th>95% Upper Boundary</th>
<th>R²</th>
<th>F/Wald test</th>
<th>Hausman Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All</strong></td>
<td>9529</td>
<td>5493.87 (10.84)*</td>
<td>27.05 (0.82)*</td>
<td>23.72</td>
<td>28.39</td>
<td>0.03</td>
<td>1085.33*</td>
<td>-3.65*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mutual</td>
<td>1766</td>
<td>5600.54 (14.18)*</td>
<td>8.51 (1.07)*</td>
<td>5.61</td>
<td>11.40</td>
<td>0.01</td>
<td>63.11*</td>
<td>-9.48*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proprietary</td>
<td>7763</td>
<td>5456.70 (12.54)*</td>
<td>32.30 (0.95)*</td>
<td>30.70</td>
<td>33.90</td>
<td>0.05</td>
<td>1152.53*</td>
<td>-7.42</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **1998** | | | | | | | |
| **Overall** | 825 | 5879.80 (29.45)* | 27.99 (2.25)* | 23.33 | 32.65 | 0.16 | 155.09* | 0.00 |
| Mutual | 84 | 6150.08 (91.10)* | 1.83 (7.78) | -11.61 | 15.26 | 0.00 | 0.06 | 0.06 |
| Proprietary | 741 | 5877.145 (31.48)* | 28.48 (2.39)* | 23.61 | 33.36 | 0.16 | 143.70* | 0.00 |

| **1999** | | | | | | | |
| **Overall** | 809 | 5544.71 (1.83)* | 46.37 (1.83)* | 42.83 | 49.91 | 0.45 | 641.11* | -1.95 |
| Mutual | 93 | 5587.29 (87.80)* | 49.27 (7.60)* | 32.15 | 66.40 | 0.26 | 42.09* | -2.20 |
| Proprietary | 716 | 5510.09 (26.05)* | 48.24 (1.92)* | 44.62 | 51.86 | 0.47 | 632.83* | -1.94 |

| **2000** | | | | | | | |
| **Overall** | 874 | 5466.88 (26.89)* | 44.83 (2.10)* | 40.68 | 48.97 | 0.33 | 456.17* | 3.83 |
| Mutual | 120 | 5754.38 (63.45)* | 23.65 (5.16) | 12.47 | 34.82 | 0.02 | 20.98* | 394.94 |
| Proprietary | 754 | 5421.78 (29.74)* | 48.02 (2.27)* | 43.59 | 52.73 | 0.38 | 447.05* | -76.25 |

| **2001** | | | | | | | |
| **Overall** | 938 | 5631.34 (32.44)* | 23.37 (2.56)* | 17.71 | 29.03 | 0.08 | 83.56* | 47.67 |
| Mutual | 109 | 5679.63 (79.13)* | 13.92 (5.82) | -3.84 | 31.68 | 0.03 | 5.72 | -3.96 |
| Proprietary | 829 | 5587.71 (34.95)* | 27.72 (2.78)* | 21.05 | 34.39 | 0.10 | 99.29* | 14.22 |

| **2002** | | | | | | | |
| **Overall** | 1028 | 5604.96 (30.70)* | 19.22 (2.35)* | 14.52 | 23.93 | 0.06 | 66.70* | -6.09 |
| Mutual | 127 | 5785.54 (49.17)* | -2.48 (3.50) | -13.25 | 8.30 | 0.00 | 0.50 | -108.91 |
| Proprietary | 901 | 5526.51 (33.44)* | 26.73 (2.59)* | 20.91 | 32.55 | 0.10 | 106.19* | -12.80 |

* denotes statistically significant at 1% (99% confidence).
† denotes Hausman test hypothesis rejected and fixed effects estimator employed.
<table>
<thead>
<tr>
<th>Year</th>
<th>Type</th>
<th>Obs.</th>
<th>Average Fixed or Random Effects</th>
<th>Standard Error</th>
<th>Coefficient $\alpha$</th>
<th>Standard Error</th>
<th>95% Lower Boundary</th>
<th>95% Upper Boundary</th>
<th>$R^2$</th>
<th>F/Wald test</th>
<th>Hausman Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>Overall</td>
<td>1014</td>
<td>5394.37</td>
<td>(28.21)*</td>
<td>27.71</td>
<td>(2.16)*</td>
<td>24.68</td>
<td>30.73</td>
<td>0.13</td>
<td>164.49*</td>
<td>-0.68</td>
</tr>
<tr>
<td></td>
<td>Mutual</td>
<td>171</td>
<td>5434.33</td>
<td>(26.22)*</td>
<td>15.44</td>
<td>(1.86)*</td>
<td>10.98</td>
<td>19.89</td>
<td>0.27</td>
<td>68.69*</td>
<td>0.61</td>
</tr>
<tr>
<td></td>
<td>Proprietary</td>
<td>843</td>
<td>5351.58</td>
<td>(31.34)*</td>
<td>33.10</td>
<td>(2.43)*</td>
<td>29.56</td>
<td>36.65</td>
<td>0.18</td>
<td>186.26*</td>
<td>-0.50</td>
</tr>
<tr>
<td>2004</td>
<td>Overall</td>
<td>1122</td>
<td>5454.18</td>
<td>(52.71)*</td>
<td>18.31</td>
<td>(4.01)*</td>
<td>15.05</td>
<td>21.57</td>
<td>0.02</td>
<td>20.87*</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Mutual</td>
<td>274</td>
<td>5625.87</td>
<td>(33.96)*</td>
<td>-3.99</td>
<td>(2.53)</td>
<td>-11.04</td>
<td>3.06</td>
<td>0.01</td>
<td>2.48</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Proprietary</td>
<td>848</td>
<td>5375.59</td>
<td>(66.2)*</td>
<td>27.52</td>
<td>(5.07)*</td>
<td>23.47</td>
<td>31.58</td>
<td>0.00</td>
<td>29.50*</td>
<td>0.29</td>
</tr>
<tr>
<td>2005</td>
<td>Overall</td>
<td>1226</td>
<td>5365.58</td>
<td>(27.60)*</td>
<td>21.19</td>
<td>(2.06)*</td>
<td>17.92</td>
<td>24.45</td>
<td>0.09</td>
<td>106.11*</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>Mutual</td>
<td>314</td>
<td>5361.44</td>
<td>(33.56)*</td>
<td>16.38</td>
<td>(2.48)*</td>
<td>9.42</td>
<td>23.35</td>
<td>0.12</td>
<td>43.48*</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Proprietary</td>
<td>812</td>
<td>5355.97</td>
<td>(35.75)*</td>
<td>23.90</td>
<td>(2.67)*</td>
<td>20.27</td>
<td>27.53</td>
<td>0.09</td>
<td>80.08*</td>
<td>0.94</td>
</tr>
<tr>
<td>2006</td>
<td>Overall</td>
<td>1008</td>
<td>5391.40</td>
<td>(32.43)*</td>
<td>18.51</td>
<td>(2.37)*</td>
<td>14.84</td>
<td>22.18</td>
<td>0.06</td>
<td>61.05*</td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td>Mutual</td>
<td>259</td>
<td>5535.67</td>
<td>(20.02)*</td>
<td>1.89</td>
<td>(1.46)</td>
<td>-2.09</td>
<td>5.88</td>
<td>0.01</td>
<td>1.67</td>
<td>2.11</td>
</tr>
<tr>
<td></td>
<td>Proprietary</td>
<td>749</td>
<td>5336.70</td>
<td>(41.68)*</td>
<td>24.59</td>
<td>(3.04)*</td>
<td>19.85</td>
<td>29.34</td>
<td>0.08</td>
<td>65.33*</td>
<td>0.29</td>
</tr>
<tr>
<td>2007</td>
<td>Overall</td>
<td>785</td>
<td>5527.50</td>
<td>(42.41)*</td>
<td>12.69</td>
<td>(3.09)*</td>
<td>8.35</td>
<td>17.03</td>
<td>0.01</td>
<td>16.81*</td>
<td>-4.89†</td>
</tr>
<tr>
<td></td>
<td>Mutual</td>
<td>215</td>
<td>5603.10</td>
<td>(46.69)*</td>
<td>4.64</td>
<td>(3.59)</td>
<td>-4.12</td>
<td>13.40</td>
<td>0.01</td>
<td>1.67</td>
<td>-21.00†</td>
</tr>
<tr>
<td></td>
<td>Proprietary</td>
<td>570</td>
<td>5508.78</td>
<td>(59.12)*</td>
<td>14.88</td>
<td>(4.22)*</td>
<td>8.69</td>
<td>21.07</td>
<td>0.02</td>
<td>12.42*</td>
<td>0.79</td>
</tr>
</tbody>
</table>

* denotes statistically significant at 1% (99% confidence).
† denotes Hausman test hypothesis rejected and fixed effects estimator employed.
### Table 4: Comparison of rankings of the relative costs of insurance and credit

<table>
<thead>
<tr>
<th>Financing Bank</th>
<th>Total loan cost (£)</th>
<th>Total insurance cost (£)</th>
<th>Insurance cost of total cost (%)</th>
<th>Financing Bank</th>
<th>Total loan cost (£)</th>
<th>Total insurance cost (£)</th>
<th>Insurance cost of total cost (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>5691</td>
<td>958</td>
<td>14.4</td>
<td>Liverpool Victoria</td>
<td>5706</td>
<td>716</td>
<td>11.1</td>
</tr>
<tr>
<td>Abbey National</td>
<td>5686</td>
<td>771</td>
<td>11.9</td>
<td>Lloyds TSB</td>
<td>5941</td>
<td>904</td>
<td>13.2</td>
</tr>
<tr>
<td>Airdrie Savings Bank</td>
<td>6050</td>
<td>1017</td>
<td>14.4</td>
<td>Marks and Spencer</td>
<td>5884</td>
<td>807</td>
<td>12.1</td>
</tr>
<tr>
<td>Alliance and Leicester Bank</td>
<td>5635</td>
<td>690</td>
<td>10.9</td>
<td>MBNA</td>
<td>5925</td>
<td>822</td>
<td>12.2</td>
</tr>
<tr>
<td>Allied Irish Banks</td>
<td>5824</td>
<td>800</td>
<td>12.1</td>
<td>Morgan Stanley</td>
<td>5691</td>
<td>794</td>
<td>12.2</td>
</tr>
<tr>
<td>American Express</td>
<td>5673</td>
<td>590</td>
<td>9.4</td>
<td>National Australia Bank</td>
<td>5904</td>
<td>816</td>
<td>12.1</td>
</tr>
<tr>
<td>Arbuthnot Banking Group</td>
<td>6510</td>
<td>1007</td>
<td>13.4</td>
<td>Nationwide BS*</td>
<td>5710</td>
<td>597</td>
<td>9.5</td>
</tr>
<tr>
<td>Bank of Ireland</td>
<td>5756</td>
<td>592</td>
<td>9.3</td>
<td>Natwest</td>
<td>6059</td>
<td>888</td>
<td>12.8</td>
</tr>
<tr>
<td>Bank of Scotland</td>
<td>5893</td>
<td>1126</td>
<td>16.0</td>
<td>Newcastle BS*</td>
<td>5671</td>
<td>586</td>
<td>9.4</td>
</tr>
<tr>
<td>Barclays</td>
<td>6009</td>
<td>925</td>
<td>13.3</td>
<td>Northern Rock</td>
<td>5600</td>
<td>629</td>
<td>10.1</td>
</tr>
<tr>
<td>Britannia*</td>
<td>5980</td>
<td>1154</td>
<td>16.2</td>
<td>Norwich and Peterborough*</td>
<td>5750</td>
<td>844</td>
<td>12.8</td>
</tr>
<tr>
<td>British Gas</td>
<td>5548</td>
<td>1044</td>
<td>15.8</td>
<td>Paragon Group</td>
<td>6038</td>
<td>906</td>
<td>13.0</td>
</tr>
<tr>
<td>Capital One Bank</td>
<td>6361</td>
<td>1291</td>
<td>16.9</td>
<td>Peoples Bank of Connecticut</td>
<td>5910</td>
<td>712</td>
<td>10.8</td>
</tr>
<tr>
<td>Citigroup</td>
<td>5821</td>
<td>868</td>
<td>13.0</td>
<td>Phone a Loan.Ltd</td>
<td>5920</td>
<td>677</td>
<td>10.3</td>
</tr>
<tr>
<td>Colonial</td>
<td>6107</td>
<td>968</td>
<td>13.7</td>
<td>Post Office</td>
<td>5556</td>
<td>832</td>
<td>13.0</td>
</tr>
<tr>
<td>Cooperative Bank*</td>
<td>5695</td>
<td>927</td>
<td>14.0</td>
<td>Prudential</td>
<td>5827</td>
<td>839</td>
<td>12.6</td>
</tr>
<tr>
<td>Coventry BS*</td>
<td>5697</td>
<td>511</td>
<td>8.2</td>
<td>Rheinisch-Westfälisches Elektrizitätswerk AG</td>
<td>5649</td>
<td>616</td>
<td>9.8</td>
</tr>
<tr>
<td>CVC Capital Partners</td>
<td>5737</td>
<td>1022</td>
<td>15.1</td>
<td>Royal Bank of Scotland</td>
<td>6209</td>
<td>833</td>
<td>11.8</td>
</tr>
<tr>
<td>Danske bank</td>
<td>5539</td>
<td>868</td>
<td>13.5</td>
<td>Royal Bank of Scotland</td>
<td>5811</td>
<td>831</td>
<td>12.5</td>
</tr>
<tr>
<td>Discover</td>
<td>5671</td>
<td>1043</td>
<td>15.5</td>
<td>Saffron Walden BS*</td>
<td>5502</td>
<td>551</td>
<td>9.1</td>
</tr>
<tr>
<td>First National Bank</td>
<td>6299</td>
<td>831</td>
<td>11.7</td>
<td>Sainsbury's</td>
<td>5661</td>
<td>793</td>
<td>12.3</td>
</tr>
<tr>
<td>General Electric</td>
<td>5554</td>
<td>1033</td>
<td>15.7</td>
<td>Skipton Building Society*</td>
<td>5502</td>
<td>551</td>
<td>9.1</td>
</tr>
<tr>
<td>Halifax</td>
<td>6014</td>
<td>824</td>
<td>12.0</td>
<td>Standard Chartered Bank</td>
<td>5952</td>
<td>848</td>
<td>12.5</td>
</tr>
<tr>
<td>HBF S</td>
<td>5887</td>
<td>1067</td>
<td>15.3</td>
<td>Tesco</td>
<td>5663</td>
<td>649</td>
<td>10.3</td>
</tr>
<tr>
<td>HFC Bank</td>
<td>6043</td>
<td>870</td>
<td>12.6</td>
<td>The Funding Corporation</td>
<td>5685</td>
<td>1090</td>
<td>16.1</td>
</tr>
<tr>
<td>HSBC</td>
<td>5924</td>
<td>890</td>
<td>13.1</td>
<td>Woolwich</td>
<td>5932</td>
<td>709</td>
<td>10.7</td>
</tr>
<tr>
<td>Leeds &amp; Holbeck*</td>
<td>5560</td>
<td>667</td>
<td>10.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* denotes mutually owned banks.
Appendix A - Formal explanation of the relationship between loan cost and insurance cost as a percentage of loan and insurance costs.

Let \( C_{LI} \) be the cost of the unsecured loans and credit insurance.

\( C_L \) be the cost of the unsecured loan only.

\( C_I \) be the cost of the credit insurance only.

Where, in each case, cost is defined as the equal monthly payment over the term of the loan.

\[
\frac{C_I}{C_L + C_I} = \frac{1}{100} \quad \text{where } P \text{ is the insurance cost as a percentage of loan cost}
\]

Now \( \frac{\partial C_I}{\partial C_L} > 0 \) as the insurance benefit, and hence premium, will increase as loan size increases.

Say \( C_I = r_L C_L \) where \( r_L \) is the insurance premium rate per unit of unsecured loan.

\( r_L \geq 0 \)

\[
P = \frac{1}{100} \left( \frac{r_L C_L}{C_L + r_L C_L} \right) = \frac{1}{100} \left( \frac{r_L}{1 + r_L} \right)
\]

Now if there is no cross subsidy \( r_L \) will be independent of \( C_L \) so \( P \) is independent of \( C_L \) thus there should be no relationship between loan cost and insurance cost as a percentage of loan and insurance costs.

Now if there is a cross subsidy \( r_L \) will be positively related to \( C_L \)

i.e. \( r_L = f(C_L) \) \( \text{where } \frac{\partial f(C_L)}{\partial C_L} > 0 \)

Thus \( P = \frac{1}{100} \left( \frac{f(C_L)}{1 + f(C_L)} \right) \)

\[
P = \frac{1}{100} X^{-1} \quad \text{where } X = \left( \frac{1 + f(C_L)}{f(C_L)} \right) = f(C_L) + 1
\]
Thus \( \frac{\partial X}{\partial C_L} = -f(C_L)^{-2} < 0 \)

Thus \( \frac{\partial P}{\partial C_L} > 0 \)

So if there is a cross subsidy from unsecured loans to credit insurance \( P \) will be positively related to loan size.