

Institution: Keele University
Unit of Assessment: C19 Business and Management Studies
Title of case study: Mortgage market choices and policy
<p>1. Summary of the impact</p> <p>Professor David Leece's research on household decision making, risk and mortgage design had a significant influence on a fundamental review of the United Kingdom's mortgage market carried out in 2003-4, and consequently has had a major continuing impact on: (i) understanding the role of mortgage market economics in the financial crisis of 2007-8; and (ii) the ability of a global investment bank (and the banking sector more widely) to understand, value and hedge risk in securitised mortgage debt.</p>
<p>2. Underpinning research</p> <p>Leece's research has pioneered the application of modelling and econometric techniques to household decision making in the mortgage market, a better understanding of which helps the valuation, pricing and hedging of securitised debt, and the appropriateness of securitising certain mortgage designs. Work published by Leece (1995) used data from the <i>Family Expenditures Survey</i> and a <i>bivariate probit model</i> to test various hypotheses on the determinants of household choice between an endowment and a repayment mortgage. The theoretical modelling reflected the behaviour of households who faced liquidity problems, rather than those able to make rational wealth-maximising decisions regarding housing and alternative investments (that is the opportunity cost of capital invested in the property). Actual choices appear to reflect the impact of nominal interest rates, income and cash flow considerations, rather than the design of the mortgage repayment vehicle.</p> <p>Research supported by Keele University and published during Leece's first period of employment at Keele (as Lecturer/Senior Lecturer until 2004), particularly his book <i>Economics of the Mortgage Market</i> (2004), combined further methodological advances with the development of practical, industry-specific approaches to the microeconomics of mortgage markets by linking household behaviour to key issues in mortgage-market economics and mortgage valuation. Building on earlier, peer-reviewed articles (Leece 2000a, 2000b), the book reaffirmed the importance of 'affordability' rather than 'rational option' theoretical approaches to household choice. In particular, Leece linked the increasing importance of the secondary mortgage market to behaviour at household level. This last issue was crucial to the financial crisis of 2007-8, and recent research by Leece continues to explore its implications, extending his analysis into the comparative differences in mortgage choices between the United Kingdom and the United States Mortgage markets. This research was undertaken in collaboration with Gauthier Lanot, then Professor of Economics at Keele (2006-2013), while Leece was Professor of Financial Studies at Manchester Metropolitan University, and continued when Leece returned to Keele as Professor of Finance in 2012.</p> <p>A working paper (Lanot and Leece 2010) also delivered at the Royal Economic Society's Annual Conference in 2011, examines, for example, the behaviour of typical households holding mortgages that contributed to the financial crisis. The paper develops a competing risk model of mortgage terminations based on a sample of UK securitized subprime mortgages. Leece and Lanot consider whether the variety of mortgage contracts that were securitized explains the performance of subprime securities and their supposed 'idiosyncratic' behaviour. They propose the use of a general, flexible modelling of unobserved heterogeneity over several dimensions, controlling both for selection issues involving mortgage choice and for dynamic selection over time. They conclude that securities consisting of subprime loans can be given meaningful valuations on bank balance sheets if the performance of the different types of loans can be better understood. As is characteristic of Leece's research over two decades, the paper underlines the importance of household behaviour to macro-economic developments, particularly during times of crisis.</p>

3. References to the research

1. Leece, D (1995) An econometric analysis of choice of mortgage design in the United Kingdom, *Applied Economics*, **27**(12): 1173-1186. DOI: 10.1080/00036849500000100.
2. Leece, D. (2000a) Household choice of fixed versus floating rate debt: A binomial probit model with correction for classification error, *Oxford Bulletin of Economics and Statistics*, **62**(1): 62-82. DOI: 10.1111/1468-0084.00160.
3. Leece, D. (2000b) Choice of mortgage instrument, liquidity constraints and the demand for housing debt in the United Kingdom, *Applied Economics*, **32**(9): 1121-32. DOI: 10.1080/000368400404263.
4. Leece, D. (2004) *Economics of the mortgage market: Perspectives on household decision making*, Oxford: Blackwell, 258 pp.
5. Lanot, G. and Leece, D. (2010) The performance of UK securitized subprime mortgage debt: 'Idiosyncratic' behaviour or mortgage design?', *MPRA Paper 27137*, University Library of Munich, Germany. <http://mpra.ub.uni-muenchen.de/27137/>

4. Details of the impact

From the 1990s to the present, Leece's research has combined methodological innovation in econometric modelling with the provision of practical resources for financial analysts working in the housing and banking sectors.

(i) Impact on the mortgage market's role in financial crisis:

Leece's substantial impact on the financial sector during the assessment period is founded on his earlier contribution to the fundamental review of the United Kingdom's mortgage market, conducted for the Treasury by David Miles, Professor of Finance at Imperial College London in 2003-4. A draft of Leece's 2004 book was consulted by the review team and he is acknowledged as an important reference point in the appendix to the final report [source 1]. On the basis of his research on mortgage markets, Leece was commissioned by the Consumers' Association to reflect and comment upon the interim report of the Miles review and to present his findings to the review team. His contribution offered a significant corroboration of the predominantly short-term, myopic perspectives governing mortgage choices, highlighted in the final report. The analysis and recommendations of this final report of the Miles Review attracted considerable media interest [sources 2 and 3], and continued to have an impact on world-wide debates, banking practices and mortgage policies between 2008 and 2013. Through the Miles Report, Leece's research has influenced the functioning of the housing market in the United Kingdom and the United States.

Work by the Research Institute for Housing America, for example, comparing mortgage contract designs internationally, cites the report [source 4]. An Organisation for Economic Cooperation and Development Working paper [source 5] notes the problems highlighted by Miles in the adoption of fixed rate mortgage contracts in the UK and the need to finance mortgage supply with covered bonds. The Miles Report called for changes in Financial Services Authority (now Financial Conduct Authority, FCA) regulations regarding covered bonds and the FSA changed the regulatory regime for such bonds in early 2013 [source 6].

Furthermore, Leece's research has had specific focused impact on policy after 2008 through the Institute for Fiscal Studies Green Budget. A preview of the official UK Budget in mid-March, the IFS Green Budget is published annually and regarded as a 'comprehensive and thought provoking document for anyone with an interest in the state of the UK economy or public finances' (*The New Economist*, 31st January 2008) [source 7]. In 2008, Leece's analysis of the differences in the risk characteristics between fixed nominal and variable nominal rate debt contracts was cited for its contribution to expert understanding of the mortgage market [source 8]. This work was produced in

collaboration with Morgan Stanley (see section ii, below). Leece's research on mortgage market economics is increasingly cited in the research papers of financial institutions, indicating enduring and wide impact on understanding of the role of mortgage contract design and household choices in the financial crisis and on financial practices and policies. A review by McAuslan [source 9] highlighted Leece's work as an important exception to the general neglect of this area by UK researchers, while in 2012 the Norwegian Central Bank [source 10] drew on Leece's work in connection with the modelling of interest rate expectations in the mortgage market.

(ii) Impact on the practices of the financial sector:

Leece's published research, his contribution to the Miles Review, and his earlier experience of advising financial institutions led to a substantial consultancy with Morgan Stanley, the leading multi-national financial services corporation in 2007-8, through a grant award of £75,000. He worked with the Structured Credit Department to model the loan performance of subprime mortgage debt. Leece assisted Morgan Stanley in the valuing and hedging of the subprime loan securities in its possession. His statistical analysis was discussed throughout 2007 and 2008, leading to new ways of approaching the data, and deployed from 2008 onwards to produce better understanding of how a likelihood model could be used to hedge securities. Leece's analysis ensured that the organisation understood the problems with previous mortgage securitisations approaches and contract designs, and these insights were used from 2008 onwards to hedge the securities and to prepare the bank for the period when securitised markets re-opened.

5. Sources to corroborate the impact (indicative maximum of 10 references)

Source 1: Miles, D. (2004) *The UK mortgage market: Taking a longer term view*. Norwich: HMSO: http://webarchive.nationalarchives.gov.uk/20071204181447/http://hm-treasury.gov.uk/media/3/C/miles04_470%5B1%5D.pdf

Source 2: *BBC News*, 'Call for more long term mortgages', 9th December 2003: <http://news.bbc.co.uk/1/hi/business/3302029.stm>

Source 3: *Building Societies Association Press Release*, 'BSA welcomes Miles recommendations', 12th March 2004: <http://www.bsa.org.uk/mediacentre/press/100076.htm>

Source 4: Lea, M. (2010) *International comparison of mortgage product offerings*, Corky McMillin Center for Real Estate, San Diego State University Research Foundation, Produced for Research Institute Housing America, September.

Source 5: Andre, C. (2011) *Economics working paper: Improving the functioning of the housing market in the United Kingdom*, OECD Working Paper Series.

Source 6: *IFLR website*, 'Covered bonds face tough questions in the UK', 2nd July 2005: <http://www.iflr.com/Article/1984785/Covered-bonds-face-tough-questions-in-the-UK.html>

Source 7: *The New Economist*, 31st January 2008.

Source 8: Institute for Fiscal Studies/St Stanley Morgan (Unpublished) *Green Budget*. January 2008. Available from: <http://www.ifs.org.uk/budgets/gb2008/gb2008.pdf>

Source 9: McAuslan, P. (2009) *Whose mortgage is it anyway? Producers, consumers and the law in the UK Mortgage Market*. ISA International Conference: Housing Assets, Housing People, University of Glasgow.

Source 10: Evjen, S. and Kloster, T. B. (2012) *Norges Bank's new monetary loss function*, Norges Bank, Staff Memo No 11.

Impact case study (REF3b)

Corroborators:

Monetary Policy Committee Member, Bank of England/Chief Economist, Morgan Stanley

Aston University Business School