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**The Price, Quality and
Distribution of Mortgage
Payment Protection
Insurance: A Hedonic Pricing
Approach**

*By John K. Ashton and Robert S.
Hudson*

Abstract: Mortgage payment protection insurance (hereafter MPPI) provides varying combinations of accident, sickness and unemployment insurance and is used to protect the mortgage payments of policyholders in the event of a fall in income. Despite alleviating many housing market failures, this service has been heavily criticised for providing poor value for money and for being associated with unhelpful sales techniques especially when sold jointly with a mortgage in the UK. Consequently, the Competition Commission (2009) ruled that after February 2011 MPPI should not be sold jointly with mortgage lending within seven days of the credit transaction. We examine whether this prohibition was justified and if the form of distribution, either jointly with the mortgage or independently influences the premium levels. This assessment uses a hedonic pricing approach with details and premiums of MPPI policies in 2010 and 2012. We conclude despite the success in reducing MPPI premium levels the Competition Commission judgement has raised concerns as to mortgagee protection.

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The price, quality and distribution of mortgage payment protection insurance: A hedonic pricing approach

John K. Ashton*
Bangor Business School, University of Bangor, Bangor, Gwynedd, UK
LL57 2DG

and

Robert S. Hudson
Hull University Business School, University of Hull, Hull, UK.

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Contact details:

*John K. Ashton, Bangor Business School, University of Bangor, Bangor, LL57 2DG, UK.
j.ashton@bangor.ac.uk. Tel. +44(0)1248 38 8193

Robert S. Hudson, Hull University Business School, Hull, HU6 7RX robert.hudson@hull.ac.uk,

* Corresponding Author.

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Abstract

Mortgage payment protection insurance (hereafter MPPI) provides varying combinations of accident, sickness and unemployment insurance and is used to protect the mortgage payments of policyholders in the event of a fall in income. Despite alleviating many housing market failures, this service has been heavily criticised for providing poor value for money and for being associated with unhelpful sales techniques especially when sold jointly with a mortgage in the UK. Consequently, the Competition Commission (2009) ruled that after February 2011 MPPI should not be sold jointly with mortgage lending within seven days of the credit transaction. We examine whether this prohibition was justified and if the form of distribution, either jointly with the mortgage or independently influences the premium levels. This assessment uses a hedonic pricing approach with details and premiums of MPPI policies in 2010 and 2012. We conclude despite the success in reducing MPPI premium levels the Competition Commission judgement has raised concerns as to mortgagee protection.

The price, quality and distribution of mortgage payment protection insurance: A hedonic pricing approach

1. Introduction

Mortgage payment protection insurance (hereafter MPPI) provides varying combinations of accident, sickness and unemployment insurance and is used to protect the mortgage payments of policyholders in the event of a reduction in income. The provision of this insurance service has long been a UK policy priority to compliment the system of state income support for mortgagors (Department for Environment, Transport and the Regions, 2000). Nonetheless, this product has been heavily criticised for providing poor value for money and for being associated with unhelpful sales techniques especially when sold jointly with a mortgage (see Office of Fair Trading, 2006 [hereafter OFT]; Competition Commission, 2007, 2008, 2009). Subsequently in 2009, the Competition Commission ruled that after February 2011 MPPI should not be sold jointly with lending within seven days of the credit agreement. We investigate if this far-reaching decision is justified and specifically if MPPI policies sold jointly are more expensive than policies sold independently for a given set of benefits and conditions. We conclude despite the success in reducing MPPI premiums concerns have arisen as to mortgagee protection.

MPPI is a highly complex service combining a number of different types of insurance and characteristics, which vary across providers. We allow for this complexity by using the hedonic regression technique formalised by Rosen (1974) as a method of deriving monetary values for the attributes of composite goods. While independently and jointly distributed policies possess different policy characteristics, significant difference in premiums are reported with MPPI policies sold independently having lower premiums

than policies distributed jointly. We conclude the Competition Commission (2009) prohibition of joint MPPI and mortgage sales is justified in terms of premium costs.

This investigation is important for three reasons. One, wider incentives exist for firms jointly supplying MPPI to provide better quality policies. Two, the costs of reducing the take up of MPPI are high for both individuals and government. Three, UK PPI markets have witnessed a major upheaval in recent years, moving from being a substantial source of income to a major cost for UK banks. Determining whether such regulatory change was required is therefore an important and on-going policy question.

First, there are clear economic incentives for firms distributing MPPI policies with mortgages to offer higher quality policies than firms independently distributing these policies. MPPI provides mortgage repayments in the event of a policyholder suffering a fall in income due to unemployment, critical illness or accident. In the event of a successful claim, the policyholder and firm jointly providing a mortgage loan with MPPI are both beneficiaries of these pay-outs. The MPPI policyholder benefits from a pay-out in that their mortgage payments are made, they will not default on their mortgage and will not face the repossession of their home. The mortgage provider jointly distributing MPPI will also benefit through guaranteed mortgage repayments and reducing the trust required within the lending relationship (Lapavitsas, 2007). A firm jointly distributing MPPI with mortgage lending therefore benefits from a policy with inclusive coverage, greater quality and higher pay-outs in the case of a successful claim. Conversely, an independent supplier of MPPI is not a recipient in the case of a successful claim and has no incentives to offer a higher quality MPPI policy. Subsequently providing MPPI jointly should lead to higher quality policies than providing MPPI independently.

Secondly, while only a small proportion of households default on their mortgage debt (Figueira *et al*, 2005) the costs of this outcome are high. For lenders mortgage

default increases provisions for bad and doubtful debts. For government, mortgage default can result in the re-housing the homeless and payment of housing support. For mortgagors, default and repossession can significantly increase the incidence of mental illness (Pevalin, 2009) and cause emotional costs akin to marital breakdown or job loss (Taylor *et al*, 2007). Subsequently developing methods to reduce mortgage default is socially and economically advantageous. The prohibition of selling MPPI jointly with lending may reduce the uptake of this form of private insurance potentially creating wider social and economic costs.

Third, at a time when questionable practices by banks in the levying of additional fees and charges for add-on services are seen globally (Tennant and Sutherland, 2014), the sale of payment protection insurance (hereafter PPI) stands out as an important case due to the scale of markets involved, their high profitability and considerable costs of customer redress. The UK market for PPI peaked with around 20 million policies in operation in 2006 (OFT, 2006) and prior to the 2009 regulatory intervention, this market was highly profitable. Indeed PPI markets have been characterised by low pay-out ratios and high commissions internationally¹. After the Competition Commission (2009) ruling a process of customer redress was initiated by the Financial Services Authority (hereafter FSA²). This process attended to many of the 13 million customer complaints made about UK PPI markets and has paid out over £16bn by June 2014 (Financial Conduct Authority, 2014). Despite the substantial costs of this regulatory process, academic work examining this judgement has to date been limited. This study contributes to this emergent literature.

¹ For example PPI pay-out ratios ranged from 40% to 80% of premiums in the USA (Federal Trade Commission, 2001) with average commissions on PPI averaging 59% (OFT 2006) in the over the 2000 to 2005 period in the UK.

² On 1 April 2013 the Financial Services Authority was replaced by the Financial Conduct Authority.

To examine the research question of whether the form of distribution of MPPI either jointly with mortgages or independently influences the level of premiums, this study is organised into six sections. After this introduction, we forward an overview of pertinent academic and regulatory literatures. In the third section, an overview of the development and scale of the UK MPPI market is advanced. The fourth section outlines the form of the analysis and data and the fifth section reports the empirical results. Lastly, we present a summary of the research, policy implications and conclusions.

2. Literatures examining mortgage payment protection insurance.

In this section, prior academic and regulatory literatures concerning mortgage payment protection insurance (MPPI) and associated markets are reviewed. The academic literatures examine a range of areas including the perceived quality and the historically low take-up of MPPI and PPI policies in the UK and the USA. The regulatory literature examining this insurance service are extensive and considers competition, welfare provision and consumer protection concerns within MPPI and PPI markets.

The perceived quality and costs of UK MPPI services has been assessed repeatedly using postal surveys. Burchardt and Hill (1998) reports MPPI is very expensive, limited in coverage and has regressive elements. Considering the effectiveness of this form of insurance in avoiding mortgage default, Ford and England (2000) report a third of MPPI policyholders developed mortgage arrears compared to half of the recipients of government supplied income support for mortgage interest. A latter study reported 20 per cent of MPPI policyholders developed mortgage arrears (Ford and Quilgars, 2001).

Past studies have also considered MPPI policy coverage and take up employing survey evidence. For example, Ford *et al* (2004) reports that as most MPPI policies are

jointly undertaken with a mortgage contract, policy coverage includes a random element. Explanations of the low level of MPPI take up indicates premiums have a limited influence on credit insurance purchase decisions and past experience of unemployment and risk perceptions are strong determinants of MPPI take up (Pryce and Keoghan, 2001). The propensity to use MPPI is also reported to be closely related to the level of savings held by a household and the age of the mortgagor (Ford *et al*, 2004) with mortgagors with unstable work histories and ill health problems often precluded from accessing MPPI policies (Diaz-Serrano, 2005).

US examinations of MPPI have examined different concerns including the limited competitiveness of MPPI markets, overpriced policies (Allen and Chan, 1998) and the legal treatment of mortgage payment protection policies generally (Spahr and Escolas, 1986). Distinctly, Ross and Tootell (2004) report that holding MPPI raises the level of mortgage application acceptance for all groups and critically for areas where racial and social characteristics might otherwise lead to discrimination or 'red-lining'. This process enables banks to satisfy legislative demands not to discriminate in mortgage lending, yet resulted in many households holding private mortgage insurance to enable lending to occur.

More recently other UK PPI markets have been investigated. For example, Ranyard and McHugh (2012) examined customer decision making in PPI markets, reporting the willingness to pay for PPI is insensitive to large changes in the quality of cover and forms of cover described as basic and premium were not significantly different. Similarly, Ashton and Hudson (2014) examining unsecured lending PPI reported that interest rate setting of loans significantly reduced when loans were offered with PPI over the 1998 to 2011 period.

Regulatory assessments of MPPI markets have also influenced these debates. In the UK, the provision of PPI has been repeatedly examined by the FSA (FSA 2005, 2006,

2007a, 2007b), the OFT (OFT, 2006) and the Competition Commission (2009). The concerns within the UK MPPI market came to a head with the Competition Commission (2009) ruling. Specifically this ruling stated joint sales of PPI with credit (unsecured lending, credit card debt and mortgages) are prohibited within seven days of the credit agreement, single premium insurance policies should not be employed, greater customer information provision is required and PPI should be unbundled from other financial services.

This investigation and the subsequent process of customer redress was prompted by claims of mis-selling and excessive prices associated with the joint sale of PPI within a variety of credit markets. This decision came after repeated UK regulatory criticism of PPI markets during the last 30 years. These regulatory concerns have also been witnessed in the USA, where the ‘packing’ of PPI within home and consumer loans has been repeatedly criticised (Federal Trade Commission, 2001), even involving Senate hearings in the 1970s.

3. The UK Market for Mortgage Payment Protection Insurance

Despite these concerns with its distribution and sale, MPPI has been considered an essential aid to achieve the goal of sustainable home ownership (Department of Environment, Transport and the Regions, 2000). Indeed, the development of an effective government or private welfare insurance ‘safety net’ such as that provided by MPPI is essential for a range of reasons. Since the 1970s, UK home ownership has become more common and diverse in socio-economic terms with the proportion of mortgagees from lower income households, unskilled workers and older people rising (Ford, 2004); a movement supported by a range of UK government policies including the right to buy (Ford and England, 2000). These changes occurred concurrently with the re-regulation of

the UK mortgage market, leading to a major growth in the variety and range of mortgages often supplied with non-standard features (Scanlon *et al*, 2008; Stephens, 2008). While these changes have reduced the number of households unable to access credit and subject to discriminatory practices, the quality of UK mortgage lending overall has also declined (Stephens and Quilgars, 2008).

The form of mortgage contracts and rising housing costs exacerbate these concerns in the UK. As mortgagors overwhelmingly opt for variable or short-term fixed rate mortgages rather than longer-term fixed rate contracts and the sums borrowed for house purchase have increased overtime, UK mortgagors have faced rising levels of uncertainty in the nominal profile of mortgage payments (Miles, 2005). This situation is exacerbated by the low inflation and earnings growth observed in recent years where high mortgage costs relative to income persist, extending these risks over prolonged periods (Stephens *et al*, 2008). These concerns also experienced in other nations (Weller and Sabitini, 2008) result in an increasing proportion of mortgagors prone to shocks in their income and employment and an enhanced level of financial fragility (see Lusardi *et al*, 2011).

The market for MPPI also augments the level of cover provided by other financial services used to protect lenders from default risks and developed in response to changes in government support for mortgagors. For example, mortgage indemnity guarantees are used in the UK to cover lenders in a case of default on higher loan to value mortgages (see Stephens, 2003). This coverage is extended by MPPI use to include mortgagees as well as lenders, for cases of illness, unemployment or accidents.

This financial service was also endorsed by repeated UK governments as a method of managing reductions in state support for mortgagors. While UK governments since 1948 have supported mortgagors claiming unemployment benefits (e.g. national assistance, supplementary benefit, income support and job seekers allowance; see Ford

and Quilgars, 2001), this welfare safety net was curtailed in 1987 and 1995, more recently extended in 2009 and reduced in 2010, when the level of interest supported was limited to the Bank of England lending rate. Following these changes repeated UK governments have indicated individuals should protect themselves using MPPI in the first instance rather than rely on state support (Ford and England, 2000).

4. Data and Forms of Analysis

4.1 The Data Employed

We consider PPI jointly sold with mortgages (MPPI) distinctly from other PPI sold with other forms of consumer credit. The MPPI market differs from other PPI markets by having a large number of both joint and independent suppliers and good compliance with regulations relative to other forms of PPI. Despite such governmental backing, the MPPI market remained one of the smaller PPI markets accounting for £607m for first mortgages and £251m for second mortgages and secured lending in 2007 (Competition Commission, 2009). A distinctive feature of the MPPI market was the very high proportion of policies which were provided at point of sale with the mortgage contract (estimates vary from 88% (Ford *et al*, 2004) to 95% (OFT, 2006). These sales include distribution by both mortgage providers (50% of sales, Ford *et al*, 2004), through mortgage brokers and intermediaries (estimates vary between 36% [Ford *et al*, 2004] and 21% [OFT, 2006]) and independently of the mortgage sale accounts (10% of sales, Ford *et al*, 2004]). MPPI customers are also more likely to shop around for this insurance service (OFT 2006) and relative to other PPI markets, MPPI has received fewer complaints which have been upheld (Financial Conduct Authority, 2014). The Competition Commission (2009) further reported that unlike unsecured lending and credit card PPI where no relationship between premiums and policy quality is observed, a weak relationship between the premium price and policy quality does exist for MPPI.

The data for this study was provided by the FSA comparison website on MPPI and includes information on 275 policies provided by 60 financial services firms in August 2010 and 702 policies provided by 62 financial services firms in June 2012. These firms issued MPPI either independently or jointly with a mortgage loan and in 2010 26 firms issued 34 jointly distributed policies and 38 firms issued 245 independently distributed policies. After the prohibition of joint MPPI sales within 7 days of a credit agreement on the 14th February 2011, the number of jointly distributed MPPI products fell and by June 2012 only 7 firms were offering 9 policies jointly with credit (sold seven days after the initial credit agreement). In contrast 56 firms offered 695 MPPI policies independently of a credit agreement at this time. This data is distinct from past studies of MPPI (e.g. Burchardt and Hill, 1998; Ford and England, 2000; Ford and Quilgars, 2001; Ford *et al*, 2004; Pryce and Keoghan, 2001) by considering MPPI policy details and premiums rather than survey evidence. It is believed, at the time of writing that this is the first study of the MPPI market to use such policy data. A full list of the firms providing MPPI in 2010 and 2012 is provided in Appendix 1.

The cross-sectional datasets allows assessment of the cost and quality differences between the MPPI policies provided jointly by mortgage lenders and independently. This information provides information for providing a MPPI policy for monthly mortgage payments of £500, £1,000, £1,500, and £2,000 borrowed by a 20, 40 and 60 year old employed person working 40 hours per week (data for £500 borrowed by a 20 year old in 2010 and for £2000 cover on jointly distributed policies in 2012 was unavailable). This data covers the majority of the suppliers and policies offered in the MPPI market. The quality of a MPPI depends fundamentally on the terms and conditions under which benefits are payable; the relevant terms and conditions are explained in Table 1.

Table 1: Explanation of Policy Characteristics, Measurement and Expected Relationship with Premium Size

Condition	Explanation, Measurement and Expected Relationship with Premium		
Distribution dummy variable	The form of distribution either jointly with the mortgage lender (denoted 1) or independently and not with the mortgage (denoted 0)	Dummy	?
Benefit Coverage	The monthly mortgage payment to be covered in the case of a claim	Amount in £s	+ve
Age	The age of the policyholder	Age in years	+ve
Maximum monthly mortgage payments	The maximum number of monthly payments that a policyholder can receive if they make a claim.	Number in Months	+ve
Waiting Period	Some policies do not pay benefits immediately. The waiting period is the period the policyholder has to wait before making a claim and may due to the cause of the claim.	Period in days	-ve
Back to day one cover	This feature concerns whether the insurer backdates claims to the first day of accident, sickness or unemployment. For example, if a policyholder falls ill on 1 st January and the policy has a waiting period of 30 days the policy would normally start to pay out on 31 st January. If the policy has back to day one cover the payments will be backdated to the 1 st January.	Dummy Y=1, N=0	-ve
Pre-existing conditions excluded	Some policies do not cover medical conditions that a policyholder already has when they take out the policy until a certain period has elapsed. This is known as the pre-existing conditions period.	Dummy Y=1, N=0	+ve
Portability	Policies are portable if they can be taken with the policyholder if they move their mortgage to another lender. It is undesirable cancel a policy on moving lenders as the policyholder may lose cover for pre-existing medical conditions as well as facing the problem that premiums may have increased.	Dummy Y=1, N=0	-ve
Backache	Backache is problematic for insurers because it is difficult to determine whether a claimant is genuinely suffering from the complaint. Often cover is restricted to cases where closely defined medical evidence is provided. Typical restrictions might be ‘You will not receive monthly benefit for any disability or unemployment caused by or resulting from any of the following: - backache or related conditions unless there is supporting medical evidence. Such evidence may be a report from an appropriate specialist or from your doctor, in both cases an MRI, CT scan or equivalent may be required.’	Dummy Y=1, N=0	+ve
Stress	Stress is problematic for insurers because it is difficult to determine whether a claimant is genuinely suffering from the complaint. Often cover is restricted to cases where closely defined medical evidence is provided. For example, typical restrictions might be ‘You will not receive monthly benefit for any disability or unemployment caused by or resulting from any of the following: - stress, anxiety, depression, mental or nervous disorder or any condition of a psychoneurotic origin unless certified by and under the continuing care of a consultant psychiatric specialist’	Dummy Y=1, N=0	+ve

These MPPI policies are also overwhelmingly written and sold as block policies. Only a limited amount of this business is sold at an individual level where the policy is written for an individual's circumstances and concerns. As block policy origination aims to provide profitable policies for a wide range of customers, restrictive clauses are included to exclude individuals with different economic and individual risks and minimise adverse selection. As policyholders have distinct probabilities to certain illnesses, accidents and unemployment, insurance firms use a range of sorting devices to separate risk groups (Borenstein, 1989) and when block policies are sold, exclude many higher risk customers. As incentives exist for low risk customers to distinguish themselves and gain a lower premium this discrimination will persist. These moral hazards can be even more acute for unemployment insurance as the individual can influence the prospect of finding new employment and the probability of losing their job (Chiu and Karni, 1998). Attempts to amend for these quality problems have included the use of benchmark products and regulation of MPPI sales through the mortgage code; a voluntary code adopted by many UK mortgage lenders between 1997 and 2004 (Ford and Quilgars, 2001).

4.2 The Testing Framework

The testing framework is divided into two parts. Initially descriptive statistics of the dataset are considered and differences between independent and joint distribution are recorded for MPPI premiums and policy characteristics. Where appropriate, differences between policies which are jointly and independently distributed are tested using T and Z tests depending of data format. These results are displayed in Tables 2 and 3 reporting premium levels and policy quality respectively.

Secondly, the costs of the different policy characteristics and restrictions are quantified using a hedonic regression model. Hedonic regression techniques (Rosen,

1974) are employed as a method of deriving monetary values for the attributes of composite goods. Composite or differentiated goods can be described by a vector of different characteristics; these are detailed in Table 1 for the MPPI policies considered³. Table 1 also considers the way the various policy features are quantified and the sign of their expected coefficient in the regression; the expected relationship between the policy characteristic and premium size. The expected influence of these policy conditions for the pricing of MPPI premiums vary in terms of the costs or benefits of including these characteristics. A positive relationship between premiums and benefit coverage, age, maximum payments, back to day one cover, portability and acceptance of backache and stress is predicted as these will contribute to the costs of the policy. A negative relationship between premiums and the waiting periods for both unemployment and accidents and sickness are predicted, as premiums should decline as waiting periods are raised.

Rosen showed that the implicit value of characteristics can be estimated by determining how the market price of products is affected by the vector of characteristics associated with the product. Essentially, in a *competitive* market, the price of a product is a function of its characteristics:

$$P(\mathbf{A}) = P(a_1, a_2, \dots, a_n) \quad (1)$$

While there is no strong theoretical basis for choosing a particular functional form (see Halverson and Pollakowski, 1981; Rosen, 1974) it is important to employ a functional form which reflects the circumstances considered by the model (see Can and Megolugbe, 1997). Following other studies examining product quality (e.g. Wilson and

³ We acknowledge these characteristics are incomplete and other characteristics maybe influential. For example, the type of employment undertaken by a policyholder, the ability to stop and start payments on mortgages and the duration of previous employment could all affect premium costs. Sadly information on all possible characteristics was unavailable.

Wilson, 2014) and its established position in this literature (Malpezzi, 2002) a log-linear functional form is employed. This model form is written as:

$$\ln P = \beta_0 + \beta_1 a_1 + \beta_2 a_2 + \dots + \beta_n a_n + \varepsilon \quad (2)$$

where $\ln P$ is the natural logarithm of monthly premiums, β_n are the n coefficients of the hedonic regression and ε is the error term⁴.

A further concern with the application of a hedonic model in this case is what is judged to be the scope of the competitive market. It is clear independently sold policies are part of a competitive market as there are no constraints leading prospective purchasers to particularly favour one policy over another. The situation is less clear-cut for jointly sold policies. Sometime purchasers compare the price and features of these policies with independently sold policies. Often this is not the case and it is challenging to quantify the extent to which jointly sold policies are compared with independently sold policies. One solution to determining the effect of the scope of the competitive environment is to consider the two extreme scenarios:

- i) jointly sold policies are fully part of the competitive market or
- ii) jointly sold policies are completely separate from the competitive market.

Analysis of the two scenarios allows bounds on the pricing of jointly sold policies relative to independently sold policies to be established.

Applying this approach, five forms of the hedonic regression model (2) are estimated. Initially, for descriptive purposes, the model is estimated separately for jointly

⁴ As the data is considered as two separate cross sections for 2010 and 2012, concerns with time variation or spatial distribution seen in other applications of the hedonic model do not apply in this case (see Helbich *et al*, 2014; Tse, 2002 for further discussion).

distributed policies, independently distributed policies and for both types of policy combined. These estimates allow an assessment of whether the signs and magnitudes of the coefficients are appropriate. The relative premiums of policies, which are jointly or independently distributed are then considered by estimating (2) for all policies using a dummy variable in the regression to denote independently distributed policies. This approach assumes that all policies, however sold, form part of a single competitive market and the value of any particular product attribute can be found in that market (scenario *i*). This procedure allows comparison with ‘all policies’ to determine whether independent policies are indeed cheaper than jointly distributed policies, taking account of their policy characteristics.

Finally, equation (2) is estimated for all policies whilst constraining the coefficients in the regression to be equal to the corresponding coefficients when only independent policies are included whilst also using a dummy variable to denote for independent policies. This assumes that jointly sold policies do not form part of a competitive market and so the value of product attributes should be obtained from independently sold policies (scenario *ii*). This procedure allows direct measurement of the premium savings available if policies with the same features as those currently sold jointly were instead purchased in a competitive market. To determine the expected monetary saving of buying a policy independently instead of jointly we algebraically manipulate equation (2). This manipulation shows that the independent cost is a factor of e^{-D} of the joint cost, where D is the coefficient of the independent distribution dummy variable in Panel D and E of Tables 4 and 5.

5. Results

5.1 Descriptive Assessment

A descriptive assessment of the MPPI premium levels is provided in Table 2. This table is divided into Panel A and B for 2010 and 2012 respectively. In Panel A premium costs rise with the level of cover and the age of MPPI policyholders influences the premium costs for policies sold independently, with younger applicants paying less for MPPI policies. This probably reflects both a smaller chance of younger applicants suffering illness and the chance of older applicants selecting against the insurers. This selection would occur when older applicants with an existing mortgage seek to buy this insurance because of private knowledge that their circumstances have changed such that they are more likely to make a claim. This age effect is not observed for the jointly sold policies, possibly reflecting a lower incidence of older people taking out mortgages making setting appropriate rates less material but also because the individuals taking out these policies will be less likely to select against the insurers. People taking out jointly sold policies will be simultaneously be taking out a mortgage which is an unlikely course of action given private knowledge of a likely impending adverse change in circumstances. At ages 20 and 40 the cost of policies sold independently tends to be less (often at statistically significantly levels) than that of policies sold jointly.

Table 2: Cost of monthly MPPI cover and policy characteristics and restrictions

Panel A Cost of monthly MPPI cover 2010								
Averages Monthly MPPI cost £'s		Independent distribution (252 policies)		Joint distribution (20 policies)		Total (272 policies)		T test (Ind. premium less Joint Premium)
Full time employee/ Age		Mean	St dev.	Mean	St dev.	Mean	St dev.	
£2000 cover	20 years	99.98	36.00	117.33	24.13	101.26	35.52	-2.12*
	40 years	106.98	31.51	117.24	24.79	107.70	33.16	-1.39
	60 years	127.45	50.86	116.83	24.20	126.67	31.16	0.92
£1500 cover	20 years	66.48	29.87	84.51	17.95	67.99	29.47	-3.25**
	40 years	73.53	25.23	84.34	18.25	74.41	24.89	-2.26*
	60 years	102.83	40.08	84.31	18.80	101.28	39.07	2.50*
£1000 cover	20 years	44.13	19.89	55.70	12.55	45.15	19.62	-3.13**
	40 years	49.02	16.75	55.54	12.54	49.53	16.53	-2.08*
	60 years	68.59	26.60	55.50	12.67	67.44	25.94	2.75*
£500 cover	20 years	n/a		n/a		n/a		n/a
	40 years	22.13	9.98	28.38	6.20	22.59	9.88	-3.21**
	60 years	34.35	13.27	27.81	6.43	33.80	12.95	2.71**

Panel B Cost of monthly MPPI cover 2012								
Averages Monthly MPPI cost £'s		Independent distribution (572 policies)		Joint distribution (9 policies)		Total (581 policies)		T test (Ind. premium less Joint Premium)
Full time employee/ Age		Mean	St dev.	Mean	St dev.	Mean	St dev.	
£2000 cover	20 years	102.17	33.25	n/a		102.17	33.25	n/a
	40 years	104.75	31.24	n/a		104.75	31.24	n/a
	60 years	122.99	46.81	n/a		122.99	46.81	n/a
£1500 cover	20 years	66.47	27.27	75.98	16.09	66.64	27.16	-1.413
	40 years	75.52	24.78	75.98	16.09	75.52	24.67	-0.045
	60 years	96.81	40.55	75.98	16.09	96.50	40.37	3.030*
£1000 cover	20 years	35.51	19.46	46.14	12.36	35.62	19.42	-2.401*
	40 years	42.30	17.54	46.14	12.36	42.34	17.49	-0.617
	60 years	79.07	35.71	46.14	12.36	78.70	35.70	7.202**
£500 cover	20 years	17.68	9.53	22.49	6.03	17.73	9.51	-2.363*
	40 years	21.57	9.18	22.49	6.03	21.58	9.15	0.302
	60 years	40.10	18.26	22.49	6.03	39.88	18.26	8.304**

Panel C T Tests of differences in premiums between 2010 and 2012					
		£2000 cover	£1500 cover	£1000 cover	£500 cover
Overall	20 years	2.297**	-1.301	-4.852**	n/a
	40 years	-0.805	3.603**	-3.37**	-0.229
	60 years	-2.113**	-0.453	4.728**	4.827**
Joint policies only	20 years	n/a	-1.152	-2.031*	n/a
	40 years	n/a	-1.115	-2.000*	-2.614*
	60 years	n/a	-1.082	-1.979*	-2.369*
Independent policies only	20 years	0.712	-0.082	-6.579**	n/a
	40 years	-0.741	1.143	-5.820**	-0.794
	60 years	-0.712	-2.025*	5.221**	5.769**

** denotes statistically significant at 5%, * denotes 10% significance

For Panel B considering 2012 we observe that premiums generally increase with age for independently but not jointly sold policies. At ages 20 and 40 independently distributed policies are again cheaper than jointly distributed MPPI policies. Comparing the premium costs of 2010 and 2012 we observe that all jointly distributed policy premiums fall between 3 and 20 per cent between August 2010 and June 2012. Premium changes, although not always reductions, also exists for the majority of age and coverage categories for independently distributed policies with changes varying from 16 per cent premium increases to 19 per cent falls in premium levels⁵. In Panel C of Table 2, T tests are used to quantify the statistical significance or otherwise of these differences between overall 2010 and 2012 premium levels; in 7 of 11 age and coverage categories significant differences in premium levels arise. Significant falls in premiums are also recorded for jointly and independently distributed policies in some age and coverage groups. Notwithstanding quality differences between policies, MPPI premiums have tended to decline to a significant extent since the 2011 prohibition.

The quality of MPPI policies is reported in Table 3. Again this table is divided into two panels for 2010 and 2012. Neither set of jointly or independently distributed MPPI policies provides a dominant set of benefits in either year. On average the policies sold jointly provide a lower maximum number of monthly mortgage payments. Little difference is observed between jointly and independently distributed MPPI policies for provision of cover to back to day one of the initial claim and whether pre-existing conditions are excluded or otherwise. It can be seen, however, that the quality of benefits provided does reflect the priorities of the institution that sold it. As discussed above firms selling policies independently are much more exposed to selection and so it is not surprising that independently sold policies have substantially longer waiting periods.

⁵ These premium changes are not adjusted for inflation; when considering the effect of inflation this fall in premiums is more pronounced. One widely used measure of inflation, the Consumer Price Index rose 6.44% between August 2010 and June 2012 – figures from the UK Office for National Statistics.

Independently sold policies are far more likely to be portable than jointly sold policies. This may reflect firms distributing MPPI policies jointly desiring to retain mortgagors. Independently sold policies also tend to offer additional benefits and are much less likely to cover claims due to backache and stress.

Table 3: Policy characteristics and restrictions

	Panel A - 2010			T Test/ Z test 2010	Panel B - 2012			T Test/ Z test 2012
	Ind.	Joint	Total		Ind	Joint	Total	
Employed Full Time								
Maximum number of monthly mortgage payments	15.21	12.42	14.97	17.897**	13.35	12.00	13.33	19.89**
Waiting period accident and sickness days before payments made (days).	79.22	48.59	76.58	19.89**	86.61	59.57	86.34	9.79**
Waiting period unemployment before payments made	77.52	48.59	75.02	18.89**	86.62	59.57	86.35	9.80**
Period for which pre-existing conditions excluded (months)	16.82	14.50	16.63	5.88**	17.17	16.80	17.17	0.342
Back to day one cover (% of policies)	40%	35%	39%	1.78*	31%	14%	31%	2.98**
Portable policies which can be moved to different mortgages (% of policies)	94%	34%	89%	32.52**	95%	46%	95%	18.01**
Coverage of backache (% of policies)	12%	85%	18%	32.49**	27%	18%	27%	1.52*
Coverage of stress (% of policies)	7%	82%	13%	37.65**	27%	20%	27%	1.25
Number of Observations	3373	318	3691		6443	65	6508	

The T Test/Z Tests test the difference between the policy characteristics of independently and jointly sold policies. ** denotes statistically significant at 5%, * denotes 10% significance

Comparing Panels A and B, a range of differences between 2010 and 2012 are reported. A number of the policy characteristics have reduced in quality with the maximum number of payments falling, back to day one cover included in fewer policies and waiting times before claims can be made rising. Other policy characteristics have remained unchanged such as the potential to access additional benefits. Lastly, the portability of policies has risen after the prohibition of joint sales. We can also observe in 2012 the policy quality differences between independent and jointly sold policies have

declined with fewer significant differences between jointly and independently distributed policies in 2012 than in 2010. Overall we can report the effect of the prohibition on joint sales has been to reduce many aspects of MPPI policy quality and reduce quality differences between policies distributed jointly and independently. This result is not surprising as policies are subject to more direct comparison due to the seven day pause for purchasing jointly sold policies.

5.2 Results of the Hedonic Pricing Model

The hedonic regression model results are reported in Tables 4 and 5 for 2010 and 2012 respectively. In each table we report model results for all annual observations, jointly and independently distributed policies and further models to examine the influence of joint or independent distribution of MPPI policies. In both Tables 4 and 5, Panel A shows the results of the hedonic regressions for the independent policies. The market for these policies can be classified as competitive so the theoretical analysis of Rosen (1974) will be applicable. The regression is highly satisfactory with most coefficients being significant and having the expected signs in both years. The overall equation is significant at a very high level and has an R^2 statistic in the region of 70 per cent for 2010 and 2012.

Panel B in both tables shows the results of the hedonic regression for the jointly sold policies. The market for these policies may not be fully competitive so the theoretical analysis of Rosen (1974) may not be totally applicable. Nonetheless the regression for 2010 is satisfactory in many respects in that most of the coefficients are significant and have the expected signs. Due to the limited number of observations employed, the results for 2012 (Table 5) are limited in utility with a number of omitted variables. The overall equation is significant with R^2 statistics of over 80 per cent for 2010 and 90 per cent for 2012.

Panel C for Tables 4 and 5 shows the results of the hedonic regression for all the policies. Again, the market for the jointly sold policies may not be fully competitive so the theoretical analysis of Rosen (1974) may not be fully applicable. Nonetheless the regression still has coefficients with the expected signs and generally a very high level of significance. The overall equation is significant at a very high level and has an R^2 statistics in the region of 70% for both years.

Panel D for both Tables shows the results of the hedonic regression for all policies with a dummy for policies that are sold independently. This allows comparison with Panel C to see if independent policies are indeed cheaper than jointly distributed policies, when taking account of their policy characteristics in a competitive market (scenario *i*). In 2010 the dummy for independent policies is negative and significant showing that these policies are 12.81 per cent cheaper for a given set of policy characteristics than jointly distributed policies. For 2012, a positive but statistically insignificant estimate is recorded which indicates independently distributed MPPI policies are no longer cheaper than jointly distributed policies.

Panel E for both Tables 4 and 5 shows the results of the hedonic regression for all the policies with a dummy for policies that are sold independently and with the regression coefficients for policy features constrained to be equal to those found in the hedonic regression for independently sold policies. This allows a direct measure of the premium savings available if policies with the same features as those currently sold jointly were instead purchased in a competitive market (scenario *ii*). The dummy for independent policies is negative and significant in 2010 showing that policies with a given set of features would be 13.483 per cent cheaper in a competitive market only containing independently distributed products. In 2012, this result is statistically insignificant indicating independently distributed policies are no longer significantly cheaper than jointly distributed policies.

Table 4: Hedonic Regression Model 2010

	Panel A		Panel B		Panel C		Panel D		Panel E	
	Independent Policies		Joint Policies		All Policies		All Policies with Dummy for independent policies		All Policies constrained to equal independent coefficients. Dummy for independent policies	
	B	Std. Error	B	Std. Error	B	Std. Error	B	Std. Error	B	Std. Error
Constant	2.267	0.072***	2.836	0.093***	2.475	0.050***	2.442	0.051***	2.412	0.022**
Distribution dummy variable							-0.137	0.033***	-0.145	0.023***
Benefit Coverage	0.001	0.000***	0.001	0.000***	0.009	0.000***	0.001	0.000***	0.032	N/A
Age	0.010	0.000***	-0.001	0.001	0.032	0.001***	0.001	0.000**	0.010	N/A
Max No. of Payments	0.032	0.001***	0.045	0.001***	0.032	0.001***	0.033	0.001**	0.032	N/A
Waiting Period Accident and Sickness	-0.001	0.000***	Omitted		-0.001	0.000***	-0.001	0.000**	-0.001	
Waiting Period Unemployment	-0.001	0.000***	0.006	0.001***	-0.002	0.000***	-0.001	0.000**	-0.001	N/A
Back to day one cover	0.030	0.016*	-0.118	0.029***	0.009	0.015	0.022	0.015	0.030	N/A
Pre-existing period exclusion period	-0.008	0.000***	0.011	0.003**	-0.009	0.001***	-0.008	0.001***	-0.008	N/A
Portability	0.174	0.028***	-0.026	0.031	0.111	0.021***	-0.158	0.023***	0.174	N/A
Coverage of Backache	0.096	0.021***	-0.166	0.049**	-0.136	0.017***	-0.096	0.020***	-0.097	N/A
Coverage of Stress – suppressed – collinear with coverage of Backache										
R ²	0.708		0.900		0.709		0.711			
Adj. R ²	0.707		0.897		0.708		0.710			
F test	886.15***		275.34***		961.36***		871.07***			
Observations	3305		253		3558		3558		3558	
e ^{-D}							87.190 or 12.81% discount		86.517 or 13.483% discount	

*** denotes statistical significant at 1%, ** denotes significant at 5%, * denotes 10% significance

Table 5: Hedonic Regression Model 2012

	Panel A		Panel B		Panel C		Panel D		Panel E	
	Independent Policies		Joint Policies		All Policies		All Policies with Dummy for independent policies		All Policies constrained to equal coefficients. Dummy for independent policies	
	B	Std. Error	B	Std. Error	B	Std. Error	B	Std. Error	B	Std. Error
Constant	2.249	0.049***	2.734	0.171***	2.250	0.048***	2.210	0.069***	1.823	0.053***
Distribution dummy variable							0.048	0.054	-0.034	0.053
Benefit Coverage	0.001	0.000***	0.001	0.000***	0.001	0.000***	0.001	0.000***	0.001	N/A
Age	0.017	0.000***	0.000	0.001	0.017	0.000***	0.017	0.000***	0.017	N/A
Max No. of Payments	0.033	0.001***	omitted		0.033	0.001***	0.033	0.001***	0.033	N/A
Waiting Period Accident and sickness	-0.001	0.000***	omitted		-0.001	0.000***	-0.001	0.000***	-0.001	N/A
Waiting Period Unemployment	-0.002	0.000***	-0.015	0.001***	-0.002	0.000***	-0.002	0.000	-0.002	N/A
Back to day one cover	0.024	0.014*	omitted		0.0244	0.013*	0.023	0.014*	0.024	N/A
Pre-existing period exclusion period	-0.009	0.001***	-0.012	0.004**	-0.009	0.001***	-0.009	0.001***	-0.009	N/A
Portability	-0.116	0.025***	-0.317	0.046***	-0.116	0.024***	-0.120	0.024***	-0.116	N/A
Coverage of Backache	-0.067	0.013***	0.657	0.097***	-0.066	0.013***	-0.066	0.013***	-0.067	N/A
Coverage of Stress – suppressed – collinear with coverage of Backache										
R ²	0.735		0.955		0.734		0.734			
Adj. R ²	0.734		0.950		0.733		0.733			
F test	1899.70***		186.38***		1909.07***		1718.19***			
Observations	6190		60		6250		6250		6250	
e-D							104.917 or 4.92% increase		96.657 or 3.34% discount	

*** denotes statistical significant at 1%, ** denotes significant at 5%, * denotes 10% significance

As previously discussed, the hedonic regression model assumes that all the policies operate in a competitive market so theoretically it is not certain whether the unconstrained or constrained regression provides the more appropriate results. However, one would expect that the ‘true’ result exists between the results obtained for scenario i) and ii) (reported in Panels D and E). In fact, the difference between the two bounds on the results is relatively small so our result is empirically and qualitatively robust to this theoretical consideration. For 2010 we can deduce that the independently sold policies are between 12.81 and 13.483 per cent cheaper than those MPPI policies sold jointly. Comparable estimates for 2012 indicate independently sold policies are between 3.34 per cent cheaper and 4.92 per cent more expensive than those MPPI policies sold jointly, although these estimates are not significantly different from zero. We can conclude that in 2012 there is no significant difference between the prices of independently and jointly sold policies.

6. Conclusions

This study uses a hedonic pricing model to investigate the interactions between the premiums, policy quality and distribution of mortgage protection insurance (MPPI). This study addresses whether MPPI is relatively expensive when these policies are distributed jointly with mortgages relative to being distributed independently of mortgage sales. In this concluding section we consider a brief summary of the study findings, the pertinence of policy responses and recommendations for further work.

We report that MPPI policies sold independently had lower premiums in the age range where people are likely to be taking out mortgages. Policy characteristics and conditions vary between policies sold jointly and those sold independently. One group of policies is not dominant in this respect but the conditions reflect the circumstances of the

institutions providing them. Hedonic analysis of the independently sold policies indicates that their premiums reflect the quality of the policy in terms of its coverage and conditions. The policies sold jointly are clearly more expensive for a given set of benefits and conditions than policies sold independently in 2010, suggesting uncompetitive premium levels. Further, after prohibition of the joint sale of MPPI with mortgages within seven days of the credit agreement, the quality of MPPI policies declines and the inflated cost of jointly distributed policies dissipates.

In light of this assessment the Competition Commission (2009) prohibition of joint sales of MPPI policies with mortgages may be justified on terms of reducing premium costs, yet may not be an optimal solution for the UK housing market. While our analysis supports the conclusions of the Competition Commission (2009) regarding the excessive premiums of jointly sold MPPI policies we consider MPPI to be a special case due to its social and economic importance. The policy challenge is whether housing and economic policy are subsidiary to the competition concerns raised by the Competition Commission. The prohibition of joint MPPI sales will at least disrupt a market aimed at providing a private insurance ‘safety net’ for mortgagors; a form of insurance advocated and promoted by successive governments. In this case, competition is clearly one of many economic concerns including mortgagee protection, monetary stability and fiscal prudence, which are all collectively important for the preservation of the economic order. Subsequently we question whether competition law should be assessed as a distinct economic problem.

Clearly further research is required to assess the longer-term influence of this prohibition. Questions requiring further assessment include whether the take-up of MPPI has declined further and if this market is viable going forward. If this market has become an irrelevance since the Competition Commission prohibition, what methods and financial services are developing to replace MPPI to ensure housing finance is

available to all (see Gibbs *et al* 2013, FSA, 2013). Determining the efficacy of any new methods of mortgagee support and their impact on both lenders and mortgagees is essential. Notwithstanding the high costs and often sub-optimal circumstances through which MPPI was distributed, this service did constrain many of the challenges facing the UK mortgage market including high house prices, variable forms of mortgage contract and growing mortgagee uncertainty. It is hoped the prohibition of MPPI will not disadvantage mortgagees in navigating these on-going challenges due to a prohibition arising from the poor behaviour of lenders.

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Appendix 1: Firms offering MPPI in 2010 and 2012.

2010 MPPI providers		
Abbey#	HIGOS	Pinnacle Insurance
Alliance & Leicester#	HMC Funding	Principality BS
Ant Insurance	iprotect	Royal Bank of Scotland
Asu.ltd	justclick4cover.com	Scottish BS#
Barclays#	Leeds BS	SecurityFirst
Berkeley Alexander	Leek United	Select & Protect
Best Insurance	Legal & General	Skipton BS#
Britannia	Lutine	Standard Life#
British Insurance	Market Harborough BS#	Stroud & Swindon BS
British Insurance Brokers	Millennium Insurance	TenetLime Ltd
Cheshire BS#	MMS	The Co-operative Bank#
Clydesdale Bank#	Monmouthshire BS#	The Co-operative Insurance#
Columbus Direct	Nationwide BS#	The One account#
Coventry BS#	NatWest#	Tipton & Coseley#
Derbyshire#	Newbury BS#	Ukinsurancenet
Direct Line#	Northern Rock#	Ulster Bank
First Active	Norwich & Peterborough BS#	webmoney
Furness BS	Paymentcare Ltd	West Bromwich BS#
getMy.com	Paymentshield	Yorkshire Bank#
Halifax#	Personal Touch	Yorkshire BS#
2012 MPPI providers		
3 X D	helpucover	Pinnacle
Ancile Insurance Services	HIGOS	PMI Partners (FirstAssist)
Ant Insurance	HMC Funding	Principality BS
APRIL UK	iprotect	Protect your bubble
Asu.ltd	Jump Money	protection.uk.net
Aviva	justclick4cover.com	Safeshield#
aymentshield	London & Country Mortgages Ltd#	Scottish BS#
Barclays	Mapfre Assistance	Select & Protect
Bennett Gould & Partners Ltd.	Market Harborough BS#	Sentinel
Berkeley Alexander	MMS	Sequence
British Insurance	MoneyMart	Sesame
Burchell Edwards	Monster Insurance	Sharman Quinney
Chorley & District BS#	MORE TH>N	Skipton BS
Columbus Direct	NatWest#	Synergy Financial Products Ltd
Compass Underwriting	Openwork	TenetLime Ltd
Connells	Pattison Lane	The One account
DMS Security Plans	Payment Cover	Tipton & Coseley#
First Assist	Payment Guard	Towergate Home and Protect
firstcallpaymentprotection.co.uk	Paymentcare Ltd	Uinsure
getMy.com	Paymentshield	Universal Provident
Hanley Economic BS	Personal Touch	

BS = building society. # = distributed jointly with a credit agreement.



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