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

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Abstract: This paper examines the joint pricing of credit insurance and unsecured lending. This case has wider regulatory implications following concerns that the sale of credit insurance as a secondary or add-on product has resulted in uncompetitive pricing, limited product utility and possible mis-selling. To explore these concerns 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 maximising by banks is central to causing such a cross-subsidy to arise. This cross-subsidy is observed to decline over time and is far more pronounced for proprietary rather than mutually owed banks.
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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 lending after 2010 (CC 2009). This is a clear step back from the de-regulation movement allowing the joint provision of banking and insurance services in the EU and USA. This study examines whether this far reaching regulatory decision to introduce a blanket ban on the joint provision of lending and credit insurance is justified. The 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? 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, providing an empirical assessment of the joint pricing of these financial services and considering policy implications. 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 level 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.

The form of our examination is prompted by the expanding theoretical literatures assessing limited decision making ability in the context on 'add-on' product pricing (Della Vigna and Malmendier 2004, 2006; Gabiax and Laibson 2006, Ellison 2004). This

literature indicates circumstances where exploitation of customers' weakness in comprehension and decision making by firms may persist in joint pricing. Cross subsidy may flow from add-on goods purchased by less informed customers to subsidise base goods purchased by all customers. Empirically assessing the veracity of such claims and firm responses to the non-standard preferences of consumers is a neglected area of academic investigation (Della Vigna and Malmendier 2004).

This investigation also has importance 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 is valued at £2,013m in 2006 (CC 2007). 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 research questions surrounding the prohibition of the joint provision of banking and insurance products. To achieve these ends 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 particular circumstances emerging in the UK personal unsecured lending and credit insurance markets. The model predictions are empirically tested in section 4 and a summary of the research, policy implications and conclusions are provided in section 5.

2.   Literature Review

The research questions have been considered within a diverse range of literatures. Initially a substantial literature has emerged examining the deregulation and diversification of banking services. The value for money and distribution of credit

insurance has been considered within a limited academic literature as well as repeatedly by regulators. Lastly theoretical literatures have emerged considering the joint pricing of goods and services and the emergence of cross-subsidies.

2.1   Previous academic studies of joint insurance and loans sales

Insurance and banking products have been increasingly provided jointly by financial services providers since the Second Banking Coordination Directive (1989) and Financial Services Modernization Act (1999) in the EU and USA respectively (Fields *et al* 2007). This legislation has allowed banks to merge with insurers and other financial firms and offer both banking and insurance products individually and jointly. Schmid and Walter (2009) estimate 24.6% of worldwide financial sector mergers have involved cross market aspects and influenced at least two financial services. 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). The market valuation of financial firm diversification strategies has shifted. Earlier in this decade the announcement of bank and insurer mergers 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 increasingly linked to lower market valuations than experienced by specialised financial firms (Laeven and Levine 2007, Schimd and Walter 2009).

Recent research has indicated the diversification movement has transformed the 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

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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 UK and US 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.

The take up of credit insurance in the UK is investigated using both formal models and surveys. Using a survey, Pryce and Keoghan (2001) indicated that premium size has a limited influence on credit insurance purchase decisions. Environmental factors and particularly past experience of unemployment are strong determinants of mortgage credit insurance take up. Further UK survey evidence indicates mortgage credit insurance is very expensive, limited in coverage and has regressive elements (Burchardt and Hill 1998). Modelling the situation Pryce and Keoghan (2001) indicated the decision to take out payment protection insurance for mortgages is rational. 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 method of 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 USA. 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

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Chan 1998) and requirements to re-examine the legal treatment of credit policies (Spahr and Escolas 1986).

There have also been a range of other contributions considering the pricing of banking services and the implication of increasing joint or bundled provision of banking and insurance products. For example for the case of South Africa, Okeashalem (2008) indicates increased bank product bundling leads to increased fee levels. In European banking Lepetit *et al* (2008) identify that higher fee level incomes are associated with lower interest rate margins and Valverde and Fernández (2007) report that revenue from non-traditional business may compensate for lower interest rate margins.

Similarly the influence of the ownership and subsequent objective function of banks may also influence the form of joint selling. Mutual banks are effectively owned by their customers, with particular customers having specified ownership rights. Proprietary banks are owned by shareholders who have ownership rights which vary with the quantity of shares owned. These different ownership rights can be a factor resulting in different bank behaviours (Rasmusen, 1988, Llewellyn, 1991). While evidence of differential pricing between proprietary and mutual banks is limited in scope, Ashton and Letza (2003) and Heffernan (2003) both indicate proprietary banks have systematically offered lower returns on deposits and higher interest rates for loans in the UK.

2.2   Regulatory literatures

Credit or payment protection insurance has also been the focus of repeated US and UK regulatory criticism during the last 30 years. In the USA 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 providing 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 where most lenders and insurers retain more than 40% of premiums are recorded (FTC 2001). Recent cases have resulted in large fines for banks and finance companies which have packed 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, the provision of credit insurance in combination with lending has recently been examined by the UK competition law enforcement and consumer protection agency, the Office of Fair Trading (OFT 2006). The OFT (2006) reported that consumers receive poor value due to the low proportion of premium income paid out in claims. The claims ratio for unsecured loan credit insurance is 18%; a level far lower than other forms of insurance, such as car insurance (84% over the same period, CC 2008). The commissions paid to credit insurance distributors are also very high averaging 59% (OFT 2006) over the 2000 to 2005 period.

Subsequently credit or payment protection insurance provision has been referred to the Competition Commission which reached its conclusions after producing two preliminary reports (CC 2007, 2008). Its final report (CC 2009) ruled that joint sales of credit insurance with loans are to be prohibited, single premium insurance policies should not be employed, greater customer information provision is required and that credit insurance should be unbundled from other financial services.

The UK financial regulator, the Financial Services Authority (hereafter FSA) has also examined credit insurance repeatedly since 2005. 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 are all areas where standards have been established by the FSA (FSA 2007c) and have been assessed

using both supervisory investigations and mystery shopping studies (FSA 2005, 2006, 2007a, 2007b). The firms visited were selected from a wide range of companies distributing credit insurance and include retailers, car dealerships, brokers, banks and building societies.

The FSA identifies particular problems with firms which do not sell financial services as their main line of business, and especially in 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 and require an explicit rejection of credit insurance by customers who do not wish to purchase the insurance (FSA 2007b).

In response to these concerns a number of firms have been served final notices, resulting in fines and in some cases the removal of permission to sell regulated financial services. Since 2006 to 2008 16 firms have been publically censured or fined between £14,000 and £7m by the FSA. The level of action has increased from 3 cases with total fines of £725,000 in 2006 to 8 cases leading to over £9m in fines in 2008. The punishments vary from moderate fines for retailers and car dealerships to heavy fines for banks. The fines were imposed following evidence of assumptive sales techniques where customers' needs where not given sufficient weight, poor information provision and on occasion poor record keeping.

Credit insurance problems are also raised in the UK Consumer Credit Act (2006) which considers the modernisation of the UK consumer credit law. Lastly the cost of credit insurance has also been raised by the European Commission (2005) as part of the on-going harmonisation of consumer protection laws. Particular 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). In particular a European wide approach for calculating the total cost of credit for consumers including add-on costs has future importance (European Commission 2005).

2.3 Previous theoretical work of joint pricing for customers with differing cognitive abilities.

A growing theoretical literature examines circumstances where customers' sub-optimal choices when jointly purchasing additional or add-on products leads to cross-subsidies. Specifically 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 limited informative advertising, to conceal the true attributes of add-on goods from consumers (Gabaix and Laibson 2006).

Within this framework there are two types of exploitation at work 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 with poor decision making abilities have limited comprehension of the detriment they face, this cross-subsidy is persistent. Conversely if these markets are characterised by homogenous or sophisticated customers, artificially high pricing of add-on products and cross-subsidy of base products should not persist over time. Therefore

when greater awareness and information develop in these markets the form of pricing will alter over time.

These predictions are also consistent with alternative modelling frameworks; for example viewing the insurance and loan products as 'investment' or 'leisure' goods (DellaVigna and Malmendier 2004). Leisure goods, such as loans, which provide immediate benefits at the expense of delayed costs, are often initially priced at below marginal cost and are frequently front-end loaded in terms of costs as customers will often over estimate future use. Credit insurance, an investment good within this framework, will involve the payment of current income in the hope of a future payout.

3. The Derivation of Optimal Unsecured Lending Interest Rates and Insurance Premiums

To explore the research questions a formal 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 and financial literacy both in the UK and USA (Agarwal *et al* 2008, Campbell 2006, FSA 2006, Hilgert and Hogarth 2003) particularly for the young, old and less wealthy. This low level of financial literary is often compounded as interactions between the providers of personal financial services and their customers involve the exchange of a complex and often intangible array of information, expertise, capital and human resources. Subsequently, personal financial

services are often difficult for many customers to comprehend (FSA 2000) and have qualities associated with credence goods (Darby and Karni 1973).

This emphasis on naïve and sophisticated customers is employed to reflect the widespread evidence of unequal comprehension of financial services by different types of customer. We assume throughout that banks may be aware that a proportion of its customers are less informed or naïve. This approach differs from past studies of joint pricing (e.g. Kanatas and Qi 2003) which emphasise the influence of joint financial services provision for bank costs and risks rather than pricing.

To examine whether all banks supplying these markets adopt similar pricing approaches it is assumed banks either maximise profits or consumer benefits to reflect proprietary and mutually owned firms 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 as used in previous research on retail financial services with heterogeneous customers (Kahn *et al* 1999, Ashton and Hudson, 2008). The model is developed over three cases:

- 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, ul indicates unsecured lending, i indicates credit insurance, v and p indicate value and premium respectively, and u and s indicates naïve (unsophisticated) and sophisticated customers respectively[1].

3.1 Case A: when 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 which can be represented by:

$$D_{ul} = D_{ul}(r_{ul}, x_{ul}) \tag{1}$$

where r_{ul} is the bank's unsecured loan rate, x_{ul} is a vector of other variables which influence the demand for unsecured loans from homogeneous customers. Similarly the demand for credit insurance can be represented by:

$$D_i = D_i(i_p, x_i) \tag{2}$$

where i_p is the bank's insurance premium and x_i is a vector of other variables which influence the demand of borrowers for credit insurance by homogenous customers.

3.1.1 Profits for homogenous customers when sales are independent

Profits for proprietary banks, which maximise profits, for unsecured loans may be presented as:

$$(r_{ul} - r - c_{ul})D_{ul}(r_{ul}, x_{ul}) \tag{3}$$

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:

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[1] 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

$$(i_p - i_v - c_i)D_i(i_p, x_i) \tag{4}$$

where i_p is the insurance premium, c_i is the net expenses per unit of insurance sold, and i_v is the discounted expected value of the benefits from the policy. If the bank wishes to find r^*_{ul} to optimize its profits, this can be determined by calculus to satisfy the first order condition[2]:

$$D_{ul}(r^*_{ul}, x_{ul}) + (r^*_{ul} - r - c_{ul})\frac{\partial D(r^*_{ul}, x_{ul})}{\partial r^*_{ul}} = 0 \tag{5}$$

Thus

$$r^*_{ul} = \frac{-D_{ul}(r^*_{ul}, x_{ul})}{\frac{\partial D(r^*_{ul}, x_{ul})}{\partial r^*_{ul}}} + r + c_{ul} \tag{6}$$

3.1.2 Profits for sophisticated and naïve customers when sales are independent

When k^s is the proportion of customers which are sophisticated the bank's profits from unsecured loans are:

$$(r_{ul} - r - c_{ul})\left[k^s D^s_{ul}(r_{ul}, x^s_{ul}) + (1 - k^s)D^u_{ul}(r_{ul}, x^u_{ul})\right] \tag{7}$$

These sophisticated customers have a demand for unsecured loans which can be represented by $D^s_{ul} = D^s_{ul}(r_{ul}, x^s_{ul})$. Distinctly native customers have a demand for unsecured loans represented by $D^u_{ul} = D^u_{ul}(r_{ul}, x^u_{ul})$. If the bank wishes to find r^*_{ul} to optimize its profits this is determined by calculus to satisfy the first order condition:

$$\begin{aligned}&\left[k^s D^s_{ul}(r_{ul}, x^s_{ul}) + (1 - k^s)D^u_{ul}(r_{ul}, x^u_{ul})\right] + \\ &(r^*_{ul} - r - c_{ul})\left[\frac{k^s \partial D^s_{ul}(r^*_{ul}, x^s_{ul})}{\partial r^*_{ul}} + \frac{(1 - k^s)\partial D^u_{ul}(r^*_{ul}, x^u_{ul})}{\partial r^*_{ul}}\right] = 0\end{aligned} \tag{8}$$

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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.

[2] Note $\dfrac{\partial D(r^*_{ul}, x_{ul})}{\partial r^*_{ul}} \leq 0$

Therefore[3]

$$r_{ul}^* = \frac{-\left[k^s D_{ul}^s\left(r_{ul}^*, x_{ul}^s\right) + \left(1 - k^s\right)D_{ul}^u\left(r_{ul}, x_{ul}^u\right)\right]}{\left(r_{ul}^* - r - c_{ul}\right)\left[\dfrac{k^s \partial D_{ul}^s\left(r_{ul}^*, x_{ul}^s\right)}{\partial r_{ul}^*} + \dfrac{\left(1 - k^s\right)\partial D_{ul}^u\left(r_{ul}^*, x_{ul}^u\right)}{\partial r_{ul}^*}\right]} + r + c_{ul} \qquad (9)$$

In this case r_{ul}^* may be larger or smaller than the optimum interest rate when customers are homogeneous which is shown in equation (6). Thus if unsecured loans are sold in isolation it is not inevitable that sophisticated customers are subsidized by naïve customers. That is they do not necessarily pay lower interest rates because of the presence of naïve customers.

When credit insurance is sold in isolation and k^s is the proportion of sophisticated customers the bank's profits from credit insurance are:

$$\left(i_p - i_v - c_i\right)\left[k^s D_i^s\left(i_p, x_i^s\right) + \left(1 - k^s\right)D_i^u\left(i_p, x_i^u\right)\right] \qquad (10)$$

where c_i is the bank's net expenses per unit of credit insurance; the sophisticated customers have a demand for unsecured loans which can be represented by: $D_i^s = D_{ul}^s\left(i_p, x_i^s\right)$ and naïve customers have a demand for unsecured loans represented by: $D_i^u = D_{ul}^u\left(i_p, x_i^u\right)$. Equation (10) is closely analogous to equation (7) and the insurance premium to maximise profits is determined following a similar approach to that used to find the profit maximising unsecured lending rate. If credit insurance is sold in isolation, sophisticated customers are not necessarily cross-subsidized by naïve customers.

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[3] Note $\dfrac{\partial D_{ul}^s\left(r_{ul}^*, x_{ul}^s\right)}{\partial r_{ul}^*} < 0$; $\dfrac{\partial D_{ul}^u\left(r_{ul}^*, x_{ul}^u\right)}{\partial r_{ul}^*} < 0$.

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

Most credit insurance is sold at the point of sale of the credit being insured (CC 2009). Customers will only buy credit insurance if they have taken out a loan and may decide not to take out insurance at all. They may also refuse the insurance available at the point of sale and instead search the market for the best available policy. These situations are elaborated for both homogenous and sophisticated and naive customers.

3.2.1 Joint sales to homogenous customers

For homogenous customers if a bank sells both unsecured loans and credit insurance its profit will simply be the sum of (3) and (4) which is:

$$(r_{ul} - r - c_{ul})D_{ul}(r_{ul}, x_{ul}) + (i_p - i_v - c_i)D_i(i_p, x_i) \tag{11}$$

As the demand functions in (11) are not always mutually independent this influences how the bank will set unsecured loan rates and credit insurance premiums to maximise profits. When these products are marketed independently the demand function for the credit insurance $D_i(i_p, x_i)$ will be independent of that for unsecured loans $D_{ul}(r_{ul}, x_{ul})$. This implies that the optimal values of r_{ul} and i_p can be found independently of one another by setting the partial derivative of (11) with respect to r_{ul} and i_p equal to zero respectively. In this case, there will be no cross subsidies between the two products.

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 company the conditional demand function is given by:

$$D_i(i_p, x_i) = p(i_p) \cdot D_{ul}(r_{ul}, x_{ul}) \tag{12}$$

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 (12) into (11) gives a profit of

$$(r_{ul} - r - c_{ul})D_{ul}(r_{ul}, x_{ul}) + (i_p - i_v - c_i)p(i_p)\, D_{ul}(r_{ul}, x_{ul}) \tag{13}$$

If the bank wishes to find r_{ul}^* to optimize its profits it can be determined by calculus to satisfy the first order condition

$$D_{ul}(r_{ul}^*, x_{ul}) + (r_{ul}^* - r - c_{ul})\frac{\partial D_{ul}(r_{ul}^*, x_{ul})}{\partial r_{ul}^*} + (i_p - i_v - c_i)\frac{p(i_p)\partial D_{ul}(r_{ul}^*, x_{ul})}{\partial r_{ul}^*} = 0$$

thus

$$r_{ul}^* = \frac{-D_{ul}(r_{ul}^*, x_{ul})}{\frac{\partial D_{ul}(r_{ul}^*, x_{ul})}{\partial r_{ul}^*}} - p(i_p)(i_p - i_v - c_i) + r + c_{ul} \tag{14}$$

We can see that r_{ul}^* is lower when goods are sold jointly in (14) rather than independently in (4) when assuming $(i_p - i_v - c_i) > 0$, i.e. the insurance is not being sold for 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 are subsidizing homogenous customers which only accept unsecured loans.

3.2.2 Joint sales to naïve and sophisticated customers

When customers vary in decision making ability the joint profit from unsecured loans and credit insurance will be the sum of (7) and (10) which equals:

$$(r_{ul} - r - c_{ul})\left[k^s D_{ul}^s(r_{ul}, x_{ul}^s) + (1 - k^s)D_{ul}^u(r_{ul}, x_{ul}^u)\right] \tag{15}$$

$$+ (i_p - i_v - c_i)\left[k^s D_i^s(i_p, x_i^s) + (1 - k^s)D_i^u(i_p, x_i^u)\right]$$

Again the various demand functions in equation (15) are not necessarily mutually independent which effects how the bank will set unsecured loan rates and credit insurance premiums to maximise profits. When credit insurance and unsecured lending

are sold together the bank will maximise profits by setting r_{ul} and i_p to maximize (15). When credit insurance is marketed only to customers who already have an unsecured loan with the bank, the demand functions for the credit insurance $D_i^s(i_p, x_i^s), D_i^u(i_p, x_i^u)$ for sophisticated and naïve customers will not be independent of the demand functions for unsecured loans $D_{ul}^s(r_{ul}, x_{ul}^s), D_{ul}^u(r_{ul}, x_{ul}^u)$.

We examine these various different dependence relationships below. Initially naive customers can find the best deal on an unsecured loan rate as effectively as sophisticated customers but, due to shrouding of the credit insurance's costs are more likely to buy credit insurance. In this case:

$$D_{ul}^s(r_{ul}, x_{ul}^s) = D_{ul}^u(r_{ul}, x_{ul}^u) = D_{ul}(r_{ul}, x_{ul}) \qquad (16)$$

In addition, as the demand function for credit insurance from naive customers is greater than that from sophisticated customers. i.e. $D_i^u(i_p, x_i^u) > D_i^s(i_p, x_i^s)$; for all i_p. To model this situation we establish the following relationships:

$$D_i^s(i_p, x_i^u) = p^s(i_p) D_{ul}(r_{ul}, x_{ul}) \quad D_i^u(i_p, x_i^s) = p^u(i_p) D_{ul}(r_{ul}, x_{ul})$$

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

$$(r_{ul} - r - c_{ul}) D_{ul}(r_{ul}, x_{ul}) \qquad (17)$$

$$+ (i_p - i_v - c_i) \left[k^s p^s(i_p) D_{ul}(r_{ul}, x_{ul}) + (1 - k^s) p^u(i_p) D_{ul}(r_{ul}, x_{ul}) \right]$$

If the bank wishes to find r_{ul}^* to optimize its profits:

$$D_{ul}(r_{ul}^*, x_{ul}) + (r_{ul}^* - r - c_{ul}) \frac{\partial D_{ul}(r_{ul}^*, x_{ul})}{\partial r_{ul}^*} \qquad (18)$$

$$+ (i_p - i_v - c_i) \left[k^s p^s(i_p) \frac{\partial D_{ul}(r_{ul}^*, x_{ul})}{\partial r_{ul}^*} + (1 - k^s) p^u(i_p) \frac{\partial D_{ul}(r_{ul}^*, x_{ul})}{\partial r_{ul}^*} \right] = 0$$

Thus[4]

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[4] Note $\dfrac{\partial D_{ul}(r_{ul}^*, x_{ul})}{\partial r_{ul}^*} \leq 0 \left[k^s p^s + (1 - k^s) p^u \right] \geq 0$. Thus $r_{ul}^* \geq r \geq 0$

$$r_{ul}^* = \frac{-D_{ul}\left(r_{ul}^*, x_{ul}\right)}{\dfrac{\partial D_{ul}\left(r_{ul}^*, x_{ul}\right)}{\partial r_{ul}^*}} - \left(i_p - i_v - c_i\right)\left[k^s p^s(i_p) + (1-k^s)p^u(i_p)\right]\frac{\partial D_{ul}\left(r_{ul}^*, x_{ul}\right)}{\partial r_{ul}^*} + r + c_{ul} \tag{19}$$

When
$$k^s p^s(i_p) + (1-k^s)p^u(i_p) \tag{20}$$

subject to $0 \le p^s(i_p) \le p(i_p) \le p^u(i_p) \le 1$; $0 \le k^s \le 1$; $0 \le (1-k^s) \le 1$ increases in markets with higher proportions of naive customers. Substituting (20) into (19), as the proportion of naive customers increases, the unsecured interest rate decreases. The expected profit contributed by each sophisticated and naive customer obtaining an unsecured loan is $(r_{ul} - r - c_{ul}) + p^s(i_p)(i_p - i_v - c_i)$ and $(r_{ul} - r - c_{ul}) + p^u(i_p)(i_p - i_v - c_i)$ respectively. As the expected profits from naive customers is 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. $(r_{ul} - r - c_{ul}) = 0$ for loans and $(i_p - i_v - c_i) = 0$ for credit insurance. Therefore, in this case, expected profits from mutual banks are: for a homogenous group of customers:

$$(r_{ul} - r - c_{ul}) + (i_p - i_v - c_i) = 0 \tag{21}$$

for sophisticated customers are:

$$(r_{ul} - r - c_{ul}) + p^s(i_p)(i_p - i_v - c_i) = 0 \tag{22}$$

and for naive customers are:

$$(r_{ul} - r - c_{ul}) + p^u(i_p)(i_p - i_v - c_i) = 0 \tag{23}$$

The mutual (non-profit maximising) banks may not wish to gain from using a cross-subsidy between credit insurance and unsecured lending for homogenous customers. Similarly, they may not wish to have persistent cross subsidies between customers with differing levels of sophistication. Therefore there are no clear incentives for mutual banks to cross subsidise unsecured lending from credit insurance. Nonetheless it is possible that, within their overall remit, mutual banks may chose to operate cross-subsidies and this can be tested empirically.

3.4   Model predictions

Three predictions are forwarded from this model. Initially it is only when unsecured lending and credit insurance are marketed jointly by proprietary banks and customers purchase credit insurance after accepting an unsecured loan that a cross subsidy develops. This cross subsidy occurs in both markets populated by homogenous customers and by customers with differing decision making abilities. These cross subsidies do not occur when credit insurance and unsecured loans are sold or marketed independently. One important conclusion to be drawn from this is that 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.

A second model prediction considers the joint sale of unsecured loans and credit insurance by proprietary banks in markets characterised by customers with different decision making abilities. In this case 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. Therefore proprietary banks offer a worse deal to customers with poor decision making abilities when joint selling these

financial services. Subsequently it is important for naïve customers with limited decision making ability to transform themselves into more sophisticated customers with increased decision making ability through greater financial education.

Lastly, the ownership and objective function of the bank is examined. Proprietary and mutual banks are likely to behave distinctly in markets with joint selling credit insurance and unsecured lending. It is predicted that mutual banks are less likely to engage in behaviours leading to the cross-subsidy of sophisticated customers through the selective purchase of credit insurance by naïve customers.

4.   Data and Empirics

In this section the form of joint pricing and value for money of credit insurance is considered and the key predictions outlined in Section 3 are tested. A descriptive assessment and three statistical investigations are undertaken

The data, provided by Moneyfacts PLC, considers the cost of a £5000 unsecured loan with and without credit or payment protection insurance. The insurance is issued as a single premium before the start of the loan and the cost added to the principal of the loan. The data is recorded monthly for 10 years, from 1 January 1998 to 31 December 2007 for 85 different firms offering 211 different joint credit and insurance products. These products include offerings developed for different market segments such as car purchase or to existing customers.

4.1   Descriptive Data

This section outlines the key features of the data set. Table 1 considers all firms which offer credit insurance and unsecured loans jointly and finance their own unsecured loans. This data description is employed to reflect firms which have complete control over their pricing decisions. Panel A of Table 1 indicates how long individual loan products have

been provided and the length of time that firms have offered these financial services. On average products have had a market life of just under four years although there is substantial variation between products 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 firms have operated in this market for around five years although there is substantial variance between banks with some participants operating throughout the entire period and one participant operating for only six months.

Table 1:   Descriptive Statistics of Joint Credit Insurance and unsecured lending.

Panel A. The length of that time individual products, banks and financing banks have existed within the sample period (months).				
	Average	Maximum	Minimum	Standard Deviation
Individual Products	45.47	120	2	36.54
Firms	63.64	120	6	41.46
Financing Firms	70.04	120	6	43.12

Panel B: Average Number of Products on the Market by year										
Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of Products	78	79	93	101	92	100	105	107	100	80

Panel C: The average number of products offered by individual banks and individual financing banks.				
	Average	Maximum	Minimum	Standard Deviation
Firms	1.52	10.26	1	1.17
Financing Firms	2.19	10.45	1	1.93

Panel D: Statistics for the variability in costs over the product range for firms offering more than one product.				
	Average	Maximum	Minimum	Standard Deviation
Loan only (£)	£190.70	£3147.84	0.36	273.38
Loan only (%)	3.36	57.75	0.01	4.98
Insurance Only (£)	142.60	1001.52	0.36	178.18
Insurance only (%)	21.84	296.14	0.06	34.70

Panel B of Table 1 shows the average number of products on sale by calendar year. The number of products available has not changed dramatically over time although slightly increases during the middle of the sample period. Panel C of Table 1 gives statistics of the average number of products offered by firms. The average number of products offered by individual banks is only 2.19 although one bank has an average of over 10 products on offer. This indicates a skewed distribution with many firms only offering one product at a given time whereas some firms offer multiple products.

Panel D of Table 1 shows the variability of costs over the product range of individual firms 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) although there is considerable variation between banks with the largest difference being £3147.84 (57.75% of 36 month costs) and the smallest being effectively zero. For insurance the variations in cost are proportionately greater across product ranges. The average difference is £142.60 which is 21.84% of the total (36 month) costs and the largest difference is £1001.52 which is no less than 296% of total (36 month) costs.

Table 2: Unsecured Loan and Credit Insurance Costs by Year

		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Average	Monthly loan costs with insurance	199.00	196.75	191.91	188.26	186.65	183.37	181.72	180.71	181.3	183.29
Standard Deviation		11.14	12.96	10.14	7.71	8.49	9.70	12.21	8.90	8.63	6.98
Maximum		229.41	229.41	227.81	209.72	209.72	208.85	273.48	208.85	208.85	208.85
Minimum		178.48	176.34	169.95	167.92	168.50	167.06	165.69	164.47	164.03	169.01
Average	Monthly loan cost only	173.14	170.69	167.52	164.61	162.57	159.69	158.08	156.79	156.71	158.32
Standard Deviation		5.60	5.97	5.11	4.6	5.08	5.39	9.11	5.02	5.09	4.58
Maximum		186.07	186.07	184.60	180.82	180.82	180.82	238.86	180.82	180.82	180.82
Minimum		161.61	160.11	157.75	155.75	153.89	151.64	150.78	150.76	150.76	151.10
Average	Monthly insurance costs only	25.73	25.96	24.37	23.7	24.10	23.67	23.64	23.92	24.59	24.97
Standard Deviation		7.28	7.96	5.98	4.59	5.22	5.91	5.42	5.53	5.23	4.07
Maximum		48.91	49.58	49.58	39.78	39.78	42.35	38.44	38.44	38.66	38.62
Minimum		14.09	14.08	8.55	8.27	8.27	13.40	13.81	13.71	12.8	14.18
Average	Total value of loan with insurance	7164.16	7082.88	6908.8	6777.38	6719.25	6601.24	6541.91	6505.42	6526.97	6598.59
Standard Deviation		401.01	466.67	364.89	277.66	305.65	349.23	439.43	320.44	310.51	251.11
Maximum		8258.76	8258.76	8201.16	7549.92	7549.92	7518.60	9845.28	7518.60	7518.6	7518.60
Minimum		6425.28	6348.24	6118.20	6045.12	6066.00	6014.16	5964.84	5920.92	5905.08	6084.36
Average	Total value of loan only	6237.84	6148.15	6031.32	5924.1	5851.82	5748.99	5690.84	5644.46	5641.87	5699.81
Standard Deviation		199.00	214.81	185.14	165.84	182.66	193.90	328.07	180.85	183.86	165.57
Maximum		6698.52	6698.52	6645.60	6509.52	6509.52	6509.52	8598.96	6509.52	6509.52	6509.52
Minimum		5918.04	5763.96	5679.00	5607.00	5540.04	5459.04	5428.08	5427.36	5427.36	5439.60

Table 2 shows how loan and insurance costs vary over the sample period. When total monthly costs including insurance are considered a steady downward trend over time is observed from an average of £199 in 1998 to £186.75 in 2007. A similar pattern can be seen in the average monthly (loan) cost without insurance which 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 costs is considered we can see that insurance costs are much more variable across firms than loan costs. In most years the difference between the maximum and minimum loan cost without insurance is of the order of 20% with a notable outlier in 2004 where there is a difference of almost 60%. For insurance costs the maximum cost is always a multiple of the minimum cost of at least 300% to often over 500% of the minimum cost. The standard deviation of insurance costs is normally in the region of 20% of the average insurance premium.

4.2 The Testing Framework

Within this section the possible cross-subsidy between credit insurance and unsecured lending and the differential in pricing loans and insurance by proprietary and mutual banks are examined. These research questions are tested using three forms of analysis. Initially a test of cross subsidy employing a regression model is employed. This assessment of cross subsidy is supported using a non-parametric ranking assessment of the relative costs of loans and insurance. Secondly the difference between mutual and proprietary providers unsecured lending and credit insurance are assessed using a non-parametric test.

Table 3a **The relationship between loan cost and the percentage of total costs that are insurance costs**

		Obs.	Average Fixed or Random Effects	Standard Error	Coefficient α	Standard Error	95% Lower Boundary	95% Upper Boundary	R²	F/Wald test	Hausman Test
All	**Overall**	**9529**	**5493.87**	**(10.84)***	**27.05**	**(0.82)***	**25.72**	**28.39**	**0.03**	**1085.33***	**-3.65[†]**
	Mutual	1766	5600.54	(14.18)*	8.51	(1.07)*	5.61	11.40	0.01	63.11*	-9.48[†]
	Proprietary	*7763*	*5456.70*	*(12.54)**	*32.30*	*(0.95)**	30.70	33.90	*0.05*	*1152.53**	*-7.42[†]*
1998	**Overall**	**825**	**5879.803**	**(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*	*(2.38)**	*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	5754.33	(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 3b   The relationship between loan cost and the percentage of total costs that are insurance costs

		Obs.	Average Fixed or Random Effects	Standard Error	Coefficient α	Standard Error	95% Lower Boundary	95% Upper Boundary	R^2	F/Wald test	Hausman Test
2003	**Overall**	**1014**	**5394.37**	**(28.21)***	**27.71**	**(2.16)***	**24.68**	**30.73**	**0.13**	**164.49***	**-0.68[†]**
	Mutual	171	5434.33	(26.22)*	15.44	(1.86)*	10.98	19.89	0.27	68.69*	0.61
	Proprietary	*843*	*5351.58*	*(31.34)**	*33.10*	*(2.43)**	*29.56*	*36.65*	*0.18*	*186.26**	*-0.50[†]*
2004	**Overall**	**1122**	**5454.18**	**(52.71)***	**18.31**	**(4.01)***	**15.05**	**21.57**	**0.02**	**20.87***	**0.02**
	Mutual	274	5625.87	(33.96)*	-3.99	(2.53)	-11.04	3.06	0.01	2.48	0.00
	Proprietary	*848*	*5375.59*	*(66.2)**	*27.52*	*(5.07)**	*23.47*	*31.58*	*0.00*	*29.50**	*0.29*
2005	**Overall**	**1226**	**5365.58**	**(27.60)***	**21.19**	**(2.06)***	**17.92**	**24.45**	**0.09**	**106.11***	**0.59**
	Mutual	314	5361.44	(33.56)*	16.38	(2.48)*	9.42	23.35	0.12	43.48*	0.00
	Proprietary	*812*	*5355.97*	*(35.75)**	*23.900*	*(2.67)**	*20.27*	*27.53*	*0.09*	*80.08**	*0.94*
2006	**Overall**	**1008**	**5391.40**	**(32.43)***	**18.51**	**(2.37)***	**14.84**	**22.18**	**0.06**	**61.05***	**0.78**
	Mutual	259	5535.67	(20.02)*	1.8916	(1.46)	-2.09	5.88	0.01	1.67	2.11
	Proprietary	*749*	*5336.70*	*(41.68)**	*24.59*	*(3.04)**	*19.85*	*29.34*	*0.08*	*65.33**	*0.29*
2007	**Overall**	**785**	**5527.50**	**(42.41)***	**12.69**	**(3.09)***	**8.35**	**17.03**	**0.01**	**16.81***	**-4.89[†]**
	Mutual	215	5603.10	(46.69)*	4.64	(3.59)	-4.12	13.40	0.01	1.67	-21.00[†]
	Proprietary	*570*	*5508.78*	*(59.12)**	*14.88*	*(4.22)**	*8.69*	*21.07*	*0.02*	*12.42**	*0.79*

* denotes statistically significant at 1% (99% confidence).
[†] denotes Hausman test hypothesis rejected and fixed effects estimator employed.

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

If there is no cross subsidy between credit insurance and loans we would expect that across and within banks' product ranges insurance cost would be proportionate to loan cost[5]. The model predictions that cross subsidies flow from relatively high priced credit insurance to unsecured loans with relatively low level of interest and these cross subsidies are more pronounced for proprietary rather than mutual banks are examined using a formal regression based test where:

$$C_{it} = \alpha P_{it} + \upsilon_i + v_{it} \qquad (24)$$

where C_{it} is total loan cost, P_{it} is the insurance cost as a percentage of total loan and insurance costs, υ_i represents the individual time invariant random or fixed effects and v_{it} denotes the remaining error for i firms and t time periods. When the coefficient α is positive a greater proportion of total variation in loan costs can be explained by variation in cost of credit insurance; a circumstance consistent with cross subsidy of unsecured loans by credit insurance. When the coefficient α is not significantly different from zero or negative, either no cross-subsidy or a cross subsidy of insurance by high unsecured loan costs is reported.

The choice of regression model is determined by reference to Hausman tests which determine whether relatively efficient random effects models will produce consistent results. This procedure tests if the 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

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[5] The total loan costs, excluding insurance premium, is calculated as 36 equal payments reflecting interest and repayment of the principal over the term of the loan. Now in the event of an insurance claim, the claim amount will be equal to the monthly loan payment which will be directly proportionate to the total loan cost excluding insurance. Thus, ceteris paribus, the single premium for the insurance

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 α estimates using a bootstrapping approach with 2000 repetitions. The results of the regression are shown in Table 3 both over time and for all banks, mutually owned banks and proprietary banks. Statistical evidence is provided that the percentage of total costs that are insurance costs increases with greater total loan cost for all banks. This is indicated by the significant positive coefficient α estimates providing evidence of cross subsidy of unsecured loans by credit insurance.

When we consider this relationship over time, the coefficients α are not stable, increasing initially but ultimately decreasing over the sample period. This indicates levels of cross-subsidy are reducing with time. Mutual and proprietary banks also provide distinct results throughout the sample period. The coefficients α 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 firm. Table 4 shows the average percentage of total costs contributed by credit insurance. If there is no cross subsidy the firms with the highest insurance costs should also have the highest loan costs. In other words the rankings of banks when sorted by 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 firms with the highest insurance costs also have above average loan costs at the 1% level (test statistic =

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will be proportionate to the total loan cost. The single premium is added to the loan principal and the related payments are then made as equal monetary payments over the 36 months.

2.71). Thus strong evidence of cross subsidy between credit insurance and unsecured loans is presented, as firms with high insurance costs have relatively low loan costs.

A second non-parametric test is applied to test for differences between mutual and proprietary firms. Table 4 indicates whether firms are mutually owned. The non-parametric rank sum test rejects the hypothesis that mutual firms have the same percentage of total cost in the form of insurance as proprietary firms at the 5% level (test statistic = 2.1). Thus there is strong evidence that the objective function of firms affects pricing strategies and the level of cross-subsidy is significantly different for mutual and proprietary firms.

4.3   Implications of the results

An initial implication that arises from these results is the need to treat unsecured loans and credit insurance independently. The study indicates cross subsidy from credit insurance to unsecured loans does 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.

Table 4: Comparison of rankings of the relative costs of insurance and credit

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

* denotes mutually owned banks.

Secondly, the incidence and extent of cross-subsidies from credit insurance appears to alter over time. This may indicate customers are becoming aware of concerns with credit insurance and adapting their behaviours correspondingly[6]. It is advocated that improved financial education and literacy is still required for those with the least ability to make decisions if joint pricing is allowed to persist and indeed given that separate sales of credit insurance will continue. It is expected that ensuring premiums are payable in instalments rather than in the form of a single premium payment at the inception of the loan in the manner advocated by the Competition Commission will assist this learning process, by offering repeated opportunities to decide whether to opt out of unsuitable credit insurance.

Third and more generally, the position of consumer sovereignty is also important within this debate. Consumer sovereignty is the set of social and economic arrangements that allow a consumer to freely choose the goods and services they wish to consume, rather than be directed in their choices by firms' persuasion. Situations where some consumers cannot make informed choices between products and firms exploit these limitations are 'out of head' failures of a choice based system (Averitt and Lande 1997, 2007). Indeed recognising circumstances where choice may not be freely exercised or situations where choice might constrain consumer benefits (Botti and Lyengar 2006) is long over due. In this case, such market failures do occur and have substantial costs for the least able consumers. Both assessing if firms act in a manner consistent with exploiting such customer limitations and challenging these circumstances when they arise

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[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. Such media exposure of the credit insurance problems has also been identified in the UK. Using a commonly used newspaper database (Proquest) which records articles published in ten major national daily and weekly newspapers, the number of articles written 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. It can also be stated that the tenor of these articles has become increasingly critical and has focused on the increased number of regulatory reports and firm punishments in this market.

should be a regulatory priority. While financial education is widely advocated internationally as a solution to these concerns (see Fox 2004, Erturk *et al* 2007 and Williams 2007), this alone can not resolve such a circumstance in light of the incentives for banks to obfuscate and withhold relevant facts (Kozup and Hogarth 2008, Williams 2007).

Lastly it is important to determine whether the policy of prohibiting the joint sale of credit insurance with loans is a measured response which accommodates the material choice and quality concerns of all potential consumers. Indeed this determination should inform decisions about whether this prohibition of joint selling insurance and loans be extended internationally. In such an assessment it is important to consider the interests of all customers and not just those customers less able to make informed and rational decisions (Thaler and Sunstein 2003). The effects of introducing a policy to change the status quo can be determined following a relationship (Camerer *et al* 2003) such as:

$$\text{Policy Effect} = k \, B - (1\text{-}k) \, C - I + \delta\Pi \qquad (25)$$

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 expression has a positive value.

We report that naïve customers lose out from current arrangements. Prohibiting joint sales of loans and credit insurance may improve this situation for customers with limited decision making abilities. Assisting this group has importance in reducing overall loan costs and reducing indebtedness particularly for the 7% of credit customers which face financial difficulties (DTI 2003). Prohibition of jointly selling loans and credit insurance will also have benefits in addressing the outcomes of over-indebtedness including child poverty and the decline of neighbourhoods. Alternatively, customers with more refined decision making skills who are not easily persuaded to purchase credit

insurance jointly with a loan, will lose out by paying more in unsecured loan costs. Individuals may also suffer through not having purchased credit insurance if they encounter circumstances that would have allowed a claim.

Prohibiting the joint sale of credit insurance and unsecured credit may have a range of effects for banks. Initially eliminating the joint sale of credit and credit insurance should reduce overall profits for banks. Secondly prohibiting joint sales of loans and credit insurance may influence loan costs by shifting bank risks. 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 seek out this form of cover. Further if sales of credit insurance decline, unsecured loan costs may rise as banks increase their margins to accommodate the greater risk of uninsured defaults. Similarly insurance premiums may increase in order to cover a larger share of fixed overheads. Lastly the implementing such regulation will involve non-trivial compliance costs.

This form of policy calculus leads us to accept circumstances where asymmetrically paternalistic situations arise; 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 justified ultimately rests on both how a society weighs the interests of customers less able to undertake purchase decisions, the potential effects on the majority of consumers and the importance of corporate concerns.

5.   Conclusions

In this concluding section we consider a brief summary of the study findings, the pertinence of policy responses and recommendations for further work. Within this study we have developed 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 in a manner consistent with cross subsidies from credit insurance to unsecured loans. Secondly, the process of selling unsecured lending and credit insurance jointly by profit maximising banks is critical in determining whether such a cross subsidy will arise under these circumstances. 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. Lastly this cross subsidy does not necessarily appear when banks do not profit maximise.

The key implication of the model is the importance of challenging the form of joint sales by proprietary banks. It is this practice rather than the presence of customers with differing decision making abilities which 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 this case of financial services sales.

A range of findings are also provided by the empirical assessment. Initially many banks which offer multiple products do so with different premium costs; behaviour consistent with market segmentation. Indeed banks with an extensive product range frequently price distinct joint loan and insurance products with different cost allocations between loan and insurance costs. Lastly there is a marked difference in the variability of monthly costs for unsecured lending and credit insurance, where loan costs have a relatively low level of dispersion and credit insurance costs have a high level of dispersion.

The research questions are tested using both regression and non-parametric techniques. The regression analysis indicates the degree of cross subsidy between credit insurance and unsecured lending is both persistent, albeit decreasing over time, and substantial with banks cross subsidising unsecured lending interest rates with high credit

insurance premiums. This finding is also confirmed by non-parametric tests. Both regression and non-parametric approaches indicate proprietary and mutual banks set unsecured and insurance costs distinctly and that mutual banks are less prone to use proportionately high credit insurance premiums.

To conclude, financial services de-regulation and subsequent joint provision of insurance and banking services has have adverse outcomes for consumers; a finding consistent with past observations of the limited benefits of diversification and risk enhancing aspects of this development (Stiroh and Rumble 2006). Clearly further research into joint pricing of financial services is needed. For example in 2006 US customers incurred $53bn in overdraft fees (McGovern and Moon 2004); a value increasing exponentially. Therefore a similar examination of fees and pricing structures in current or checking accounts and other bundled financial services is required.

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