Institution: University of Nottingham

Unit of Assessment: Economics and Econometrics (18)

Title of case study: Improving the Design and Effectiveness of Monetary Policy

1. Summary of the impact

Research by the School's **Centre for Finance, Credit and Macroeconomics (CFCM)** on the monetary transmission mechanism has been influential in improving the design, implementation and effectiveness of the monetary policies of a number of central banks, including the **Bank of England, Banque de France** and the **European Central Bank**. The research has influenced changes in the way that official monetary aggregates are measured so as to capture the impact of non-bank financial institutions on the money supply and credit availability, and in better understanding of how monetary policy affects different interest rates. This in turn has allowed for improved control by central banks of their policy targets, and for better understanding of the effects of their monetary policies on economic activity and inflation.

2. Underpinning research

- *Context*

CFCM brings together the work of researchers working in the School on financial markets, macroeconomic cycles, and consumer and corporate credit. In this case study the focus is on **CFCM's** research on the monetary transmission mechanism (MTM). **Paul Mizen** (then Reader in Monetary Economics, University of Nottingham) was recruited as a consultant (40% contract) to undertake research at the **Bank of England** between 1997 and 2000 to assist the **Monetary Policy Committee (MPC)** in understanding: a) the importance of money and credit for the MTM, particularly output and inflation; b) the different impacts of household, non- financial firms and non-bank financial firms' money and credit on output and inflation; and c) the pass through of interest rate changes to households and firms through the banking system.

Mizen had been approached to join the Monetary Assessment and Strategy Division headed by **Paul Tucker** (subsequently a Deputy Governor of the Bank) after having published the book *Buffer Stock Models and the Demand for Money* in 1994 and a number of refereed papers on demand for money by **UK** households and firms. The research undertaken subsequently was published in the **Bank of England** working papers numbers 100, 134, 151, 170, and 254, summarised in the **Bank of England Quarterly Bulletin** and also published in peer reviewed journals (listed [1] – [6] below).

- *Research insights and findings*

The studies on money and credit, [1], [3], [4] and [5] show that excess money and credit held by households and private non-financial corporations in the UK economy interact with each other and feed through to output and inflation via the conventional monetary transmission mechanism. The majority of excess money and credit is held by the non-bank financial sector (insurers, pension funds, securities dealers, leasing companies etc), and these balances have an indirect effect on monetary transmission through their impact on households and firms. For example, money and credit held by financial companies involved in factoring or leasing of capital equipment directly influences output and inflation. Paper [2] demonstrated that their balances have an impact on firms and household spending.

The **MPC** is therefore right to be concerned about excess money and credit held by these sectors and should be embedded in the Bank's forecasting models. The Bank's own research in 2012 built on this sectoral information following the work that was done by **Mizen** to improve structural VAR forecasting models under **Quantitative Easing (QE)**. However, the non-bank financial sector is diverse, and some institutions which are more like banks do not affect output or inflation – they should be netted out. The monetary statistics collected by the **Bank** have since 2009 netted out

money held by both banks and the non-bank financial sector that are similar to banks.

The study of interest rate pass through demonstrates that retail interest rates set by banks (such as deposit, loan and mortgage rates) could deviate from official rates set by the **Bank of England** in the short run. This deviation is driven by expectations about the direction of changes to official rates in the future. Paper [6] estimates the long run relationships between different retail rates and the official rate using individual bank data for the **UK**.

The absence of adjustment to retail rates in the short run, following an adjustment to official rates, is not a cause for concern, since it may reflect expectations by banks that adjustments are temporary, or likely to be reversed. This research helped to explain why interest rates set by banks do not follow official rates set by central banks at turning points. It also answered a concern expressed by journalists and other commentators that changes to interest rates were not being passed on to commercial banks' mortgage customers, by explaining more accurately how and when banks respond to monetary policy changes.

- *Key researcher*

Paul Mizen, Lecturer (1992-99), Reader (1999-2004) and Professor of Monetary Economics (2004-present), University of Nottingham.

3. References to the research

[1]. Brigden, A. and **Mizen**, P. (2004) 'Interactions between Money, Lending and Investment in the UK Private Non-Financial Corporate Sector', *Manchester School*, 72(1), pp. 72-99, January 2004; also Bank of England Working Paper, No. 100, September 1999. [doi: 10.1111/j.1467-9957.2004.00381.x]

[2]. Chrystal, A. and **Mizen**, P. (2005a) 'Other Financial Corporations: Cinderella or Ugly Sister of Empirical Monetary Economics', *International Journal of Finance and Economics* 10, 63-80, February 2005; Bank of England Working Paper, No. 151, December 2001. [doi: 10.1002/ijfe.258]

[3]. Chrystal, A. and **Mizen**, P. (2005b) 'A Dynamic Model of Money, Credit and Consumption for the Household Sector' *Journal of Money, Credit, and Banking*, 37, pp. 119-144, February 2005; also Bank of England Working Paper, No. 134, May 2001. [stable URL: http://www.jstor.org/stable/3838939]

[4]. Chrystal, A. and **Mizen**, P. (2002) 'Modelling Credit in the Transmission Mechanism of the United Kingdom' *Journal of Banking and Finance* 26(11), pp. 2131-2154, November 2002. [http://www.sciencedirect.com/science/article/pii/S0378426602002030#]

[5]. Chrystal, A. and **Mizen**, P. (2000) 'Money, Lending and Spending – A Study Of The UK Private Non-Financial Corporate Sector and Households' Bank of England Quarterly Bulletin, 40(2), May 2000 [http://papers.ssrn.com/sol3/papers.cfm?abstract_id=764264]

[6]. Hofmann, B. and **Mizen**, P. (2004) 'Interest Rate Pass Through in the Monetary Transmission Mechanism**:** UK Banks' and Building Societies' Retail Rates' [with Boris Hofmann] *Economica*, 71, pp. 99-125, February 2004; also Bank of England Working Paper, No. 170, December 2002. [doi: 10.1111/j.0013-0427.2004.00359.x]

4. Details of the impact

The research listed [1] – [6] above underpins the **Bank of England's** current research: Bridges and Thomas (2012) state:

> *"The PNFC sector model uses a three-equation system of PNFC money holdings, borrowing and investment based on Brigden and Mizen (2004)"…*
> "*Although aggregate models are useful, as they allow us to look at the complete macroeconomic response to a QE shock, the linkages between money, asset prices and spending have tended to be clearer at the sectoral level in the UK data (see … Brigden and Mizen (2004), Chrystal and Mizen (2005a,b),)."*

Prior to these studies the **Bank of England** was uncertain whether excess money and credit balances held by non-bank financial corporations should be treated like assets and liabilities held by banks (as they are in the United States) which are netted out of the official figures, or included in the analysis of monetary policy. The Bank now considers these data from some of these institutions to be important for output and inflation and factors them into its analysis. Prior to this research the **MPC** could have understated growth in money and credit aggregates by ignoring all non-bank financial institutions, some of which have an impact on real activity and inflation. The Bank produces monthly reports on monetary developments in these sectors (see [A] various issues), and discusses them in the quarterly *Inflation Report.* It has cited research on money and credit, including the research in this case study, as one of its major contributions to understanding monetary transmission in the 50th Anniversary edition of the **Quarterly Bulletin**, [C]. The main beneficiary has been the **Bank of England**, and other central banks that they influence.

The research has had an impact on official monetary aggregates published by the **Bank of England**. The research provided the starting point for a review of other financial institutions in the monetary statistics taken up by **Spencer Dale** when he was **Head of Division in Monetary Assessment and Strategy**. The Bank undertook to review its monetary statistics [G] and after public consultation adjusted its measure of broad money from M4 (deposits held by banks and building societies) to M4X (M4 minus holdings of money by certain bank-like entities known as intermediate other financial institutions). Since June 2009, the M4X statistics have been produced monthly by the Bank. The decision to exclude non-bank financial institutions that undertake similar activities to banks e.g. bank holding companies, but to include financial institutions that serve firms and households (e.g. leasing companies) recognises the research that showed some financial institutions have an impact on output and inflation. The beneficiaries are all users of monetary aggregates produced by the **Bank of England** in the **United Kingdom,** such as commercial and investment banks, insurance companies and pension funds, private non-financial corporations and individuals.

This work on non-bank financial institutions involved **Mizen** in an 'Expert meeting on monetary analysis' in **DG-Economics, European Central Bank** in 2006, which discussed the construction of monetary aggregates excluding other financial institutions in **Europe**, [B]. It underpins the analysis of the recent weakness of broad money growth, [D], and the assessment of quantitative easing in the **UK**, [E].

The research also contributes to our understanding of policy and contributes to the public policy debate, particularly during times of change when new instruments or objectives have been adopted for extraordinary times e.g. quantitative easing policies. It is notable that, while central banks had relegated information on monetary aggregates during the mid-2000s and when inflation targeting appeared to be very successful, they refocused on these aggregates with the introduction of quantitative easing. At the **Bank of England** the understanding of monetary aggregates and credit have primary importance with the introduction of **QE** in March 2009, as [D], [E] and [F] document. The Deputy Governor of the Bank of England wrote

> *'"The financial crisis has reminded economists of the centrality of money and banking to macroeconomic conditions. At the Bank of England, we drew on Paul Mizen's money models as a guide to gauging the prospective impact of the Monetary Policy Committee's quantitative easing on spending and asset prices."*

One measure of the success of quantitative easing is the impact on bank lending to UK businesses, which is reported by the **Bank of England** monthly. The discussion in [H] shows how the measure of money excluding certain non-bank financial corporations has an impact on the debate over quantitative easing, as does [F]. The **Editor of *The Sunday Times***, comments:

> *'The research has had a clear impact on the Bank of England, both in its modelling and in construction of the monetary aggregates (the new M4X measure). It has also informed the work of other central banks…and the researchers have been used as experts by these central banks and invited to undertake further work.'*

The work on interest rate pass through has helped central banks to understand how their policy

decisions affect interest rates offered to households and firms. This has become a very important issue in understanding the monetary transmission mechanism. **Mizen** was invited to the **Bundesbank** in 2005-6 to explore the effects of interest rate pass through in Europe. This then led to an invitation to an 'Expert meeting on interest rate pass-through', at **DG-Economics and DG-Statistics, European Central Bank** in 2007 to discuss transmission of monetary policy http://www.ecb.int/events/conferences/html/mir.en.html .

The **Banque de France** invited further work on pass-through in the major European economies and on individual French banks in particular in 2011. This work has been published as **Banque de France Working Paper** N 361, and Journal of Money, Credit and Banking, 45, 1377-1417, October 2013. The findings were used by the **Banque de France** to establish data and modelling protocols, forecasting assessment criteria, and informed the **European Central Bank** through the **Expert Group on Financial Assumptions (EGFA)** from April 2011-June 2013. The senior **Banque de France official** responsible for this research writes:

> *'The research on interest pass through was very innovative and extremely useful for the monetary policy decision making process: it confirmed the importance of future expected interest rates in aggregate euroarea data, and then verified this in data for individual French commercial banks. It had a great impact on our understanding of this aspect of the monetary transmission mechanism in the Banque de France'*

Further work is being undertaken on individual bank pass through using panel data in 2013. On 15th February 2013 **Mizen** participated in a policy briefing on pass through and the Bank's Funding for Lending Scheme with the **Chief Economist of the Bank of England, Spencer Dale**, and his staff. In February 2013 **Mizen** was asked to collaborate with **Dr Garry Young (Bank of England)** to update and improve their model of pass through, this work is ongoing. **Mizen** has also been invited by the **Bank for International Settlements** to engage in a detailed study of pass through for advanced and emerging economies in 2014. The major beneficiaries are central banks, especially the **Bank of England**, the **Banque de France** and the **European Central Bank**.

5. Sources to corroborate the impact

[A] **Bank of England** Sectoral Breakdown of Aggregate M4 and M4 lending various issues http://www.bankofengland.co.uk/statistics/Pages/fm4/2012/aug/default.aspx
[B] Moutot, P. (2007) 'The Role of Other Financial Intermediaries in Monetary and Credit Developments in the Euro Area' **ECB** Occasional Paper No. 75.
[C] Bank of England Quarterly Bulletin (2010) 50th Anniversary edition, 50(4). **Bank of England**.
[D] Bridges, A., Rossiter, M. and R. Thomas (2011) 'Understanding the recent weakness in broad money growth', **Bank of England Quarterly Bulletin** 2011 Q1, 51(1), 22-35.
[E] Bridges, A. and R. Thomas (2012) 'The impact of QE on the UK economy – some supportive monetarist arithmetic' **Bank of England Working Paper** 442.
[F] Butt, N.,S. Domit, M. McLeavy and R. Thomas (2012) What can the money data tell us about the impact of QE? **Bank of England Quarterly Bulletin** 2012 Q4, 52(4), 321-331.
[G] Burgess, S. and N. Janssen (2007) 'Proposals to modify the measurement of broad money in the United Kingdom: a user consultation' **Bank of England Quarterly Bulletin** 2007Q3, 402-413.
[H] Smith, D.B. (2012) 'Money still matters: The Implications of M4X for quantitative easing' IEA Discussion Paper No. 26, Institute for Economic Affairs.

Individuals who could be contacted:

[I] Director of Research at the **Prudential Supervision Authority, ACP, France**.
[J] Manager, Monetary Assessment and Strategy, **Bank of England**.
[K] Deputy Governor, **Bank of England**.