

Stabilizing Monetary Systems

Sterling's Currency and Credit Markets from the 12th to the 21st C

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Abstract

This paper seeks to highlight a design feature of monetary systems that was prevalent from medieval times until the 20th century, but has since fallen into abeyance. The lost piece of functionality in modern monetary systems is a mechanism for stabilizing the value of assets that form the main counterpart of money, without giving rise to perverse incentive effects. Understanding how this mechanism works is confused by the many guises taken by money and its credit counterparts around the world, and the radical changes in their form over the centuries. Rather than attempt to distinguish between form and substance over multiple currencies, this paper seeks to illustrate the stabilization mechanism by presenting an analytical history of sterling's currency and credit markets from the 12th C to the present day. One reason for using sterling as a guinea pig for this type of analysis is that English data are of remarkable quality since the 12th C, a time span not matched by other currencies. Comparative studies with other currencies should be possible, but that goes beyond the remit of this paper.

For the purposes of this study, the methods used to stabilize the value of banking assets are examined with reference to four types of banking institution: the Royal Mint, the Bank of England, clearing banks and building societies. The stability of these four is then contrasted with the predicament of the retail and shadow banks of the post-1980 era. The paper concludes that policymakers should pay more attention to stabilizing the value of bank collateral.

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Acronyms and abbreviations

ABS	Asset backed securities
Bank	Bank of England
<i>BEQB</i>	<i>Bank of England Quarterly Bulletin</i>
Bank Rate	Bank of England minimum lending rate
BCI	Bank collateral price index
Bill	Bill of exchange
BSA	Building Societies Association
BSC	Building Societies Commission
CDO	Collateralized debt obligation
CCC	Competition and Credit Control
CPI	Consumer Price Index
CDS	Credit default swaps
DCM	Debt Capital Markets
DWF	Discount Window Facility
DCE	Domestic credit expansion
DSGE	Dynamic stochastic general equilibrium
ECB	European Central Bank
EEA	Exchange Equalisation Account
ERM	Exchange rate mechanism
HPI	House Price Index
IMF	International Monetary Fund
IMA	Investment Management Agreement
IME	Investment Management Exemption
LOLR	Lender of last resort
LTV	Loan-to-value ratio
LIBID	London interbank bid rate
LIBOR	London interbank offer rate
MTFS	Medium-Term Financial Strategy
Mint	Royal Mint of England
MLR	Minimum Lending Rate of Bank of England
MBC	Monetary base control
MPC	Monetary Policy Committee
MBS	Mortgage backed security
OMO	Open market operations
OTC	Over the counter
£ s d	Pounds, shillings, old pence
PSBR	Public sector borrowing requirement
QE	Quantitative easing
Repo	Spot-sale and forward-repurchase agreement
RPI	Retail Price Index
SLA	Savings and loan association
WTI	West Texas Intermediate

1. Introduction

This paper seeks to highlight a design feature of monetary systems that was prevalent from medieval times until the 20th C, but has since fallen into abeyance. The lost piece of functionality in modern monetary systems is a mechanism for stabilizing the value of assets that form the main counterpart of money, without giving rise to perverse incentive effects. Understanding how this mechanism works is confused by the many guises taken by money and its credit counterparts around the world, and the radical changes in their form over the centuries. Rather than attempt to distinguish between form and substance over multiple currencies, this paper seeks to illustrate the stabilization mechanism by presenting an analytical history of sterling's currency and credit markets from the 12th C until the present day. One reason for using sterling as a guinea pig for this type of analysis is that English data are of remarkable quality since the 12th C, a time span not matched by other currencies.¹ Comparative studies with other currencies should be possible, but that goes beyond the remit of this paper.

Six banking models

The monetary institutions responsible for managing the sterling currency and credit system have changed radically since the 12th century, but there has been one abiding constancy in their *modus operandi*, at least until the 1980s: the prices of the credit counterparts of money were stabilized and changes in relative prices were achieved by changing the prices of other (non-monetary) goods and assets. Thus, when the Royal Mint (the Mint) was England's primary monetary institution, sterling bullion prices were stabilized and ordinary commodity prices were allowed to adjust in response to market pressures. When the Bank of England (the Bank) became the primary monetary institution, the prices of its assets, including its bullion reserves, were stabilized. A similar regimen applied during the era of clearing banks and building societies (home loan specialists). Since the 1980s, retail and shadow banks have formed an increasingly important part of the banking system, but the prices of their assets have not been stabilized and problems have ensued.

In the next section we examine the methods used to stabilize the value of banking assets with reference to four types of banking institution: the Mint, the Bank, clearing banks and building societies. The stability of these four is then contrasted with the predicament of the retail and shadow banks of the post-1980 era. It is important to note that this is not a traditional study of money and banking. It does not attempt to provide a comprehensive history of how these banking institutions evolved since the 12th century – a monumental task well covered by others.² Instead, this study seeks to explain the stability, or otherwise, of each banking type by identifying their key characteristics. The aim is to understand the *operating model* underlying each type of institution, and thereby be able to compare them.

¹ Mayhew, 1992, pp. 83-178

² Feaveryear, 1931; King, 1936; Sayers, 1938; Capie and Webber, 1985; Collins, 1988; Challis, 1992; Mayhew, 1999; Graeber, 2011; Allen, 2012

It might be objected that the Mint was not a bank, but it is useful to analyse the minting process as a form of banking activity. The Mint acquired assets (bullion) by issuing monetary liabilities in the form of coin (specie), and it took a turn on the way. It issued money (coin) embedded with its asset counterpart (bullion), rather than retaining them on its balance sheet, an early form of off-balance sheet banking. What has distinguished the Mint and other banking operations from ordinary companies is that their liabilities (or some of them) have been treated as money (currency) in the sense that they have been customarily accepted for the settlement of debts, including the payment of taxes. From time-to-time these instruments have been granted the status of legal tender under statute, but this has not been a prerequisite for their monetary status; for example, well-regarded coins circulated quite happily outside their jurisdiction of issue.

A key characteristic of monetary instruments is that they are negotiable (transferable), allowing them to pass freely from one party to another. However, coins were not the only negotiable instrument circulating in medieval and early modern economies. A seller of a consignment of goods might draw a bill of exchange (commercial bill or bill) to be accepted by the buyer for payment on arrival of the goods three months hence. The drawer might sell the bill to a third party at a discount before payment was due, and the third party might endorse the bill and sell it to another party. The bill could circulate until repayment by the acceptor. Other forms of potentially negotiable instrument included promissory notes (IOUs), goldsmiths' certificates and government liabilities, such as tallies and exchequer bills. Unlike coin, these instruments would return a yield.¹

Rather than attempt to make a sharp distinction between money and other negotiable instruments, a practical approach is to define gradations of money-ness, where coin can be regarded as a component of narrow money (M1), and successively broader definitions of money (M2, M3...) can include a wider range of monetary instruments, such as bank notes, bills of exchange and short-term government debt. However, we shall argue that an important distinction between money and near-money turns on whether the value of its asset counterpart is protected or not.

¹ Marius, 1651; Forbes, 1718

2. Royal Mint

Posted prices

The Mint operated a posted price system in which it offered current coin with a face value of £X against delivery of bullion of a fixed weight and fineness. A posted price was offered for silver from the 12th C and an equivalent price was offered for gold from the 14th C. In principle, the Mint was offering a convertibility regime in which bullion could be sold for coin (specie) at a posted price. Mint prices were not fixed for predetermined periods, but they normally remained unchanged for decades: between the 14th and 17th C, they were usually fixed for periods of 40 to 70 years. When posted prices were changed, they were almost always adjusted in an upward direction, i.e. coins of a higher total face-value would be issued against a given weight and fineness of bullion delivered, and each coin would be devalued (reduced in weight). Devaluations tended to be between 10% and 35% resulting in step increases in Mint prices followed by periods of constancy. Between the 14th and 17th C, sterling Mint prices rose threefold and coin weights were reduced by a commensurate amount. For the most part, English coins were not debased (reduced in fineness), save for the notorious debasement of Henry VIII.¹

Bullion holders and dealers were assured of being able to sell to the Mint at its posted price, but there was always the possibility of achieving a higher price by selling to makers of plate, to foreign mints and to Asia.² When the Mint's posted price was uncompetitive, less bullion would be delivered to the Mint, the issuance of coin would diminish and the economy could suffer from 'scarcity of coin'.³ When the Mint's posted price was competitive, more bullion would be delivered for coining. As David Hume was to observe subsequently, in a slightly different context, there was scope for a self-equilibrating system to operate around a fixed mint price. An increased supply of specie (i.e. coin) could lead to the increased price of ordinary commodities, as a surfeit of coin bid up their price, and the reverse could occur when there was a scarcity of coin.⁴ However, the relationship between circulating coin and ordinary commodity prices needs to be treated with care. In the 1630s and '40s there was a marked rise in the stock of silver coin circulating in England as a result of an agreement with Spain on the use of English ships to carry Spanish bullion and to mint a proportion of it in England.⁵ There had been some inflation of ordinary commodity prices, possibly as a result of an influx of gold bullion, but the relationship between circulating specie and ordinary commodity prices does not appear to have been straightforward.

A fixed-price mint system did not necessarily affect *relative* prices (exchange ratios) between bullion and ordinary commodities, for example, the number of pennyweights (dwt) of silver required to purchase a bushel (bl) of wheat. From the 13th C until the 15th C, a bushel of wheat rarely cost less than 3 dwt of silver, but its

¹ Mayhew, *English Mint Price Data*, 2012; Spufford, 2012

² Mayhew, ed. Munro, 2012

³ Mayhew, 2000, pp. 73-4, 95, 103; Evelyn, *Diary*, 24th May 1696

⁴ Hume, 1742, part II, essay III, I

⁵ Mayhew, 2000, pp. 71-2

price could peak at 20 dwt of silver in famine conditions after a bad harvest. (20 dwt = 1 troy ounce; 12 troy ounces = 1 troy pound.) In normal years, prices tended to fluctuate around 10 dwt/bl until the 16th C when trend prices started to rise twofold to 20 dwt/bl by the middle of the 17th C [slide 1]. Various explanations have been offered for the increase in the relative price of wheat, including the supply side effect of silver mine discoveries in the Spanish Americas and the effect of increased population on the demand for grain. During this period the Mint's prices for silver and gold moved broadly in line with each other and wheat prices provide a reasonable proxy for a composite price index of ordinary commodities weighted by household use. It is therefore fair to say that the terms of trade between bullion (silver and gold) and ordinary commodities (using wheat as a proxy) moved against bullion and in favour of ordinary commodities between the 16th and early 17th C.

The shift in the exchange ratio between bullion and ordinary commodities could have been reflected in deflation of sterling bullion prices, or inflation of the sterling prices of ordinary commodities, or a combination of the two. However, the Mint system and its posted prices operated to stabilize the sterling prices of bullion, and the required adjustment of relative prices was achieved by inflating the sterling prices of ordinary commodities. Indeed, periodic step-devaluations accommodated an *increase* in the sterling price of silver and a more substantial increase in the sterling prices of ordinary commodities [slides 1 & 2]. The nature of these step-devaluations is discussed in more detail in the next section.

Devaluation and debasement

The Angevin monarchs established a sterling price for silver delivered to the Mint which remained fixed for nearly 200 years between the late 12th C and the mid-14th C. In broad terms, a penny coin (1d) was struck using sterling silver weighing 22 grains (gr) - approximately 1.4 grams, g. Silver of standard fineness was known as sterling silver and comprised 37 parts silver and 3 parts base metal, a proportionate fineness of 37/40, i.e. 92.5% fine (925 fine in modern bullion market parlance).¹ The Mint's implied *gross* offer price for penny (1d) coins against delivery of sterling silver was the reciprocal of the penny's weight, $1/22 = 0.455$ d/gr, equivalent to $1 \times 24/22 = 1.09$ d/dwt (1 dwt = 24 gr), 21.8d/troy oz (20 dwt = 1 toz), £1.09/troy lb (240 dwt = 1 tlb).

The Angevin 1d silver coin of 22 grains represented a modest devaluation against a hypothetical coin of 24 grains which would have equated a face value of 1d to a pennyweight of sterling silver.² The notion that monetary value should be tied to a particular weight of precious metal is a recurring theme down the ages, but we shall also see that judicious - and sometimes injudicious - devaluations were an integral part of the monetary system during the medieval and early modern periods [slide 2]. In the English system, devaluations were usually implemented by reducing the weight of coin of a given face value, but the same result could be achieved by 'raising the coin' (increasing the face value of coin of given weight): an example of the latter being the

¹ Jastram, 1981

² Mayhew, 2000, p. 28

variable face value of the guinea during the Napoleonic wars.¹ Both approaches are referred to as devaluations in this study.

Although the silver coinage established by the Angevins was not devalued until the 1340s and '50s, there was grain price inflation for most of this period, at least until the 14th century.² Thereafter step-devaluations in the silver coinage did occur between the 14th and 17th centuries, albeit at irregular intervals and on a low-frequency basis, usually no more than once each generation.³ The Plantagenet devaluations from the mid-14th century until the 15th century appear to have been non-inflationary; indeed, they may have avoided grain price deflation, a development that could have had an adverse impact on agricultural interests with sterling debts [slide 3].

In some respects it is surprising that there was not more of an institutional bias in favour of Mint price rises (coinage devaluations) since scarcity of coin was unpopular and more throughput at the Mint would have meant more seigniorage (Mint profits) for the Crown and more mintage (Mint fees) for the moneyers (Mint indenture holders). These deductions meant that suppliers of bullion to the Mint received a *gross* Mint price for sterling silver *less* deductions for mintage and seigniorage, giving a *net* Mint price. In the English Mint system, deductions as a proportion of *gross* Mint prices rarely exceeded 5% and its silver coins were normally of sterling fineness.

The aberration to this tradition of monetary discipline was the severe devaluation and debasement that started in 1542, during the reign of Henry VIII, and lasted for a decade.⁴ During this period the Mint reduced both the weight of its coins (devaluation) and their fineness (debasement). The Mint paid a higher price for sterling silver and extracted more seigniorage by lowering its net Mint price relative to its gross price. It secretly reduced the fineness of its silver coins from 92.5% (sterling fineness) to a low point of 25% in 1551. Immediately prior to this assault on the currency, (gross and net) Mint silver prices had stood at around 2d/dwt, having doubled over the previous two centuries. At the peak of the debasement, the net Mint price of silver exceeded 5d/dwt and the sum minted came at close to 15d/dwt. Silver coinage of sterling fineness was quickly re-established in the 1550s, as well as a Mint price close to 3d/dwt.

There were some small step-devaluations in 1601 and 1666, but the silver Mint price remained close to 3d/dwt during the late 16th, 17th and 18th centuries. Between 1500 and 1650, the sterling price of wheat increased 6-fold; this can be decomposed into a 4-fold increase in the price of wheat relative to bar silver and a 50% devaluation of the silver coinage from around 2d/dwt to 3d/dwt [slide 5]. Using Hicksian terminology, the sterling price of silver was (relatively speaking) a fix-price and the

¹ Carey, 2011, p. 44

² Harvey, 1973; Clark and Lindert, 2006

³ Mayhew, English Mint Price Data, 2012

⁴ Gould, 1970; Challis, 1978; Spufford, 2012

sterling price of wheat was a flex-price.¹ Changes in the exchange ratio between bar silver and wheat could not be resisted, but the Mint was able to introduce a degree of fixity in the sterling silver price, leaving the sterling wheat price to facilitate the required change in relative prices.

When the minting of gold coins (re)started in England in the 14th century, coins with a face value close to a pound sterling (£1 = 240d) were offered against delivery of a troy ounce of standard gold (£1/troy oz of 22 carat, 22/24 = 916 fine). The Mint's gold price of around £1/standard troy ounce was an implied price, since gold coins were not necessarily denominated in units of £1 and, initially, the Mint used Tower pounds as its unit of weight for delivered gold bullion (5,400 grains in a Tower pound, 5,760 in a troy pound, ratio of 15/16).² By the early 17th century, successive gold coin devaluations, broadly in line with silver ones, meant that the Mint's gold price stood at around £3/standard troy ounce.³ A gold price of £3/toz and a silver price of 3d/dwt implied a gold-to-silver Mint price ratio of 12 times, there being 240d to £1 and 20 dwt to 1 troy oz (240/20 = 12) [slide 2].⁴ Much of the economic literature on mints has been concerned with the gold-to-silver price ratio set by each mint and the implications for bimetallic flows.⁵

Nominalism versus metalism

Coins issued in England had a nominal sterling value which was often stamped on their face – a face value.⁶ In addition, they had a collateralized value based on their precious metal (bullion) content. Coins in mint condition had a collateral value equivalent to the reciprocal of the *gross* Mint price at their time of issue. As we have seen, the net Mint price tended to be at a discount to the gross price reflecting the withholding of some coin to cover mintage and seigniorage costs. From 1666, free coinage was introduced, where mintage was covered by the Exchequer and no seigniorage was taken by the Crown, and net and gross Mint prices therefore became the same. Coins in circulation nevertheless lost weight over time as a result of wear and tear and clipping. Old coins could be 25% under-weight and, in some cases, weight loss due to mutilation could be even more severe. There was an incentive to hoard well collateralized coins, leaving a rump of poorly collateralized coins in circulation.

The medieval solution to the problem of deterioration of coins in circulation was to undertake re-coinages, an exchange of new coin for old, roughly once each generation. Re-coinages incurred costs, not least mintage, seigniorage and the cost of organizing the exchange of new coins for old. Also, allowance had to be made for the reduced weight of the old coins relative to their original weight when issued. The exchange of worn coins for new coins in mint condition required that the new coins be

¹ Hicks, 1939, 2nd edition 1946, pp. 265-71

² Nightingale, 2008

³ Mayhew, English Mint Price Data, 2012

⁴ Connor, 1989

⁵ Friedman and Schwartz, 1963; Quinn, 1996

⁶ Wray, 2004

devalued, or that coin holders suffer a reduction in the face value of their coins, or some combination of the two. In general, the authorities placed more emphasis on devaluation than lowering the aggregate face value of issued coins, the latter being unpopular and deflationary.

Devaluations raised a question of equity between debtors and creditors, and whether debtors should be repaid at face value, or in new coin of equivalent weight to the old. English common law was clear that a sterling debt with a face value of X could be extinguished with current coin of a face value of X, irrespective of any devaluations. Contracts between borrowers and lenders could be denominated in units other than sterling and there were plenty of examples of gold loans and forward commitments to deliver a quantity of a specified commodity, for example, bushels of wool. However, debts were mostly expressed in sterling and, if this were the case, the common law said that repayment could be made in current English coin irrespective of whether it had been devalued during the tenor of the loan.¹

The other key factor affecting the collateralization of the coinage was fluctuations in the sterling price of bullion. A fall in bullion prices would have left coins with a reduced collateral values, but the Mint's commitment to its posted price reduced this risk. A rise in bullion prices could result in collateral values rising in excess of face values, providing an incentive for coins to be hoarded and melted down. Premiums of collateral value over face value could therefore lead to a scarcity of circulating coin and, in extreme cases, currency crises like the one that occurred in England in the 1690s. Perversely, the risk of this type of crisis had been exacerbated in the 1660s by the introduction of free coinage and milled edges to deter clipping.² There were therefore good reasons for the mint system to have a bias towards periodic devaluations and these devaluations did not necessarily lead to inflation of sterling prices of ordinary commodities.

The traditional response to the currency crisis of the 1690s would have been to implement a step-devaluation, but Locke's argument about the supposedly immutable Mint price of silver prevailed.³ There were fewer qualms about raising the Mint price of gold, which had been increased from around £3 per standard troy ounce to some £3 7s in 1623 and to £3 14s in 1670. Sir Isaac Newton, in his capacity as Master of the Mint, implemented a further rise in 1718 to £3 17s 10 ½ d and a degree of stability returned to the gold market.⁴ The sterling price of gold remained bounded on the downside by the Mint price and, until Suspension in 1797, the sterling price of gold rarely rose by more than 5% over the Mint price. The Mint price for silver had not been raised and its market price remained disengaged from its Mint price, usually at a premium in excess of 5% [slide 4]. As a result silver coin remained scarce and the metallic standard for sterling shifted from silver to gold. The move to a monetary

¹ Fox, 2011

² Mayhew, 2000, p. 96

³ Locke, 1695, ed. 1991; Carey, 2011, pp. 27-40

⁴ Clancy, 1999

standard based on gold was an unintended consequence of Locke's insistence on the fixity of the Mint silver price, rather than a deliberate act of policy.¹

One conclusion to be drawn from the above discussion is that bullion prices were not set in competitive markets, simply reflecting the interaction of mercantile supply and demand. The London Mint acted as an anchor for the bullion market, discouraging bullion price movements significantly *above or below* its posted prices. Strong demand for coin in sterling and other currencies could create a monetary demand for bullion that dominated the international market. The prices set by mints could be significantly in excess of that which would pertain if bullion were used only for plate and artefacts (non-monetary purposes). As a result, mints could become swing users, setting a price range for bullion around their posted mint prices (expressed in terms of a common currency). Mint prices of leading currencies did stabilize the international bullion market for extended periods, but there were episodes when individual currencies were disrupted by the actions of rival mints and by extraneous shocks from the bullion market.

English coins were normally exchanged in domestic markets by tale, rather than by weight, and taxes could usually be paid using coins at face value. This supports the nominalist (or chartalist) view that coins should be valued at their face value, as designated by the state.² However, coins remitted abroad to settle debts in foreign countries would often be re-coined in a foreign currency. In this case they would be treated like bullion and their value would depend on their weight and fineness. Lower weight coins would be worth less. The formal rate of exchange for mint condition specie from different countries would therefore be based on a metalist view and depend on the ratio of gross mint prices in each country, allowing for differences in standards of fineness. Actual exchange rates would depend on the weight of the coin being delivered with an adjustment being made for underweight coins. In many cases a foreign debt might be settled using a bill of exchange thereby avoiding the cost of remitting coin or bullion. The rate of exchange for bills – the dry rate of exchange – could deviate from the specie rate of exchange, but usually by no more than the cost of remitting specie.

The dichotomy between nominalism and metalism is at best an unhelpful one. Specie was a dual value instrument with both a nominal (or face) value and a collateral (or metal) value. Confidence in the face value of coins depended on the credibility of the Mint and its posted price helped to maintain the collateralization of its coins. The Mint's floor for the sterling price of bullion meant that it was doing more than certifying the weight and fineness of its coins; it was not just providing the equivalent of a Goldsmiths' Company mark on plate. Like coins, plate had a collateral value, but it was the Mint that set a floor for the sterling price of that collateral.

Since time immemorial a lot of mumbo-jumbo has been talked about the special qualities of bullion and its role as a monetary standard and inflation hedge. Bullion price deflation was avoided, not because of the intrinsic qualities of certain

¹ Eichengreen, 2008, p. 11

² Keynes, 1930, edition 1971, p. 4

precious metals, but because of the design and operation of the Mint system, in particular its posted prices. Between the 14th C and the 17th C, the price of wheat doubled in terms of bar silver, but because Mint prices were increased threefold, the sterling price of wheat increased six-fold. The level of sterling prices was as much the result of a deliberate monetary policy as it is today.

In principle, there was no reason why corn, or oil, or a composite index of commodities – Marshall’s tabular standard - should not have played a role as a monetary standard.¹ After the Napoleonic wars, proponents of the Corn Laws in Britain argued for a variable import tariff on grain that would stabilize wheat prices at 80 schillings per quarter (10 schillings per bushel), a price below wartime peaks but above pre-war levels. The Corn Laws might have stabilized the agriculture and banking sectors, but free traders, in particular the Anti-Corn Law League, successfully argued against them, and Britain adhered to a gold standard, rather than a corn standard.

After the First World War, the Cunliffe Committee articulated the generally accepted view that Britain should return as soon as possible to the gold standard at its pre-war rate, essentially the one set by Newton two centuries earlier in 1718.² The Edwardian’s commitment to a neo-Lockean fixed-weight bullion standard was in marked contrast to the reliance placed on periodic devaluations of sterling between the 14th C and 17th C. Although the British economic establishment remained committed to the normalcy of the pre-war gold parity, other parity rules were being promoted at the time. Irving Fisher argued for a US dollar monetary unit with a constant purchasing power achieved by ‘...varying, by a fixed rule, the price of gold from the present \$20.67 an ounce...to prevent any real change in our monetary unit...’.³

After the Second World War, the US established a stabilization scheme that successfully pegged its reference price for crude oil, West Texas Intermediate, at around \$3 per barrel from 1946 until 1973. For most of this period, domestic US oil prices were somewhat higher than Middle East prices, encouraging domestic exploration and self-sufficiency. The stability of domestic oil prices promoted and protected bank finance for the sector. Towards the end of this period, Middle Eastern oil increasingly met excess domestic demand over domestic production and Saudi Arabia became a swing provider.⁴ The stability of the dollar price of oil may have helped to stabilize the US and world economy, but oil did not become a reserve asset of banks and a standard for money.

Instead, the world moved to a US dollar standard linked to gold, and thence to a multi-currency system decoupled from gold. As we shall see, fiat systems have struggled to maintain confidence precisely because they are seen to be open to human intervention. Curiously, mythologies about bullion’s intrinsic qualities helped to sustain confidence in bullion-based systems and successful fiat systems have likewise

¹ Alfred Marshall, *The Economist*, 12th March 1887, p. 339;

² Cunliffe, Report, 1918

³ Fisher, 1920, p. 285 and p. 216; Fisher, 1911, p. 332

⁴ Yergin, 2011, p. 185

relied on an element of mythology to sustain themselves. The role of mythology in monetary systems will be considered subsequently, but the role of successor institutions to the Mint need to be considered first, starting with the Bank.

3. Bank of England

Public banks were founded in a number of European financial centres during the 17th C.¹ These banks took a number of guises: some were no more than clubs of borrowers lending to states or municipal governments; others held bullion and specie to back issues of bank (paper or fiat) money.² The foundation of the Bank of England in 1694 and its subsequent growth during the 18th and 19th centuries changed the country's monetary model. Arguably, Britain's monetary model changed twice during this period. Firstly, after Newton's raising of the Mint's gold price in 1718, after which the Bank became the country's primary monetary institution with the Mint playing a secondary role, albeit an important one for the prudential management of the Bank's balance sheet. Secondly, it changed during the second half of the 19th century as the Bank developed functions that we now regard as being those of a central bank: the use of short-term interest rates as a policy variable – the interest rate weapon – and the role of lender in a crisis – lender of last resort (LOLR). In this second phase, the leading joint stock banks (subsequently known as the clearing banks) collectively became the country's primary monetary institution, in terms of being the main provider of money and credit. The Bank held the ring, managing the system as a whole, and became a central bank.

The history of the second phase, the development of the Bank's money market operations and its relationship with the clearing banks from the late 19th C, is well-established and largely uncontroversial.³ The history of the first phase, from the Bank's inception in 1694 until the mid-19th C, needs further elucidation. Histories of the Bank during its early phase tend to focus on Whig politics, the constitutional settlement of 1688 and state finance. Financing the state's wars was particularly important, both Marlborough's wars and the Napoleonic wars.⁴ This paper does not dissent from the above interpretation of the Bank's founding rationale, but it will argue that the Bank's role in the bullion market had important implications for the development of sterling's currency and credit system. These developments were not always foreseen, or intended, by the powers-that-be of the time, and as a result they are not always well documented by contemporaries.

The Bank's charter was not entirely clear about its power to issue notes, but its court of directors took it upon itself to offer notes redeemable against coin. The legend on the notes stated 'Wee promise to pay the Bearer of this Indented Note the summe of [...] pounds on demand' with space for the cashier to write in the number of pounds due.⁵ This was interpreted to mean repayment in current English coin at face value. The note holder was not promised to be repaid with the same specie (i.e. coin of the same weight) which had been paid into the Bank, if, for example, a re-coinage had occurred. During the currency crisis in 1696 the Bank did, exceptionally, issue 'Specie Notes' against delivery of guineas or milled money which were 'repayable

¹ Clapham, 1944, I, p. 2-3

² van Dillen, 1934, 1964

³ Sayers, 1930 & 1976; W.T.C. King, 1935; Tucker, *BEQB*, Autumn 2004

⁴ Clapham, 1944, ed. 1966; Bowen, 1995; Roberts and Kynaston, 1995; Murphy, 2009, p. 39

⁵ Acres, 1931, p. 58

upon demand in the same specie paid in' and these notes received 6% interest.¹ Fortunately for the Bank, it was able to withdraw these expensive notes after a few years.

Before Suspension in 1797, the modal denomination of its notes was £20 and its smallest was £5. Bank notes were not therefore used as pocket-money, or for retail transactions. They were used for mercantile transactions, for example settling amounts due on bills, and they were held by private banks for their own liquidity. During the 1760s, Bank notes in circulation stood at some £5 million and in addition the Bank kept around £100,000 of its own notes in its tills.² (Bank notes issued and held by the Bank itself are netted out in subsequent figures and ratios.) From the 1770s, private banks started to formalise ways of clearing inter-bank payments, resulting from customer transactions, and used Bank notes to settle amounts outstanding between themselves.³ Bank notes, rather than specie or bullion, became customarily acceptable in commerce as an asset of final settlement many decades before they became legal tender in 1833, or the Bank became a near-monopoly issuer in 1844.⁴

The Bank also took deposits and issued post bills. The latter were notes payable a specified number of days later (usually 3 or 7 days) providing some protection from loss in transit at the hands of highwaymen.⁵ Post bills (a liability of the Bank) should not be confused with bills of exchange (often an asset of the Bank). Henceforth, references to deposits will include post bills unless otherwise specified. Although the Currency School subsequently focused attention on Bank notes in circulation as the driver of the country's paper currency, deposits at the Bank could also be treated being part of its monetary liabilities. For most of the 18th century, deposits comprised between 30% and 50% of the Bank's (broadly defined) monetary liabilities, Bank notes being the remainder. To meet its contractual obligation to convert its notes into current coin at par, the Bank held till money (coin) and bullion reserves, available for minting, as backing for its notes and deposits. During the 18th century, its coin and bullion holdings tended to vary between £2 and £8 million; the proportion of coin and bullion backing its notes and deposits normally ranged between 20% and 60%. The ratio of coin and bullion to notes alone was more volatile, ranging between 20% and 110%.⁶ The Bank was therefore operating as a fractional reserve bank.

London's bullion market

The ability of the Bank's customers to redeem notes for current English coin at par did not necessarily mean that foreign coin or bullion could be acquired in the London market at a fixed sterling price, but there was a reasonably close alignment of

¹ Acres, 1931, p. 72

² *BEQB*, June 1967, Appendix

³ Matthews, 1921

⁴ Tucker, *BEQB*, Autumn 2004, p. 360

⁵ Clapham, 1944, I, p. 144

⁶ *BEQB*, June 1967, Appendix

sterling prices for bullion and specie. However, the Bank operating in tandem with the Mint meant that a degree of alignment of sterling prices was achieved between the three assets – bank paper, coin and bullion – from 1718. Whereas the Mint's throughput was managed via the Mint price, the Bank had to use a different lever to manage its balance sheet and the lever in question came to be its official lending rate, Bank Rate, and related rates. The Bank's balance sheet was essentially asset, rather than liability, driven because it did not normally pay interest on its notes or deposits. If the bullion backing of its notes fell too low, the Bank would have to constrain its non-bullion assets by buying fewer bills and reducing its advances (loans).

The Bank also acted as custodian of its customers' coin and bullion. Traditionally, the Mint had held bullion to the account of merchants, but in 1640 Charles I had impounded merchants' bullion in the Mint in an attempt to raise finance for an army to fight a Scottish Rebellion.¹ Memories of the 'Mint Stop' may have subsequently encouraged bullion holders to look for a custodian that was not a direct organ of the state. Records, for the period 1770-1809, suggest that the Bank's storage facilities gave it a custodial capacity for coin and bullion of up to £50 million.² It is possible that its custodial holdings might have normally been around half this figure; in addition, its own holdings came to 20% of its custodial capacity. In view of the Bank's role as a proprietary trader of bullion, and an agency trader on behalf of its custody clients, it is not surprising that the London bullion market operated under the aegis of the Bank. However, the Bank did not hold a majority of English bullion during the 18th C.

Casson and Mayhew have estimated figures for the stock of English coin outstanding from the 13th C until 1750. For the period between 1715 and 1750, they estimate a relatively stable stock of specie of around £3 million of silver coin and £13 million of gold coin, a total specie stock of £16 million (including Bank holdings of coin).³ Bank holdings of bullion (ex-coin) stood at around £4 million for much of this period and it is possible that private holdings of coin and bullion in Bank custody stood at some £20 million. These bullion holdings could be regarded as a form of quasi-money in view of their convertibility into specie at the Mint's posted price. The Bank's monetary liabilities, notes and deposits, stood at around £8 million, but a small part of this was backed by coin, which should be netted off to avoid double counting.⁴ Broadly speaking, specie of £16 million plus bank money of £8 million (less coin held by Bank) gives broadly defined money of some £24 million. From the middle of the 18th C, the number of note-issuing country banks increased, but the Bank remained the dominant issuer.⁵ Overall, bank money is likely to have comprised less than half of total money.

¹ Mayhew, 2000, p. 74

² Bank of England Archive, M2/52 & 53: Chests up to No. 134; up to £1/2 m per chest, £1,000 coin per bag

³ Casson and Mayhew, 2012

⁴ *BEQB*, June 1967, Appendix

⁵ Pressnell, 1956, Table X, p. 160

The debate between the Currency and Banking schools in the early 19th C centred on the reserve backing of the note issue and the Bank Charter Act 1844 (1844 Act) placed a statutory obligation on the Bank to back its note issue with coin and bullion, save for a fixed fiduciary issue. The 1844 Act also limited note issuance by other banks.¹ The Bank's larger bullion holdings strengthened its liquidity position, but increased its exposure to losses in the event that the sterling price of its bullion and foreign coins fell. These assets were not matched by bullion liabilities, but funded by notes and other sterling denominated liabilities. Fortunately, the Mint's posted price set a floor price for bullion and the Bank was therefore able to hold much of its reserves in bar gold and silver, and be protected from mismatch risk. Without the Mint's commitment to a posted price for gold, the Bank could have avoided a mismatch only by holding English (sterling) coin against its (sterling) note liabilities.

During the Revolutionary and Napoleonic wars, convertibility of Bank notes into coin was suspended between 1797 and 1821 (Suspension or Restriction period). The sterling (paper money) price of foreign coin and bullion rose significantly, although the price of grain rose even more [slide 5]. The Mint price (for coin against bullion) remained notionally fixed, but delivery of bullion to the Mint for coinage was low and the circulation of paper money (Bank and bank notes) increased. After the war, gold sovereigns with a face value of £1 were issued from 1816. These coins comprised 0.25682 standard troy ounces of gold and reaffirmed the Mint price for gold of £3 17s 10 ½ d per standard troy ounce (£3 17s 10 ½ d = 1/0.25682) set by Newton in 1718. In broad terms, this set a floor for the sterling price of gold bullion. Convertibility at par of Bank notes into coin was re-established in 1821 (Resumption) thereby re-establishing a fixed sterling price of English coin against paper money.

The 1844 Act imposed a statutory duty on the Bank to offer notes for bar gold at the rate of £3 17s 9d per standard troy ounce. The 1844 Act split the Bank into Issue and Banking Department and the former was obliged to issue notes against gold bullion at the statutory price. Although the Bank was offering 1½ d less than the Mint, it supplied coin immediately from its vaults, whereas minting involved weeks of delay. The Bank's payment in notes tended to be more convenient and the Bank superseded the Mint as the primary recipient of bullion from the market. Bullion was held in the Bank's vaults and delivered to the Mint for coinage when the Bank needed to replenish its stocks of coin (till money).² In effect, the Bank was offering the London market a bid-offer spread for standard bar gold of £3 17s 9d to 10 ½ d. If the sterling price of gold was in danger of falling below the bid price, the Bank's note issuance and its balance sheet would expand. The reverse would happen if the offer price were tested. Under the gold standard these two posted prices (gold points) came to be regarded as immutable, and a totem of sound money and financial rectitude.

From 1816, the Mint ceased to post a fixed price at which it would offer coin against bar silver.³ Silver coins continued to circulate and new ones were minted, but the Mint bought bar silver at prices determined by the market. The price of bar silver

¹ Sayers, 1976, p. 8

² Hankey, 1867, pp. 2-5

³ Challis, 1992, p. 480

immediately fell below the old Mint price for silver, but by only a modest amount. Later in the 19th C the price of silver fell by half as more countries moved to the gold standard and monetary demand for silver declined [slide 6]. The fall in the silver price illustrates the dramatic effect of withdrawing the stabilization mechanism offered by mints worldwide. The Bank held gold rather than silver reserves, save for silver till money required for customers, and after 1816 the Bank would have been exposed to mismatch risk on its holdings of bar silver and foreign silver coin. As the price of bar silver declined, the fiduciary (un-backed) element of English silver coin increased. The Mint did not offset the declining price of silver by increasing the silver content of its coins of a given face value, or by reducing their face value (reducing the coin). These coins nevertheless continued to be exchanged by tale at their face value.

For completeness, we should note what became of bullion-reserve banking since the late 19th C. In the decades before the First World War, the Bank was joined by the clearing banks as holders of bullion, but reserves were centralised at the Bank in 1919 and then moved to the Government's Exchange Equalisation Account (EEA) in 1934. The Bank had covertly held some US dollar reserves (in Issue Department) since the 1920s and these were likewise centralised in the EEA. After the Second World War, the US authorities pegged the dollar price of gold at US\$35 per fine ounce and most other western currencies, including sterling, were pegged to the US dollar under the Bretton Woods system. The dollar standard started to come under pressure in the late 1960s and the dollar was forced off gold in 1971.¹ The US authorities declined to follow the medieval and early modern expedient of devaluing against gold and resetting the standard at a higher dollar price of gold. The volatility of the gold price since the collapse of Bretton Woods in 1971 illustrates the dramatic effect of withdrawing this stabilization mechanism [slides 7 & 8].

Interest rate policy

Another important aspect of bullion-reserve banking and its successors is the evolving role of the interest rate weapon. Interest rate policy became possible in Britain because of the Bank's combined role as bankers' banker and Government banker. As we have seen, final settlement of inter-bank indebtedness, after netting of payments between banks, was made using Bank notes from the late 18th C.² By the mid-19th C the main joint-stock banks (subsequently clearing banks) had been admitted to the Clearing House and since 1854 inter-bank indebtedness has been settled daily by transfers of bankers' balances (deposits) at the Bank (rather than notes).³

The other emerging feature of the London money market was the ebb-and-flow of liquidity in-and-out of the market, resulting from the seasonal flow of net payments to-and-from the Exchequer which increasingly held its balances at the Bank. Aggregate bankers' balances at the Bank followed a distinct pattern over the year reflecting the seasonal pattern of tax payments into the Exchequer, and payments out

¹ Eichengreen, 2008, pp. 126-133

² Matthews, 1921, p. xx

³ Matthews, 1921

of the Exchequer to cover government spending and dividends (interest) on consols (consolidated government debt).¹ Net payments out of the Exchequer would tend to increase aggregate bankers' balances, and vice versa.

After the Napoleonic wars, outstanding government debt was high and quarterly interest payments on consols would flood the money market with liquidity and increase bankers' balances. Between the quarterly interest payments, net payments to the Exchequer would tend to reduce aggregate banker's balances. Between 1830 and 1910 seasonal fluctuations in bankers' balance were reduced dramatically: their coefficient of variation fell from 50% to 10% [slide 9].² The reduced variability of bankers' balances partly reflected the reduced significance of the national debt and its dividend (interest) payments, but it also reflected the increasingly regular provision of market assistance by the Bank. Bankers' balances at the Bank increased because the major joint stock (clearing) banks grew rapidly in the second half of the 19th C and their combined balance sheets exceeded that of the Bank. However, the Bank's deposit taking from non-bank customers declined significantly: non-bank deposits as a percentage of total deposits declined from around 90% in 1830 to 50% in 1910.³ The clearing banks were becoming commercially more significant than the Bank and, in its turn, the Bank was evolving into a central bank.

By the late 19th C the Bank's balance sheet had become a mechanism for recycling seasonal Exchequer flows. When the money market was short, due to net payments into the Exchequer, the Bank would acquire bills for cash (crediting the consideration to bankers' balances at the Bank), and grant short-term loans secured on bills. When net flows left the Exchequer, the Bank would sell bills for cash, and reduce its short-term loans secured on bills. Over time, the Bank directed its secured lending to the market via the discount houses and they became key intermediaries between the Bank and the market. The combination of being bankers' banker and the Government's banker meant that the Bank could set the rate of interest it charged to the market when it was short. It became apparent that the Bank could keep the market short at will by selling more bills for cash and then alleviate its own shortage by lending funds back to the market at Bank Rate, or a closely related rate – the classical system.⁴ The clearing banks aligned their base rates on Bank Rate, and thence the Bank determined short-term interest rates generally. This overall approach to short-term interest rate management remains broadly in place today, although the institutional arrangements have changed over time.⁵ Dow and Saville have questioned whether the banks needed to follow the Bank's lead on rates so slavishly, but accepted that this is what happened historically.⁶

The interest rate weapon has been with us for nigh on two centuries, but its detailed operation and the purposes to which it has been directed have evolved over

¹ Sayers, 1936, p. 24-5

² *BEQB*, June 1967, Appendix

³ *BEQB*, June 1967, Appendix

⁴ Sayers, 1930, pp. 19, 45, 49; Ogden, 1991

⁵ Bank of England, March 1963; Bank of England, March 1982, pp. 86-94

⁶ Dow and Saville, 1988, pp. 132-7

time. In the 18th and early 19th C, the Bank's policy rates (Bank Rate and the Bank's discount rates) were varied to manage its own balance sheet, notably its proportion of bullion (ratio of coin and bullion to notes and deposits). During the 19th C the Bank made its policy rates effective throughout the London money market using the classical system. Rates were varied to manage gold flows into London with a view to keeping sterling within its intervention points under the gold standard. Confidence in sterling's position in the system was such that a modest interest rate differential in favour of sterling would be sufficient to secure an influx of gold into London. The extent to which this confidence was based on reality or mythology is a moot point.

Prior to 1914, Bank Rate usually stood at a premium to the rate on 3-month prime bank bills – effectively the market reference rate - when conditions were calm. The Bank would conduct open market operations (OMOs) at irregular intervals and reduce market liquidity, forcing market rates up to Bank Rate, when external pressures required it to do so. Bank Rate normally ranged between 2% and 5% and, *in extremis*, it could be raised to 7%.¹ After the First World War, the banks could sell Treasury bills to the authorities at the tap rate for Treasury bills and market rates were aligned on the tap rate, rather than Bank Rate.² Bank Rate and the tap rate were raised in response to post-war inflationary pressures and funding needs, and from 1921 Bank Rate regained its position as the policy rate for short-term interest rates. From 1932 to 1952, the Bank allowed market rates to remain well below Bank Rate, which stood at its then minimum rate of 2%. For most of this period, 3-month prime bank bill rates stood at around ½% and during the war they were kept at 1%.³

From 1952, the interest rate weapon was deployed to defend sterling's dollar parity in the Bretton Woods system. If sterling came under selling pressure, the EEA would offer US dollars and other currencies against sterling, but its foreign currency reserves were limited. The authorities would therefore raise Bank Rate and short rates generally with a view to increasing the (uncovered) interest differential between sterling and other currencies. Holders of sterling would benefit from an improved carry yield compared with other currencies which should have compensated for the risk of a capital loss on devaluation. To this end, Bank Rate was raised to the emergency level of 7% in 1957, 1961, 1964-5 and 1966. In 1967-9, it was raised to the then unprecedented level of 8%.⁴ The same technique was used during sterling's sojourn in the Exchange Rate Mechanism (ERM) between 1989 and 1992, but massive foreign exchange intervention and interest rates of 15% were insufficient to prevent sterling's ignominious exit.

From 1976 to 1985 formal targets were set for monetary growth, rather than an exchange rate band. The interest rate weapon was nevertheless ascribed an important role for the purposes of monetary control. One of the reasons suggested for adopting a monetary target was that it would counter an institutional bias against raising interest rates quickly and decisively to counter inflationary pressures. There is

¹ Sayers, 1930

² Howson, 1975; Dimsdale, 1981, p. 307

³ Capie and Webber, 1995, Table III (10) c, p. 502

⁴ Capie and Webber, 1995, Table III (10) c, p. 502

evidence that it did strengthen the then Chancellor of the Exchequer Denis Healey's hand on the need to raise rates in 1976.¹ However, the authorities were not blessed with a workable econometric model for forecasting the effect of interest rates on the targeted monetary aggregate, broad money (M3 and then £M3). Flow-of-funds methods were used instead, in particular an accounting identity equating the change in broad money (M3/£M3) to the public sector borrowing requirement (PSBR), less government funding from the non-bank private sector, plus bank lending, less externals – the credit counterparts of money. Although interest rates did not necessarily affect bank lending much in the short run, a more aggressive interest rate policy could improve government funding.²

By the early 1980s, Government funding had ceased to be a matter of concern to the market and the authorities started to overfund – sell more government debt to the non-banks than required to cover the PSBR - in an attempt to keep £M3 on target despite rampant growth in bank lending. The interest rate weapon had proved insufficient for controlling the latter.³ The overfunding policy highlighted the question of whether £M3 was the sole relevant indicator of monetary policy, or whether the makeup of its counterparts mattered as well. It was well known to Bank forecasters that there were offsets between counterparts in the short term: a rise in the PSBR could depress bank lending and gilt sales could be associated with external inflows.⁴ In the short term the variability of the counterparts tended to be greater than that of £M3: a shock to one counterpart was partially absorbed by others. At the time, there was a lively discussion on whether overfunding exacerbated bank lending growth and whether it was a suitable response anyway.⁵

Standing back from all the detail, it has to be said that the interest rate weapon did not live up to expectations as a tool for controlling bank lending and £M3 during the 1970s/80s and it seemed to have become a spent force when it came to the ERM exit in 1992. Surprisingly, interest rate policy was to gain a new role under the inflation targeting regime, but before considering this new departure we should pause to note the demise of the discount houses and the end of an era in money market history.

Between 1996 and 1998 the Bank orchestrated the creation of a market for the sale and repurchase (repo) of gilts and started to use it for its own money market operations instead of the dwindling market for eligible bank bills. The Bank included banks and securities dealers as counterparties for its open market operations and the discount houses lost their special status.⁶

¹ Hotson, 2010, pp. 11-12

² Hotson, 2010, pp. 6-7

³ Goodhart and Hotson, 1984

⁴ *BEQB*, June 1979, p. 123 (discussion of offsets and special factors); Bank of England Archive, 5A175/10, Lesley Smith note 8/6/1978, Dow comment 12/6/1978, David Reid 15/6/1978

⁵ Flemming, in Mizen, [1 or 2?] 2003, p. 126

⁶ Tucker, *BEQB*, Autumn 2004, p. 377

Between 1993 and 2007 interest rate policy gained a magical reputation for delivering stable inflation and real growth. The transmission mechanism from short-term interest rates to output and inflation was presented with great authority: it was argued that a rise in nominal policy rates resulted in a rise in real interest rates because of price and wage stickiness; a rise in real rates was expected to depress investment and expenditure on consumer durables and raise the real exchange rate, depressing inflation.¹ Actually, the rate-setters controlled overnight money market rates and the MPC considered policy adjustments monthly. It was recognized that ultra-short rates had little impact on the wider economy, but the MPC could affect expectations about longer term rates if the market had confidence it would stick to its stated objective, the inflation target. The crucial part of the jigsaw was market confidence about the policy regime which generated changes in *expected* (future) real interest rates and exchange rates. In 2002, confidence in the MPC was at a peak and expectations about rates, as embodied in forward yield curves, adjusted as the economic outlook changed without the need for policy rates to change by much: the market was doing the Bank's work for it.² For a few halcyon years, confidence in the inflation target rivalled the market's confidence in sterling's position in the pre-1914 gold standard.

Lender of last resort

Although the Bank's pivotal role on the London money market from the late 19th C gave it the opportunity to set short-term interest rates, it also gave rise to a problem of counterparty risk. The Bank could find itself lending significant sums to the market to offset a cash shortage arising from 'autonomous factors', for example, net payments to the Exchequer, or increased demand for notes and coin.³ The Bank had a strong bargaining position and wished to alleviate market shortages either by acquiring short dated assets of high standing, or by lending against security of equally high quality and liquidity. The advent of Treasury bills in 1877 provided one such asset, but during this period it did not really address the Bank's need to alleviate shortages by lending to the banks.⁴ The Bank's solution was to develop quality standards for bills of exchange that it would accept for rediscount (eligible bills).⁵ To be eligible, the Bank required that a bill be accepted by an accepting house, endorsed by a discount house and met certain 'clausings' requirements. The last requirement was designed to ensure that the borrowing was self-liquidating, rather than longer-term accommodation, requiring refinancing at the end of the bill's tenor. Eligible bills were therefore triple-name paper where the Bank would have recourse to the discount house, the accepting house and ultimately the drawer of the bill.⁶

Whereas the Bank was willing to rediscount eligible bills from reputable practitioners in the market, be they banks or brokers, it directed its lending through

¹ MPC, *BEQB*, May 1999, pp. 161-70; Tucker, *BEQB*, Autumn 2004, p. 359

² King, Mais Lecture, *BEQB*, Summer 2005, pp. 228-9

³ Tucker, 2004, p. 367

⁴ Clapham, volume 2, 1797-1914, 1966, pp. 307-8

⁵ Sayers, 1976, p. 33-45

⁶ Tucker, 2004, p. 377

the discount market. Prior to the 1890s, the Bank had tried a range of lending and rediscounting policies including ones where it refused to deal with certain banks that had incurred its displeasure, for example, joint-stock banks which, in the Bank's view, had over-issued notes during the 1830s.¹ From the 1890s, the discount houses became an inner sanctum of the London money market, effectively under the oversight of the Principal of Discount Office at the Bank, and the intermediaries through which the Bank lent to the market. Even so, the Bank did not rely on the name of a discount house alone and insisted that its loans to the houses be secured against eligible bills, Treasury bills or gilt-edged stock (eligible collateral in modern parlance). The point to note is that the market did not spontaneously create high quality assets for the Bank to buy; the Bank had to use its bargaining position in the market and orchestrate the creation of the eligible bill market. This brings us to the Bank's role as lender of last resort (LOLR)

Modern policy on LOLR is shrouded in mystery and there remains a mythology about its past, reflecting misunderstandings about its history. The statutory provisions of the 1844 Act requiring that the note issue be backed by bullion reflected the Currency School's victory in the debate with the Banking School. However, the backing of the note issue proved insufficient to avoid periodic banking crises in 1847, 1857 and 1866, when the Government temporarily suspended note convertibility.² This highlighted the need to clarify the Bank's responsibilities for maintaining stability in the banking and bill markets, and prompted Bagehot to publish his famous dicta on the Bank's role as LOLR.³

Writing in 1873, Bagehot enjoined the Bank to use its reserves during a banking panic to lend 'freely and vigorously', but to do so at a high rate of interest and to ensure that all its lending be secured against 'good banking securities'.⁴ Bagehot took it for granted that the banking system held a ready supply of creditworthy securities available for pledging against Bank loans and as a result 'no advances need be made by which the Bank will ultimately lose'.⁵ Bagehot's proposals were not of his own creation and they can be traced back at least as far as Henry Thornton, a banker writing in 1802.⁶ However, Bagehot was an effective communicator and he helped to establish a consensus around a doctrine of money market management that persisted from around 1870 until 1970.⁷

Bagehot's presumption that there would always be good banking securities to provide security against loans from the Bank during times of crisis was broadly justified at the time. Late Victorian banks did not normally make advances (i.e. loans) of more than 60% of their deposits and the balance of around 40% was held in liquid and good quality assets.⁸ This had two important implications for the role of the Bank as LOLR.

¹ Collins, 1988, p. 182

² Collins, 1988, p. 178

³ King, 1935, pp. 286-7

⁴ Bagehot, 1873, 14th edition 1915, pp. 187-8

⁵ Bagehot, 1873, 14th edition 1915, pp. 187-8

⁶ Thornton, 1802

⁷ Collins, 1988, pp. 170, 188-193

⁸ Goodhart, 1972, p. 158

Firstly, the Bank should not have to make judgements about the solvency or otherwise of LOLR borrowers since it could rely on securities pledged against its loans and, secondly, the Bank could act as LOLR using its own balance sheet and without recourse to financial support from the state and taxpayer.¹ In effect, the Bank provided a recycling mechanism at times of panic that gave the public free reign to exchange their bank deposits for Bank notes and coins of the realm. This was achieved by allowing the banks to either sell sound assets to the Bank, or borrow from the Bank secured against sound assets. The balance sheet of the Bank would therefore be expected to expand during periods of low confidence and revert to a more normal scale, relative to the banking sector as a whole, when confidence returned.

In many respects it may be better to avoid use of the term LOLR and instead specify various types of assistance provided by the Bank to the market as a whole, or to individual banks. In the absence of a crisis, the Bank undertook routine open market operations (OMOs), lent to alleviate shortages in the market and set interest rates. This was not what Bagehot was talking about in his book of 1873; he was addressing crisis situations where, for example, a shock disrupted the bill market and the Bank stood ready to offer banks liquidity by buying their (temporarily illiquid) bills for cash. By fostering a market for bills of good credit quality – eligible bills – the Bank was protecting itself against having to buy doubtful bills in a crisis, although it has to be said that eligibility criteria might be relaxed in a crisis. It is not precisely clear why Bagehot suggested that market assistance in a crisis should be at a high price (in terms of interest charged), but he knew that the Bank tended to raise rates in a crisis to defend the exchanges (sterling gold price) and it is possible that he was mindful of what we now call moral hazard problems. However, the key objectives of Bank assistance in a crisis were to prevent liquidity drying up, to prevent interest rates rising to prohibitive levels, and to ensure that bank assets remained saleable and their value did not collapse.

Bagehot did not discuss situations where the Bank might orchestrate a lifeboat for a stricken bank, like it did for Barings in 1890. In this instance, Barings' problems were threatening London's reputation and more was needed than liquidity. However, high profile lifeboat operations for particular banks or sectors were rare events in the late 19th and 20th C. The London market was resilient in the face of the US crisis of 1907. It did freeze up in 1914 and the accepting houses had to be supported, but what would one expect at the onset of the Great War? The 1931 crisis required standby arrangements going beyond orthodox Bagehotian assistance in the face of the banking crisis in Germany and central Europe. It was also a major factor in the decision to decouple sterling from the gold standard.² The 1973/4 fringe bank crisis required a lifeboat orchestrated by the Bank and the clearers.³

In the modern context, the most obvious casualty of reduced bank holdings of high quality and resilient liquid assets is Bagehot's presumption that 'no advances

¹ Goodhart, 1999, pp. 7-9, 19-27

² Kunz, 1987, p. 100

³ Reid, 1982

need be made by which the Bank will ultimately lose.¹ Inadequately collateralised bailouts of even middle-sized institutions have forced the Bank to seek financial guarantees from the UK Government, one of the more recent examples being the Northern Rock rescue.² Rather than allow failed institutions to contract in an orderly manner by ceding deposits and assets, it is now standard practice for governments to assist in their recapitalisation. It has become routine for governments to underwrite failed banks' capital raisings and take an equity stake with a view to resale back to the private sector once normalcy has returned, a practice known as the 'Scandinavian model' after the rescues there during the 1990s.³

The post-Bagehotean LOLR system has been rationalized by drawing a distinction between banks that are said to be solvent, but not liquid, and others that are insolvent (and illiquid). The former are considered worthy of rescue, the latter not. However, this approach to rescue policy has faced a number of problems. As a matter of law, UK statutes define insolvency in terms of not being able to meet liabilities 'as they fall due' without regard to the notion of being viable but illiquid.⁴ As a matter of practice, central banks are rarely graced with a situation where they are confident that an illiquid bank is viable: applicants for LOLR support are usually there because no one else will lend to them and without official support they would be insolvent in the legal sense. Even in cases where a supplicant bank appears to have positive net worth at the time of rescue, there is often a suspicion that the rescue process could lead to an erosion of value and, in the end, the authorities could be left with a shortfall.

Recent literature on LOLR characterises it as liquidity insurance and there has been an extended debate about the problems of moral hazard, i.e. the risk that providing LOLR support encourages imprudent behaviour.⁵ Concerns over moral hazard have led the Bank to suggest that its relatively new Discount Window Facility (DWF) for individual banks facing liquidity or funding problems should 'exclude...any bank whose solvency or viability is seriously in question'.⁶ However, the Bank's professed seriousness about lending only to viable banks remains overshadowed by the debacle of 2007/8 when the viability test was overridden by fears that the failure of major institutions would have dire systemic consequences. Even if memories fade and the Bank convinces the market that it is serious about the viability test (most of the time), automatic and blame-free access to the DWF might encourage imprudent liquidity or funding behaviour. For some reason, concerns about dysfunctional incentives tend to focus on imprudent behaviour leading to capital losses, whereas imprudence leading to liquidity problems can be equally germane, as exemplified by Northern Rock.

¹ Bagehot, 1873, pp. 187-8

² Bank of England, *Financial Stability Report*, October 2007, pp. 10-12; *Annual Report 2008*, pp. 21-22

³ Haldane, 2009, p. 4

⁴ s123(1)(e) Insolvency Act 1986; Mr. Justice Briggs in *Cheyne Finance Plc (in receivership)* [2007] EWHC 2402 (Ch)

⁵ Clews, Roger, Chris Salmon, Olaf Weeken, 2010 Q4, pp. 293-4

⁶ Clews, Salmon, Weeken, 2010 Q4, p. 299

The Bank's review of its 'sterling market framework', following the 2007/8 crisis, has shied away from root-and-branch reform of the money market. Instead, it has concentrated on refining its market operations to alleviate systemic (i.e. market-wide) liquidity pressures and its Discount Window Facility (DWF) to address idiosyncratic pressures (e.g. funding problems of individual banks).¹ Since traditionally defined liquidity ratios are so low by historical standards, the Bank is proposing to widen significantly the definition of collateral acceptable for LOLR purposes. Acceptable collateral is now called extended collateral and is defined so broadly that asset backed securities (ABS) and un-securitised loan portfolios can now qualify.² The Bank accepts that it no longer requires that extended collateral be backed by an undoubted name: in this benighted age it appears that virtually no names are undoubted! Instead loans must be over-collateralised by a variable margin that depends on the asset's credit standing. The margin, known as a haircut, is deducted from the value of the collateral to determine the amount that can be borrowed. Many of the newly accepted forms of extended collateral are not valued in open markets and therefore have to be valued on a mark-to-model basis.³

In essence, the new approach will consider almost any asset as having the potential to be treated as extended collateral, but the haircut will be deep for low quality assets. In principle, it should be possible to calculate each bank's ability to borrow against extended collateral as a percentage of its total assets, the percentage being unity minus the blended percentage haircut on all its assets. It can be argued that extended collateral, subject to haircuts, is a modern version of Bagehot's reliance on lending secured against 'good banking securities', but it is not clear that the two are equivalent. Recent experience suggests that many modern banking assets lack resilience in a crisis.

All this gives one pause for thought. Prior to 1970, the Bank was quite clear that 'the responsibilities of the Bank of England include the management of the money market.'⁴ Officials were preoccupied to the point of obsession about the maintenance of orderly and liquid markets.⁵ Since then, the balance of power appears to have shifted in favour of practitioners in the international wholesale and inter-bank markets. The Bank seems content to tailor its definition of extended collateral to accommodate the requirements of the current market, even though it has been far from trouble-free in recent years. Treating LOLR facilities as a form of insurance is in danger of distracting attention from the need to address the market's liquidity and counterparty risks. This is in marked contrast to the Bank's approach between 1890 and 1970 when it sought to mould the market to meet certain precepts of what it believed was required for the market to be orderly and liquid.⁶

¹ Clews, Salmon, Weeken, 2010, pp. 299-300

² *BEQB*, Q4 2010, p. 251

³ *BEQB*, Q2 2010, pp. 94-103

⁴ Bank of England, 'The management of money day by day', *BEQB*, March 1963

⁵ Capie, 2010, p. 82

⁶ *BEQB*, December 1961, pp. 26-31; *BEQB*, June 1967, pp. 144-156

4. Clearing banks and building societies

The clearing bank model was the archetype of a banking system made resilient by high levels of liquid asset holdings. This model continued to operate until the late 1970s and early 1980s. The clearers' balance sheets were eerily reminiscent of the Bank's balance sheet of the late 19th C, without the Bank's bullion holdings. The asset side of the clearers' balance sheets were roughly split three ways: a third in Government debt, including gilt-edged stock holdings; a third in bank bills and related money market instruments; and a third in short-term advances to businesses and persons, commonly overdrafts. The clearers held assets of high quality and low credit risk; they maintained high levels of liquidity and negligible levels of inter-bank exposure.¹ Much of their liquidity was placed at short notice with the London discount market and in many respects they out-sourced their treasury operations to the discount houses.² The clearers borrowed short and lent short, thereby maintaining low levels of maturity mismatch; and the interest rates on their assets and liabilities were broadly matched (basis and duration matching). The clearing bank model was a modern regulator's dream, albeit not so good for those who favour a *credit mobilier* model in which banks accept long-term commitments, and equity or quasi-equity risk to promote industrial development.³

Competition and credit control

The clearing bank model in the UK was dismantled in three phases in the 1970s and 1980s. The first phase of deregulation started in 1971 with a collection of reforms known as 'Competition and Credit Control' (CCC). The 'Competition' part of CCC entailed the abolition of direct controls on lending and an end to restrictions on the clearers' use of inter-bank and other wholesale funding.⁴ The 'Credit Control' part of CCC was a commitment to use the interest rate weapon as a tool to regulate credit flows and to place greater reliance on the market to allocate credit, rather than rely on quantitative and qualitative controls. The clearers had lobbied for the UK banking market to follow the US, where regulatory changes in the 1960s had allowed US banks to compete actively for lending and to fund themselves in wholesale markets. Under this model, banks' balance sheets were driven from the asset side – lending managers were given greater prominence – and treasury departments became liability managers tapping the wholesale markets for funds. In contrast, the clearing banks had been liability driven, extending their branch coverage to build up their deposit base; their treasury operations had been out-sourced to the discount houses; and they had exhibited very limited appetite to build margin by lending to lesser credits.

CCC came to grief within two years when direct controls were re-imposed after a credit splurge that had not been controlled by the interest rate weapon.⁵ The problem had been exacerbated by a commercial property boom-and-bust of the early

¹ Goodhart, 2004, p. 31

² Tucker, Autumn 2004, p. 363, footnote 1

³ Collins, 2003

⁴ Bank of England, 1984, pp. 31-44

⁵ Bank of England, March 1982, pp. 74-85

1970s. The clearers had expanded their lending, in part by lending for property development, via secondary banks, sometimes known as ‘fringe’ banks: the clearers made inter-bank loans to secondary banks that in turn funded speculative property developments.¹ When the economy turned in 1973, the commercial property market fell, some fringe banks were rendered insolvent, most faced funding problems and the clearers were left with bad debts.² The re-imposed system of direct controls on balance sheets remained in place until the second phase of deregulation in 1979/80.³ The absence of domestic growth during the 1970s led the clearers to look overseas for growth, both to euro-market lending, notably petro-dollar recycling, and foreign acquisitions. As a result, the clearers continued to tap international wholesale markets for (non-sterling) funding and the shift to US-style asset-driven banking continued, albeit in overseas markets.

Home finance

The second phase of deregulation started with the election of the Thatcher Government in 1979. The strength of the sterling exchange rate - reflective of the UK’s North Sea oil and gas reserves and production - encouraged the Government to remove exchange controls speedily. This meant that UK residents could deposit funds with, and borrow from, banks based outside the UK. These banks would not be subject to UK controls and as a result UK residents (including companies) could circumvent controls on UK banks by going offshore – offshore disintermediation. The scheme for placing direct controls on UK banks’ balance sheets was therefore abolished as well, opening the door to an expansion of domestic bank intermediation. The clearers started to look more favourably at domestic expansion as many of their excursions overseas started to look ill-judged, particularly when the Latin American debt crisis broke in 1982.

Deregulation at home raised the prospect of domestic growth on the retail side of the business, notably personal lending. Home finance had been the preserve of building societies (mutuals which specialize in retail savings and home loans). The Building Societies Association (BSA) had operated a cartel whereby the politically sensitive mortgage lending rate was kept low relative to wholesale market rates and building society savings rates were likewise set at an even lower level relative to wholesale rates. Low savings rates did not undermine the building society sector’s dominance of the short-term retail savings market because regular saving with a building society was often a precondition for a mortgage loan. Customers tolerated a derisory rate of interest on the understanding that they should subsequently qualify for a loan. The clearing banks agreed not to encroach on the savings flow of the building societies, and government savings schemes (National Savings) were likewise managed not to take too much market share.

Building societies operated in a looking-glass world when compared with modern retail banking. The BSA cartel limited price competition between societies

¹ Capie, 2010, p. 524; Moran, 1986

² Reid, 1982, p. 123

³ Bank of England, *BEQB*, March 1982

and sustained a healthy gross margin between retail saving and lending rates. More ambitious societies competed against other societies and the banks by extending their high street coverage through branches and agencies, and by building brand and product awareness through regional TV advertising. Building society balance sheets were driven by their ability to attract retail savings; their wholesale funding being limited by law and by the fact that wholesale borrowing cost more than the BSA-approved mortgage lending rate, which was sub-LIBOR. There was therefore little scope for societies to undertake profitable mortgage lending by tapping wholesale markets. On the asset side of their balance sheets, societies earned more on their liquid assets (LIBOR-related rates), than on their mortgage lending (sub-LIBOR rates). For this reason, the building societies regulator, the Registrar of Friendly Societies, set a 30% maximum for liquidity holdings as well as a 12% minimum. A few societies maximised their profitability by holding close to the maximum level of liquidity allowed.

Building societies regulated their mortgage lending depending on their inflow of retail savings. From time-to-time a shortfall of savings meant societies had to ration their mortgage lending, making creditworthy mortgage borrowers wait some months in a queue until they could be granted a loan. One advantage of the system was that house price rises tended to be kept within certain bounds because excessive rises were choked off by mortgage rationing. When inflows were plentiful, societies lent more, but they did not start to compete on price (lowering margins), or accept lower quality borrowers. If societies experienced a surplus of inflows over their lending commitments, they would build up their (more profitable) liquidity and, if necessary, curb their inflows (special offers). As a result, mortgage lending flows were stabilized and house price inflation was not exacerbated by aggressive lending. Conservative lending criteria and few sustained falls in house prices meant that loan quality remained high and loan losses were minute. From time-to-time, smaller societies would encounter problems, usually weak management and occasionally fraud, and the larger societies would take it in turns to absorb them. It was understood that the building society sector would look after its own.

The Thatcher Government was strongly committed to wider home ownership and took a dim view of the BSA's cartel and mortgage lending queues.¹ The BSA manoeuvred to allow societies to lend more and to solve the queuing problem by raising building society rates relative to wholesale rates. The building societies found themselves competing against newly formed specialist mortgage lenders who raised funds in the wholesale market. The BSA accepted *faute de mieux* the participation of others, including the clearing banks, in the mortgage market, but argued that societies should not be subject to more restrictions than their competitors, the proverbial unlevel playing field.² The BSA's lobbying proved to be successful and the Government passed the Building Societies Act 1986, which empowered building societies *inter alia* to raise up to 40% of their funds from wholesale sources and to convert to banking status. The legislation allowed the larger building societies to move from being deposit-led institutions and become asset-led, like the banks.

¹ Lawson, 1992, pp. 86-7

² Boleat, 1985, p. 54

The sterling balance sheets of the leading building societies were a sufficient match for the retail businesses of the clearing banks and when the herd of major banks and builders decided that growth of mortgage lending was a strategic priority, the home loan market expanded considerably. Building societies found it relatively easy to expand by tapping wholesale markets, in part because they were perceived to be safe institutions and partly because of a quirk: wholesale lenders to building societies were very senior creditors ranking ahead of the societies' capital-reserves and most of their retail savers who held shareholder accounts. Competition did not lead, at least initially, to a diminution of overall margins. Instead, a greater willingness to lend resulted in easier loan ratios, in particular higher loans relative to the values (LTVs) of underlying properties and higher repayments on loans relative to borrowers' income (income multiples). The building societies became more like banks, many of the larger ones converting to banking status, and the clearers became more like building societies as mortgages became a significant part of their sterling loan books.

One consequence for the banks was that the maturity mismatch of their balance sheets increased dramatically as they lent 'long' on mortgages, and continued to borrow 'short' in retail and wholesale markets. Traditional building societies had managed a similar maturity mismatch and faced the risk that short-term savings could be withdrawn, leaving a liquidity problem. However, the building societies had not relied on wholesale funding and their pool of retail savings was largely protected from competitors, both inside and outside the sector.

UK building societies and banks did manage to avoid the problem of duration mismatching – as distinct from maturity mismatching – a problem that necessitated bailouts for large numbers of US savings and loan associations (SLAs) in the 1980s. SLAs typically offered mortgages with interest rates fixed for five years (long duration assets). Their savings rates had been relatively sticky, but greater volatility of short-term interest rates since 1979 forced SLAs to raise their savings rates in line with market rates so as to maintain their funding (short duration liabilities). Sharp rises in interest rates exposed a serious mismatch between their long duration assets and their short duration liabilities, leading to unprecedented losses.¹ In the UK, duration mismatching was not a problem because mortgage loans were normally provided with variable (adjustable) borrowing rates and, where fixed rates were offered, duration matched funding was secured. However, borrowers faced considerable interest rate uncertainty and politicians came under electoral pressure to curb interest rate rises.

Monetary control

The acute problems of monetary control, experienced during the first and second phases of bank deregulation in 1971-3 and 1979-86 respectively, rekindled a debate about the conduct of monetary policy.² Proponents of monetary base control (MBC) argued that central banks should control the size of their balance sheets and

¹ Bryan, 1988, p. 47

² Capie, 2010, p. 698

that this should contain the growth of the banking sector as a whole.¹ At its heart, historicist MBC is a proposal to revive the second banking model outlined in this paper with certain modifications. It involves a reversion to the Bank's *modus operandi* during the long 18th century before the emergence of the interest rate weapon and LOLR. The main modification would be the absence of bullion as a reserve asset; instead, monetary discipline would be maintained by a commitment to limit the long-term growth of the Bank's balance sheet and, in particular, the monetary base of the banking system.

There are as many variants of MBC as there are official excuses for missing targets, but a key element of the proposal is to dismantle the role of the Bank as a mechanism for recycling liquidity in normal times. The Bank would cease to be the Government's banker and Exchequer accounts would be privatized, distributed across private banks – as they are in the US - ending the game in which the Bank relends inflows into the Exchequer. Note and coin issuance could be undertaken by a state agency (perhaps the Mint?) and the proceeds deposited with private banks, thereby avoiding another autonomous influence on money-market liquidity. The Bank would not seek to corner the market for liquidity and banks would not need to follow Bank Rate slavishly when setting their rates.² Like the Currency School, proponents of MBC have been reluctant to countenance Bank rescues in a crisis, but some of them might accept Bagehot-style crisis management: loans might be granted at high rates of interest against prime security.³ Full-blooded Baghotean assistance might involve a temporary override of a long-term rule for the growth of the monetary base, just as the 1844 Act was temporarily suspended in the 19th C. However, most proponents of MBC would argue against state financed rescues of individual banks.

Under MBC, boards of commercial banks and their managers would have to revert to being real bankers like those of the long 18th century; bankers such as Henry Thornton (1760-1815) and Samuel Bosanquet (1744-1806).⁴ During this period, directors of fractional reserve banks had to decide on a prudent level of reserves - a moving target depending on market conditions - without the safety net of a LOLR facility. They faced the possibility of bankruptcy if they got it wrong. Under MBC proposals, their modern counterparts would have to do the same, holding primary reserves in the form of bankers' balances (deposits) at the Bank and, possibly, secondary liquidity in the form of public sector debt. A plethora of money market instruments would cease to be day-to-day reserves because the Bank would not be standing ready to convert them into cash (bankers' balances). The banks might be expected to hold around 10% of their balance sheets in bankers' balances and the Bank would be one of the largest banks in the country, following the 18th century model. Bankers' balances are sometimes known as narrow monetary base (narrow M0). Broad M0 comprises narrow M0 (banker's balances) plus notes and coin in circulation with the public and in bank tills. In the 1980s, narrow M0 was around 5% of broad M0, but under the proposed MBC regime narrow M0 would be expected to

¹ Griffiths, 1979; Griffiths and Wood, 1984; Dow and Saville, 1988, pp. 141-152

² Dow and Saville, 1988, p. 217

³ Foot, Goodhart and Hotson, 1979

⁴ Thornton, 1802; Dimsdale, on Samuel Bosanquet

be much larger.¹ The banking sector's balance sheet might be expected to be in the region of 10 times narrow M0, the reciprocal of the presumed 10% bankers' balances ratio.

Historicist proponents of MBC found common cause with proponents of the money multiplier, suggested by Cole in 1904 and articulated by Phillips and Keynes.² Under this approach bank money expands as a multiple of high-powered money (*aka* monetary base), a liability of the central bank, which is held as reserves by the banks. If the central bank controls its balance sheet and the money multiplier is stable, bank money will be controlled. Money stock can therefore be targeted and interest rates are allowed to vary so the target is met. This differs from official doctrine where interest rates are treated as a policy variable and money supply is endogenous. Notwithstanding official views, the notion of an exogenous money supply is deeply entrenched in academic economics across a wide spectrum of views: it is followed in Hicks's IS-LM model and its Keynesian successors, as well as Friedman and Schwartz.³ The idea of a stable money multiplier has been recounted endlessly in textbooks too numerous to mention.⁴

The notion of the money multiplier predates mandatory reserve requirements for commercial banks, but the subsequent development of uniform balance sheet ratios has given rise to some confusion. In the inter-war period, the London Clearing Banks agreed to hold 10% of their total deposits as till money and bankers' balances. After the Second World War, the clearers agreed to abide by an 8% cash ratio which was transformed into two ratios in 1971: a 12½% reserve asset ratio, comprising a range of money market instruments, and a 1½% ratio of non-interest bearing bankers' balances to eligible liabilities.⁵ The 10%, 8% and 12½% ratios were not used to control the money supply by way of the monetary base, but had a broadly prudential purpose. The 1½% ratio was a means of financing the Bank. The ratios ensured that the banks' sterling balance sheets determined their bankers' balances (narrow M0), not the other way round.

Likewise, changes in broad M0 were a consequence rather than the cause of economic activity. The stock of notes and coin in circulation with the public was about 20 times the stock of bankers' balances and, as a result, movements of broad M0 were dominated by movements of notes and coin in circulation with the public. The stock of notes and (fiduciary) coin was determined by customer demand and (for once) robust equations had been estimated relating note demand to total final expenditure.⁶ These equations were used for planning note production at the Bank's printing works in Debden, Essex. Causality ran from consumer spending to demand for notes and coin, not the other way round. In view of this, it might seem perverse to suggest that

¹ *BEQB*, March 1981, Table A, p. 62

² A.C. Cole, March 1904; C.A. Phillips, 1920, pp. 38-76; Keynes, 1930, edition 1971, V, *Treatise on Money*, Book I, pp. 20-9

³ Hicks, 1937; Friedman and Schwartz, 1963

⁴ Llewellyn et al, 1982, pp. 39-41

⁵ Treasury and Bank of England, Green Paper, March 1982, pp. 16-20

⁶ *BEQB*, 18, no. 3, September 1978, pp. 359-364

either narrow or broad M0 could be used as leading indicators of the economy, and as benchmarks for interest rate setting. However, Nigel Lawson, while Chancellor of the Exchequer in the mid-1980s, insisted that broad M0 be included as an indicator for policy and econometric work was cited to support this decision.¹ We will probably never know the extent to which Lawson truly believed in M0 as a policy indicator, and the extent to which he valued its reliability as a slow growing aggregate.²

None of the above should necessarily matter to proponents of MBC. Narrow and broad M0 may not be causal determinants of inflation under the current regime, but the adoption of MBC would be expected to result in a change of bank behaviour and much larger holdings of bankers' balances. It is conceivable that narrow M0 would become the pivot for managing the size of the banking sector. The validity or otherwise of the MBC approach will not be proved or disproved by econometric studies of the behaviour of M0 under the current regime, a case in point for the Lucas critique.³

The role of econometrics in the M0 debate raises wider issues about the use and abuse of statistical methods for evaluating the usefulness of monetary aggregates as indicators for policy. Broad M0 has grown more slowly than nominal income since the 1930s and therefore its velocity has increased. Increased velocity has reflected the diffusion of other payment mechanisms, such as cheques, automated bank payment of wages, and credit and debit cards.⁴ These changes have taken place incrementally over time and as a consequence the rise in velocity has been trended and largely predictable. M1 (notes and coin plus sight deposits) was likewise relatively predictable until structural changes, including the payment of interest on some of these accounts, led to a breakdown of the relationships in the early 1980s.⁵ Similar attempts to estimate forecasting equations for broad money (£M3) fell foul of the effects of banking deregulation in the early 1970s and early 1980s.⁶

From the mid-1970s it was clear that there was no robust econometric model of £M3 - the targeted aggregate - that could be used for policy purposes. The UK authorities controlled £M3 via its counterparts: the public sector borrowing requirement (PSBR), less gilt sales to non-banks, plus sterling bank lending, plus external flows.⁷ In the April 1976 Budget, the Labour Government announced a 'cash limits' budgeting system for central government expenditures with a view to improving its control over the PSBR.⁸ The targets also meant that the Treasury would be under greater pressure to raise Bank Rate (called MLR at the time) more promptly and more aggressively to contain credit expansion and create favourable rate expectations for gilt sales.⁹ Essentially, Britain's monetary regime was not built on the

¹ Niehans, 1981; Walters, 1986; Batini and Nelson, 2005, p. 70

² Lawson, 1992, pp. 452-7

³ Lucas, 1976

⁴ Trundle and Pemberton, December 1982, pp. 519-29

⁵ Coghlan, 1978, pp. 48-60; Trundle, 1982

⁶ Coghlan and Smith, Bank of England internal note, 15th September 1977; Hotson, 2010, p. 6

⁷ M.E. Hewitt, *BEQB*, June 1977, pp. 188-95

⁸ Davies, 2012; Denis Healey, 1989, p. 401

⁹ John Fforde, June 1983, pp. 201

back of a stable equation or a behavioural model of money, but on an accounting identity where monetary control required the containment of unfunded Government deficits and limited growth of bank lending to the private sector.¹

Milton Friedman and US-orientated proponents of MBC were incredulous that British officialdom was seeking to link monetary targets and fiscal policy.² However, the British view was based, perhaps unwittingly, on extended historical experience. The English mint system had largely avoided pressures to monetise sovereign funding, the main exception being Henry VIII's debasement of the currency. The Bank of England was founded to provide war finance for the country's constitutional monarch, but some contemporaries, including Locke, remained fearful of the potential for abuse by a tyrannical monarch.³ For most of the clearing bank era from the 1870s to the 1970s, the gold standard and then the Bretton Woods system, provided a counterbalance against pressures to monetize state debts via the clearing banks.

By the 1960s the dollar parity of sterling seemed to be an insufficient discipline for maintaining sound public finances. The British Government's official borrowing from the International Monetary Fund (IMF) became subject to ever more stringent conditions, in particular a public ceiling on the growth of the domestic credit counterparts of money.⁴ The credit counterparts approach was a British adaptation of the IMF's monetary approach to the balance of payments.⁵ The British Government published figures on changes in the domestic credit counterparts of money from June 1966 and a public commitment to a ceiling on domestic credit expansion (DCE) was announced in 1968.⁶ In 1970, the newly elected Heath Government was able to dispense with the IMF's externally imposed ceiling for DCE and a substantial monetary surge followed.⁷

Notwithstanding the Heath-Barber dash for growth, officials and academics continued to monitor various definitions of money and their credit counterparts.⁸ From August 1970, data on three official definitions of money were published by the Central Statistical Office (CSO) and from December 1972 the Bank published a revised table of changes in M3 and its credit counterparts.⁹ Attention had shifted from DCE to M3 because the exchange rate was no longer pegged, but DCE and M3 were both part of the same counterparts' analysis. From 1973, projections for the credit counterparts were treated with greater seriousness leading to the adoption of public targets for M3 (and then £M3) in 1976.¹⁰ The change from M3 to £M3 was largely technical: M3

¹ Hotson, 2010

² Friedman, 1980; Dow and Saville, 1988, p. 142

³ Carey, 2011, p. 45

⁴ Needham, 2012

⁵ Holtrop, 1957; Holtrop, 1960; Polack and Argy, 1971

⁶ Capie, 2010, p. 376; 'Factors determining changes in money supply', Table 48, *Financial Statistics*, June 1966 et seq

⁷ Congdon, 1982, p. 3

⁸ Goodhart's letter to Alan Walters, 18/02/1970, Bank of England Archive 5A175/2

⁹ *Economic Trends*, August 1970; 'Influences on the money stock and domestic credit expansion', Table 12(3), *BEQB*, December 1972 et seq

¹⁰ Needham, 2012

included UK residents' foreign currency deposits with UK banks, whereas £M3 did not. A review of banking statistics had led to the introduction of a new reporting system in May 1975, providing monthly balance sheet data for all banks and separate reporting of sterling and foreign currency items.¹ Monthly data for £M3 and its counterparts, with consistent seasonal adjustments, were published from March 1977, and set the scene for a monthly public debate on whether the Government's monetary policy remained on track.²

The incoming Thatcher Government of 1979 made great play of its commitment to control the money supply, but it left in place the Labour Government's target for £M3 and continued to use credit counterparts to implement policy (although some senior members of the Government never grasped how the system worked).³ The centrepiece of the new Government's monetary policy was the publication of multi-year targets for £M3 in the Medium-Term Financial Strategy (MTFS).⁴ The four yearly targets in the MTFS were supposed to influence expectations, but the rapid expansion of bank credit - following the Government's deregulatory initiatives - left the MTFS in disarray as £M3 and other measures of money dramatically overshot their targets. Monetary targeting and the credit counterparts approach fell into disuse in the mid-1980s.

In Britain, the debate over monetarism had been highly politicized: to be a Friedmanite monetarist invariably meant being a Thatcherite, although the reverse did not necessarily follow.⁵ In practice, the monetary authorities found that they could not rely on a stable relationship between money and prices, at least when bank deregulation was taking place, and monetary targets were eventually abandoned by Nigel Lawson, a Chancellor who had been a prime mover behind the MTFS and a defender of the policy.⁶ However, the proponents of monetarism did create a new orthodoxy in which controlling inflation was accorded the status of being a primary objective, it being argued that a successful counter-inflation policy would also lead to less instability in the real economy.⁷ As it happens, this largely came to pass and we enjoyed a period of Great Stability until the onset of financial turmoil in August 2007.

The adoption of a counter-inflationary objective as the primary objective of policy was part of a truly revolutionary change in the thinking of Britain's macroeconomic establishment. In the post-war period until the 1970s, it was accepted by virtually everyone in authority that the Government had multiple objectives – lower inflation and lower unemployment – and that these objectives should be achieved by using a judicious mix of policy tools.⁸ These policies were formulated by officials and approved by Ministers under a cloak of secrecy in what

¹ Bank of England, *BEQB*, June 1975, pp. 162-5

² Bank of England, *BEQB*, March 1977, Hotson, 2012, pp. 5-6

³ Riddell, 1983, pp. 58-60

⁴ Dimsdale, 1991, Table 4.7, p. 131

⁵ Howe, 1995, pp. 98-113

⁶ Lawson, 14th January 1981; Lawson, 1992, p. 111

⁷ King, Mais Lecture, *BEQB*, Summer 2005, pp. 226-7

⁸ Brittan, 1964; Wass, note of meeting on 9th November 1977, cited in Hotson, 2010

John Fforde described as 'a centralised macroeconomic executive'.¹ In the years after the calamity of sterling's exit from the ERM in 1992, a different institutional structure evolved in which the Government set an inflation objective and a semi-autonomous body, the Monetary Policy Committee (MPC), implemented the policy by varying short-term interest rates. Minutes of the monthly meetings of the MPC were published and interactions between Government and the MPC were reasonably transparent. Government sought to distance itself from monthly interest rate decisions and allowed the MPC to build an enviable record for pursuing a coherent monetary policy.

An emphasis on governance rather than mechanical money rules seemed to have been much more successful. For a period the MPC won the market's confidence and relatively small changes in interest rates appeared sufficient to keep the economy on track. The disavowal of flow of funds may have been a step too far. The expansion of credit in the period prior to 2007 has raised questions about the need to monitor the credit counterparts and flow of funds more generally. The monetization of a large part of the national debt and the dramatic increase in the size of the Bank's balance sheet, resulting from the quantitative easing (QE) programme started in March 2009, raises similar questions. A credit counterparts' framework may well have a future role.

¹ Fforde, *BEQB*, June 1993, p. 200

5. Retail banks and shadow banking

Securities market deregulation

We shall return to the options for banking reform in the concluding section of this paper, but first we must address the third and last phase of deregulation, which occurred in 1987 when the London Stock Exchange implemented its 'Big Bang', again emulating US reforms a decade earlier. A consequence of these reforms was that clearing banks were allowed to own stockbrokers, market makers, securities underwriters and corporate advisory businesses. This resulted in the agglomeration of retail and investment banking businesses within the same banking groups. This last change has been the source of much policy reappraisal since 2008 and elicited the Vickers proposals for establishing firewalls between retail and investment banking.¹ Here again, there is a need to look dispassionately at what happened during the third phase of deregulation.

Integrated securities houses had developed in the US after the introduction of dual capacity in the New York Stock Exchange in the mid-1970s. The Glass-Steagall Act still debarred the combination of commercial and investment banking, and US securities houses came to be known as broker dealers, combining securities broking, market making, primary underwriting and corporate advisory work, but not deposit-taking and commercial banking.² Many of them established London offices in the mid-1980s in readiness for the 1987 Big Bang and started to encroach on the territory of the indigenous merchant banks. The absence of a UK version of the Glass-Steagall Act led to fears in some quarters that US broker dealers might merge with UK commercial banks, exposing depositors to trading risks. However, the leading broker dealers - so-called bulge-bracket investment banks - had little appetite for merging with European commercial banks. At that time, broker dealers prided themselves on generating exceptional revenues from advisory mandates and securities distribution, rather than from lending to corporate clients.

Competition between asset-driven commercial banks encouraged larger companies to establish treasury departments to manage multiple banking relationships and prime borrowers secured funding at ever finer margins. There was much talk of commercial banks being disintermediated in favour of capital raisings orchestrated by debt capital market (DCM) practitioners of dealer brokers. Traditional banks sought to maintain their (no longer exclusive) blue chip relationships by offering plain vanilla finance at barely commercial rates with the forlorn hope of earning extra revenues from selling add-on products, 'bells and whistles'. Traditional corporate banking remained in the pale of the broker dealers and this reinforced the trend for commercial banks to seek growth in the retail sector. In the English-speaking world, households were borrowing rather than saving so this meant focusing on mortgages and consumer credit. The other game in town was the consummation of in-market mergers with overlapping banks, allowing cost savings from branch consolidation and

¹ ICB, 12th September 2011

² FSA, *The Turner Review*, March 2009, p. 72

processing economies. Sir Fred (the Shred) Goodwin was a relative latecomer in a long line of commercial bankers who built their careers on the back of in-market mergers.

The global equity boom of the 1990s allowed investment bankers to enjoy a golden decade, but their business model faced a challenge. The provisions of the Glass-Steagall Act were being progressively dismantled, culminating in the Gramm-Leach-Bliley Act of 1999 which allowed US bank holding companies to own other financial companies. Margins in the broker dealers' core market – US domestic securities underwriting – were being eroded by competition and at the same time their expense base, in the form of global distribution networks, had increased massively. It became clear that growth would increasingly depend on the investor side of the business, rather than on the corporate client side. There was a shift in power away from corporate financiers in favour of proprietary trading and prime brokerage, the provision of securities and derivative dealing services to fund managers, particularly hedge funds and private equity houses.

Repos as money

Much has been made of the pace of innovation in the creation of over-the-counter (OTC) derivative instruments and their complexity, but a relatively straightforward securities transaction, the spot-sale-and-forward-repurchase (repo), transformed the funding of broker dealers and their hedge fund clients. Repos allowed broker dealers to become shadow banks providing funding and leverage for themselves and their investing clients, notably hedge funds. Rather than attempt to borrow in their own names on an unsecured basis in the money markets, they borrowed by entering into fixed-term repo agreements, where they pledged securities to lending counterparties and agreed to buy them back at a pre-agreed price. The investment banks' prime brokerage units intermediated between lenders and borrowers by managing tri-partite collateralized repos which bypassed traditional bank intermediaries.¹ Prime brokerage, provided by the leading investment banks, and hedge funds grew symbiotically from the late 1990s.

The notion of undoubted names at the core of the banking system and money market was discarded in favour of a more graduated view of credit quality and the notion that risk could be managed through balance sheet diversification: the search for alternative asset classes with low correlations with the conventional market. Instead of simply depositing unsecured funds with undoubted names in the money market, a secured lending market developed in the form of collateralized repos. Institutions, notably hedge funds, that lacked market standing to borrow unsecured, increasingly put up modest margins and borrowed to buy trading assets that were used to collateralize their debt.² The collateralized repo market provided a means for hedge funds to behave like shadow banks, funding themselves using repos as a form of collateralized deposit. Hedge funds were able to gear up (leverage) their investors'

¹ FRB *New York*, May 17, 2010

² Rajan, 2010, p. 172

funds and manage a quantum of assets which was many times those provided by their investors.

Geared investor demand for securities during the 1990s boom encouraged retail banks to move from strategies based on asset-led growth to ones based on the originate-underwrite-and-distribute model. Loans could be securitised so that the funding and credit risk could be borne by another party and traded as asset-backed securities (ABS). ABS could be repackaged as collateralised debt obligations (CDOs) where senior tranches of CDOs bore very little credit risk and junior ones carried disproportionate risk. Credit default swaps (CDS) could be used to repackage the risks further and create synthetic CDOs. As a result vertically integrated banks could be unbundled so that different parties undertook origination, underwriting, funding (senior note holders) and credit risk (junior note holders). A number of leading US and European banks (mostly UK ones) ceded mortgage and other loans to off-balance-sheet special investment vehicles (SIVs) which issued ABS, which in turn were repackaged as CDOs and synthetic CDOs. ABS, and in particular residential mortgage backed securities (MBS), became an important new asset class traded in the money market. Senior tranche CDOs could be AAA-rated ranking alongside the best rated sovereign and supranational credits.

The markets for ABS appeared to be liquid and senior securitised debt became the successor to commercial bills as the asset of choice for bank liquidity. Securitised debt was also used extensively as collateral for the repo funding of investment banks' proprietary trading units and their investment clients.¹ Repo loans were arranged at a margin or haircut below the value of collateral provided. The collateral was (and is) adjusted daily to allow for valuation changes of the collateral and for changes in margin requirements which are at the discretion of the lender. When the ABS markets were being promoted in the 1980s, it was suggested that they would provide a means for the banking sector to cede risk to a wider pool of non-bank end-investors. However, the appeal of ABS as a liquid asset, which could be used as collateral for repo funding, was so great that traditional banks and shadow banks became dominant holders and not much risk was shared with end-investors.²

Before considering the crisis of 2007/8, we should pause to assess whether shadow banks are real banking operations, or somehow less than real, as their misleading name suggests. There is the related question of whether repos are money, or not quite the real thing. The asset counterparts of repos used to fund shadow banks include a diverse range of trading assets, including derivatives and other synthetic assets. In contrast, conventional banks have tended to stick to recognized asset classes (bankable assets). Confusingly, shadow banking operations are fragmented across a number of institutions. The stereotype, not too distant from the truth, is of a hedge fund manager with a London office close to Green Park, serviced by a prime broker based in Canary Wharf and a raft of subcontractors, including settlement, portfolio administration and custodial services. The hedge fund is domiciled offshore, often in Cayman, and there is an investment management

¹ Gorton, May 2009, pp. 567-72

² FSA, *Turner Review*, March 2009, pp. 14-16

agreement (IMA) between the Cayman fund and its London-based manager, often a limited liability partnership (LLP). Despite the 'mind and management' of the fund being in London, Gordon Brown's investment management exemption (IME) conveniently excludes the fund, but not its managers, from UK taxation.¹ To be fair to the ex-Chancellor of the Exchequer and Prime Minister, the IME is arguably a sensible provision, the absence of which would result in the footloose management of these funds being located elsewhere. As a consequence, large sums could be lost to the UK economy.

The shadow banks are real banks in the sense that they have financial assets and liabilities and their balance sheets are geared (levered). They undertake maturity mismatching and a host of duration and other mismatches (long and short positions). It is true that traditional banks are subject to standardised capital adequacy requirements, whereas shadow banks have been subject to less official regulation. Investors in shadow banks rely on rating agencies to assess the resilience of the collateral underlying their repos, whereas unsecured depositors in traditional banks rely on official regulators to monitor their solvency. Repo investors are supposed to be protected by over-collateralization and traditional depositors by a capital buffer. Conceptually, the two approaches are not that dissimilar. Traditional depositors are relying on official regulators to ensure that banks will have positive net assets and liquidity to repay their deposits. To this end, the official regulator seeks to ensure that deposits are over-collateralized in economic terms, even if depositors do not have a legal charge over the bank's assets. One can debate the advantages and disadvantages of official regulation versus privatized regulation through rating agencies, but it seems likely that some mix of the two is here to stay, along with parallel markets in unsecured deposits and collateral repos.

Repos are not a retail currency and this might lead one to think that they are not therefore a proper form of money. However, key forms of money down the ages have been used in wholesale markets rather than in retail ones. The silver penny (1d) was too valuable to be used by the commonalty for day-to-day purchases in medieval times. The same was true of gold coins in early modern times and Bank notes before Suspension in 1797. Repos have widespread currency in wholesale financial markets and can therefore be regarded as no less a form of money than unsecured wholesale deposits. Retail funds are aggregated by traditional banks and fund managers before finding their way into the repo market. Modern definitions of money should therefore straddle both the unsecured deposit and repo markets. Where a traditional deposit taking bank buys a repo, there is a need to net the two to avoid double counting in much the same way that interbank deposits have to be netted.

Flows between the deposit and repo markets could give rise to prudential concerns. Herein lies a possible problem for Vickers-style firewalls between retail banks and shadow banks: the two may be separately capitalised, but there can still be exposures if traditional retail deposits (and money market funds) are intermediated through to the repo market. While clarity about flows and exposures should be

¹ <http://www.hmrc.gov.uk/manuals/intmanual/INTM269010.htm>

helpful, attempts at creating a complete compartmentalisation of the deposit and repo markets may be counterproductive. The solution to the problem of contagion in both these markets may lie elsewhere.

At a more general level, it is ironic that the nature of money has come full circle: collateralised repos are a modern form of specie (precious metal coins). These medieval and modern forms of money each have a face value and a collateralized asset value embedded in the instrument. In both cases collateral values can vary relative to face values, leading to problems, even crises. One difference between then and now is that coins were collateralized with bullion, whereas repos are collateralized with a diversity of assets of differing credit quality. Most importantly, the Mint's posted price provided protection against a fall in the collateral value of specie. No such protection has been offered to collateralized repos with consequences that are outlined below.

Asset bubbles and the 2007/8 crisis

The path that led to the panic of 2007/8 started with a downturn in the US residential housing market in 2006, leading to a deterioration in subprime MBS values.¹ Subprime MBS had been repackaged into CDOs and it was not necessarily clear which CDOs would be affected and by how much. Asset complexity and lack of transparency led repo lenders to play safe and reject certain asset types as collateral and to insist on increased haircuts. Many of the assets were not actively traded and therefore collateral valuations relied on modelled prices (mark-to-model) which lenders subjected to greater scrutiny. A more discriminating repo market forced borrowers to value collateral more conservatively and apply larger haircuts. Borrowers were forced to realize long positions and sell assets. This in turn led to a vicious circle where lower asset prices reduced collateral values and encouraged lenders to seek even larger haircuts, which in turn necessitated further forced sales.² There was no mechanism to protect collateral values.

Prime brokers and their shadow banking clients had been undertaking bank-style maturity mismatching by using short-term repos to borrow and relying on being able to roll them over so that they could fund longer term investments. Prior to the summer of 2007 the scale of maturity mismatching appears to have increased, but from the summer of 2007 repo lenders started to apply a more conservative approach. Repo rollovers stopped and large parts of the prime brokerage market shut down.

The process whereby contagion shifted from the repo market to the interbank market is not exactly clear and it may never be established unequivocally. Some commercial banks were known to have some dependency on repo funding and there were rumours about commercial bank exposures to subprime MBS. Some British banks had programmes for tapping wholesale funds swapped into sterling from US money market mutual funds. These funds were exposed to the repo market in the US and faced customer withdrawals, and part of their response was to cut their lending to

¹ Gorton, 25th August 2008

² Gorton and Metrick, 9th November 2010

UK banks. Once it became clear that aggregate interbank funding was contracting, the market started to assess which banks would face funding difficulties and problems contracting their balance sheets. In the UK, Northern Rock was seen as being exposed and, once it became evident that it was in trouble, the market started to assess the next most vulnerable institutions.

It is important to distinguish between measures used at the time to alleviate the symptoms of the 2007/8 crisis and measures required to avoid its recurrence. The dramatic fall in bank collateral values from 2006 led to a seizing up of the inter-bank market and a dearth of liquidity in 2007/8. An array of LOLR facilities helped to alleviate the liquidity shortage and avert a systemic collapse, but LOLR facilities do not of themselves address the problem of excessive cyclicality of bank collateral values.

The boom-and-bust in canal investments in the 1790s is an early example of rapidly changing collateral values having a ricochet effect on a number of country banks. During the Napoleonic wars, grain prices in Britain doubled and agricultural land prices appreciated. After the war, grain prices fell back, land prices fell and there was a spate of country bank failures due to impaired agricultural loans culminating in the banking crisis of 1825. The effect of falling land values on banks in the early 19th C appears to have been a factor behind the Victorian banking nostrum that banks should not normally lend on mortgages secured against property, a view that endured with the clearing banks until the 1970s.¹

Problems with US trade finance led to disruption in the bill market and a banking crisis in 1836/9; sharp movements in railway investments and grain prices led to a banking crisis in 1847; US exposures again led to a banking crisis in 1857 and the collapse of Overends became a wider crisis in 1866.² The adoption of Bagehot's LOLR in the late 19th C helped avoid illiquidity in bill markets and helped to stabilize the value of money market instruments in good times and bad. Key to the stability of the banking system was the conservatism of the clearing banks' appetite for credit risk and their willingness to hold protected money market instruments. This model continued until the 1970s.

The post-clearing bank settlement proved to be more prone to asset price bubbles, most spectacularly in 2007/8 and thereafter, but also the commercial property bubble of 1971-4. The problem re-emerged because banks started to lend against collateral values of a wider range of assets and in some cases these assets values were sustained by the flow of lending. Rises in collateral values provided apparent security for yet larger loans, but risk rose pro-cyclically. At some point, the virtuous circle of more credit and higher collateral values was broken and collateral values collapsed, leading to defaults and bank insolvencies. The Irish property market since 2000 has been a classic example of this process.

¹ Gilbert, 1849, p. 37-51

² Gilbert, 1849, 97

6. Monetary reform

Three phases of deregulation

We should now take stock of the three phases of banking reform that took place in 1971-3, 1979-86 and 1987. All three originated in the US in the sense that the London market was adopting practices already used in the US. The changes of the 1970s and '80s have left us with a retail banking model, in place of the clearing bank (or money centre bank) model; and a shadow banking model, instead of securities houses. The core business of the retail banks is long-term mortgage lending, funded with short-term borrowing from retail and wholesale sources. It has been commonplace to argue that heroic levels of maturity mismatch - often referred to as maturity transformation to make it sound more positive - is what banks are designed to do, but this is not historically accurate. The clearing bank model, and before that the Bank of England model, did not rely on high levels of maturity mismatching. However, the resilience of earlier models depended on more than just low maturity mismatching.

Before the 1970s, the London clearing banks were regarded as undoubted names, firstly, because they were low-risk businesses of long standing and, secondly, because the state more-or-less emphatically stood behind them (but not other banks). The risk for the taxpayer was relatively low because of their low risk profile. The reforms of the 1980s led to a position where the authorities argued that the state could not, and should not, stand behind a wider circle of retail banks carrying a broader range of risks. Central bankers were much exercised by moral hazard problems, but when it came to the crunch in 2007/8, the UK Government ended up bailing out not just Royal Bank of Scotland (including National Westminster Bank), Halifax-Bank of Scotland (HBOS) and Northern Rock, but the Bank also had to orchestrate the rescue of a raft of mortgage lenders, including Abbey National, Alliance & Leicester, Bradford and Bingley and Dunfermline Building Society. None of the converted building societies survived as independent entities. The maturity mismatch of the retail banks left them vulnerable to shocks, particularly housing market shocks, even though the proximate cause of the 2008 crisis of confidence was Lehman's collapse.

Since 1980, the leverage of household borrowers had increased and highly leveraged shadow banks took larger positions in trading assets, including MBS. In countries where housing related leverage was considerable – most notably US, UK, Spain, Ireland – property bubbles ensued with house prices rising significantly relative to the generality of prices and then collapsing. Fluctuations in asset prices do not necessarily have systemic consequences, for example the tech stock boom-and-bust of 2000, but property price fluctuations do affect modern retail banks because of their reliance on property values to collateralize a large proportion of their loans.

Erecting a Vickers-style firewall between retail and shadow banks may help to mitigate some of the risks of contagion, but it does not address the fundamental issue relating to instability on both sides of the firewall. Also, an effective firewall is more

difficult to erect than is generally recognized. Separately capitalized retail banks may not be sufficient to protect ordinary depositors, if significant amounts of their funds are intermediated through to the repo markets. In any case some shadow banking operations may prove to be too important to be allowed to fail, even if retail deposits are ring-fenced effectively. One is left thinking that the Vickers proposals may not be enough.

Historical banking models

One way of thinking about proposals for banking reform is to assess them with reference to our six historical models [slide 10]. There is nothing new under the sun and most proposals involve a revival of an old model with some amendments. Before doing this it may be helpful to summarize our historical account:

1. We have identified six main banking models, each with a core monetary institution as follows: Mint, Bank, clearing banks, building societies (builders), retail banks and shadow banking.
2. These models have not operated on a mutually exclusive basis: indeed, the Bank operated in tandem with the Mint; the clearers coexisted with the builders; and present day retail banks coexist with shadow banks.
3. These institutions have monetary liabilities and are associated with particular forms of money: the Mint with specie, the Bank with its notes, clearers with current and deposit accounts (sight and time deposits), builders with their shareholder accounts (members' deposits), retail banks with retail and wholesale deposits, and shadow banking with collateralized repos.
4. Each institution has a key credit counterpart that backs the value of its monetary liabilities (money): bullion for the Mint and the Bank, money market assets (bills and gilts) for the clearers, mortgage loans for the builders and retail banks, and trading assets for shadow banks.
5. Under the Mint model, the Mint price offered convertibility of bullion into specie at a posted price.
6. Under the Bank model, Bank Rate and the lender of last resort (LOLR) regime provided convertibility of money market instruments into bankers' balances at the Bank (a final settlement asset) at a posted price.
7. The underlying purpose of these convertibility regimes has been to stabilize the nominal price of banks' liquidity-reserves, or banking assets more generally.
8. Worryingly, there has been no equivalent price stabilization mechanism for the assets of modern retail and shadow banks. Instead, the LOLR system has been extended into a form of state guarantee, including a deposit protection scheme (deposit insurance).¹
9. We have a system for the state rescue of banks and their depositors, rather than a strategy for preventing systemic financial crises.

¹ <http://www.fscs.org.uk/>, Leonard, A

Options

There are a number of options for reform:

1. Neo-clearing banks. At a time of banking turmoil it is not surprising that we should hanker after the stability of the clearing bank system which operated between circa 1870 and 1970. Proposals for low-risk banking have been expressed in terms of narrow banks or utility banks, and the Vickers firewalls have a similar intent.¹ A key problem for this option is what to do with residential mortgages and commercial property loans. There were good reasons why these assets did not form a large part of clearing banks' balance sheets before 1970.

2. Building societies. One means of removing property loans from the neo-clearers' balance sheets would be to reinvent the cartelized building society sector. This option has the merit of having worked before, but this author is sufficiently old to have seen mortgage rationing in operation and he would not vote for this one.

3. An updated version of 'building society' approach would be to allow banks to provide mortgages, but they would be subjected to special prudential rules. Mortgage lending terms could be standardized and subject to prudential norms for loan-to-value ratios and income multiples. These norms could be varied pro-cyclically so that they would be set more conservatively as the top of the cycle approaches.²

4. State home loan agencies. A potentially popular short cut would be to accept that retail banks provide mortgage loans and find ways of limiting their risk by sharing it with state agencies. The danger here is the possibility of creating an incentive for banks to extend credit which contributes to property bubbles, the costs of which is then borne by the taxpayer. It would appear that the US remains hooked on this particular drug.

5. 18th C banking. The Georgian banking system operated with considerable resilience from Newton's devaluation of 1718 until 1797. Modern proponents of monetary base control (MBC) seem to be advocating a revival of Georgian banking practices reminiscent of this period when the Bank did not seek to set interest rates, or act as lender of last resort (LOLR).³ However, revivalists of this model need to address how the gold standard would have operated without the interest rate weapon, and how 19th C banking panics would have been tackled other than by the development of a LOLR system.

¹ Kay, 2009

² Goodhart and Hofmann, 2007, pp. 199-201

³ Hankey, 1867, p. 25 (opposition to Bagehot's LOLR)

6. Interest rate weapon and lender of last resort. Perhaps it is not surprising that one continually finds echoes of late-Victorian banking debates in contemporary discussions, in particular interest rate policy and quantitative easing (QE), inflation targeting (a modern gold standard) and LOLR facilities. A large part of the official response to the euro crisis involves a debate within the European Central Bank (ECB) about its LOLR facilities. However, we now live in a world where collateralized repos are a key component of money and this form of money has more in common with specie.

7. Stabilizing specie and repo values. Specie and collateralized repos both have face values and collateral values, and problems arise when the two diverge significantly. Medieval and early modern experience of currency crises may be more relevant to the post-2007/8 financial system than the banking debates of the 19th and 20th C. We need to take a longer view.

Price targets

An underlying theme since the 12th C has been the management of certain prices. Which prices (or rates of change of prices) should the authorities seek to fix in nominal terms and which should they allow to adjust flexibly?¹ Modern inflation targeting focuses attention on (the rate of change of) a composite consumer price index (CPI), rather than on bank asset prices. As we saw in 2007/8, the CPI target could be met, but a property bubble in a number of countries could still impinge on bank asset values with repercussions for the stability of the global banking system [slides 11 and 12]. Contemporary policy debate has focused on measures to make banking institutions more resilient in the face of flexible asset price changes, and has ignored the traditional approach of seeking to stabilize bank asset values themselves. The organizational split between macro and micro in economics is perhaps one of the reasons for this restricted view. It is assumed that the classical dichotomy between relative prices and the level of prices means that the market should govern relative prices and that monetary policy should determine a composite level of prices (or its rate of change), as reflected in a CPI index (or similar).²

Sophisticated rationalizations have been developed for composite inflation targeting, but the origins of the policy are more prosaic.³ In the 1970s and 1980s attempts were made to reduce (composite consumer price) inflation by controlling the money supply, using interest rates as a policy variable. 'Practical monetarism' met its objective, but the money stock proved to be a poor indicator of policy.⁴ The neat move of the 1990s was to replace monetary targets with (composite) inflation targets, while retaining interest rates as a policy tool. Monetary policy without reference to money and credit sounds odd, but for a period the regimen met its objective.

¹ Goodhart, June 2001, p. 337

² Wicksell, 1936, p. 4

³ Woodford, 2003, p. 623

⁴ Greider, 1989

Unfortunately, it did not address the problem of credit-induced asset price bubbles, and one particular strain of these, property bubbles, led to a global banking crisis in 2007/8.

In this regard, it should be fruitful to re-evaluate the market for mortgage backed securities (MBS). Understandably, it has had a bad press recently and the market clearly took a wrong turn. When MBS was being developed in the UK in the 1980s, it was argued that securitization of mortgage assets would allow mortgage risk to be distributed more widely across banks and outside the banking sector. In practice, higher risk tranches of MBS tended to be kept by the banking sector and AAA-rated low-risk tranches were sold outside it, for example, to re-insurance pools and the like. Higher risk MBS tended to be traded less, it was less easy to price and more prone to rerating. The medieval equivalent for specie was the hoarding of full weight coins and the progressive deterioration of coins in circulation (coins with ever lower collateral values). The same problem has to be overcome in the MBS market.

At the moment the problem of banking instability is being treated as a matter for the supervision of banks individually and their capital adequacy. When all is said-and-done, Basle III is the central plank of the official response to the global financial crisis of 2007/8. However, we are not confident about its adequacy. We keep looking over our shoulders at further market turbulence and wonder if even more bank capital is required, most notably David Miles's arguments for more capital based on a cost-benefit analysis.¹ Part of this concern is reflected in a proposal for capital requirements to vary pro-cyclically so they are maximised as the cycle reaches its peak.² The problem with this overall approach is that ever higher capital requirements create incentives for the ingenious to find ways of disintermediating credit flows outside the regulated sector. The authorities can respond and play a game of cat and mouse with disintermediated flows, as they have done since the start of bank regulation. However, there may be other ways which have been used before, albeit in different contexts.

One model to follow would be the Bank's creation of a liquid and transparent bill market in the late 19th C. Similar approaches could be used today for the MBS market. The Bank could set (graded) quality criteria for 'eligible MBS' and stand ready to deal at posted prices, maintaining a liquid market at times of turbulence. The Bank would stabilize MBS prices, but would need to protect itself by imposing a regime for MBS quality on the banking system. This is not without political problems because the banks would probably not be able to offer highly leveraged home loans to the public. From the point of view of a stable banking system, this line of thinking suggests that our monetary authorities need to do for the MBS market what the Bank did for the bill market in the 19th C and what the Mint did for the bullion market in the Middle Ages. In a sense this is what the Bank's sterling market framework is trying to do, but the eligibility criteria for MBS and the liquidity requirements for bank's sterling balance sheets would need to be much more restrictive. In this regard, a key firewall would need to be erected between sterling

¹ Miles, January 2011

² Goodhart and Hofmann, 2007, pp. 1996-8

balance sheets (subject to a sterling liquidity regime) and those of other currencies with a less stringent regime.

There is a need to reverse the tendency for high quality MBS to be hoarded outside the banking system and for rubbish tranches of MBS to circulate within it. One possibility would be to require sellers of MBS to endorse their paper and retain some of the risk if it defaults. Traded MBS would become multi-name paper analogous to triple-name bills, and it might create an incentive to originate and distribute good quality paper.

Of course, stabilizing MBS prices is not the same as stabilizing the prices of the underlying property (real estate) used to collateralize MBS. It is possible that an eligible MBS regime would not be sufficient to avoid credit induced property bubbles. To meet this concern it might be necessary to set a target range for the price of bank collateral – a modified House Price Index (HPI) – in addition to the Consumer Price Index (CPI), currently used as an objective for the MPC. The setting of a target for an index of bank collateral prices (BCI), as well as the CPI, would give rise to a host of technical issues concerning the potential for conflicts between the two and the instruments used to control the BCI. Setting policy for the BCI raises some knotty governance issues relating to the respective roles of the MPC and other state bodies. None of this is easy, but the banking system is unlikely to be stable if we do not stabilize the value of its collateral.

Reappraisal of money

Stepping back from the technicalities of how monetary policy should be implemented, we should reappraise the way we think about money. Time honoured expositions suggest that money has multiple functions as a unit of account, a means of payment and a store of value.¹ This approach tends to lead to multiple definitions of money, M0, M1,..., M5, and an emphasis on the need to interpret a range of monetary indicators. A different approach would be to define money in terms of the liabilities of banking institutions with assets protected by the monetary authorities. In other words, an instrument is deemed to be money when the value of its credit counterpart is stabilized by the monetary authorities. Under this rubric, coins issued by the medieval and early modern Mint would have been money, whereas bills would not have qualified. Other institutions – the Bank and the clearers - subsequently received protection for the value of their assets, and their liabilities came to be regarded as money. Since the 1980s, downside protection for the credit counterparts of money has been eroded and we no longer have monetary instruments upon which we can rely. The challenge is to recreate institutions that support a reliable monetary system.

¹ Goodhart and Crockett, *BEQB*, June 1970

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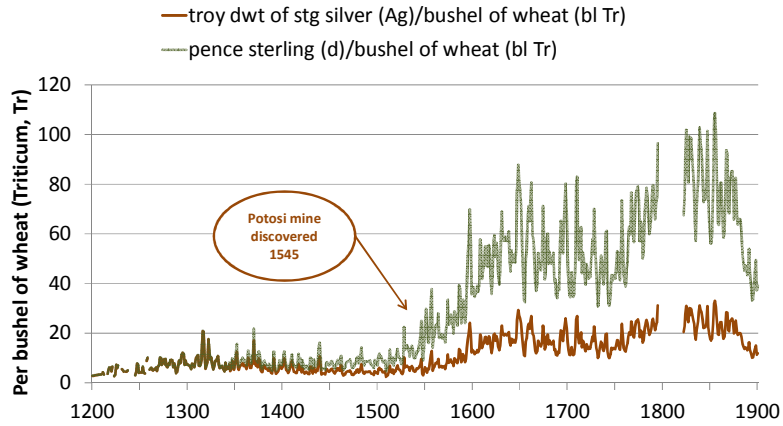
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Slides 1 to 10

Wheat – relative price and money price (ex-Suspension period)

Silver exchange ratio (Ag/Tr) and sterling price (d/bl Tr)

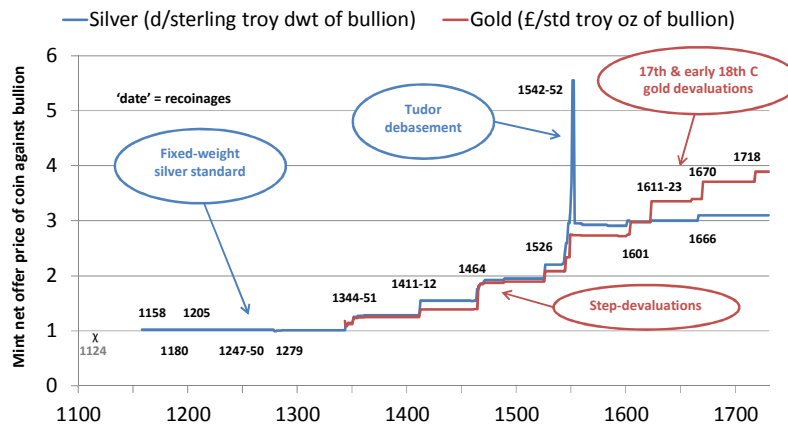


Mayhew, 2012; Clark and Lindert, 2006

1

English mint prices, 12th to 18th C

Face value of coin offered by mint against bullion supplied

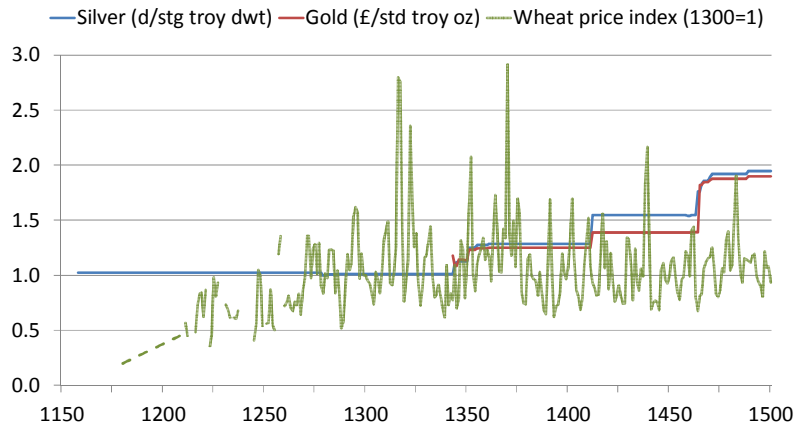


Mayhew, 1992, 1999, 2011; Feaveryear, 1963; Gould, 1970; Challis, 1992; Nightingale, 2008

2

Mint and staple prices in medieval England

Inflation without devaluation followed by non-inflationary devaluation

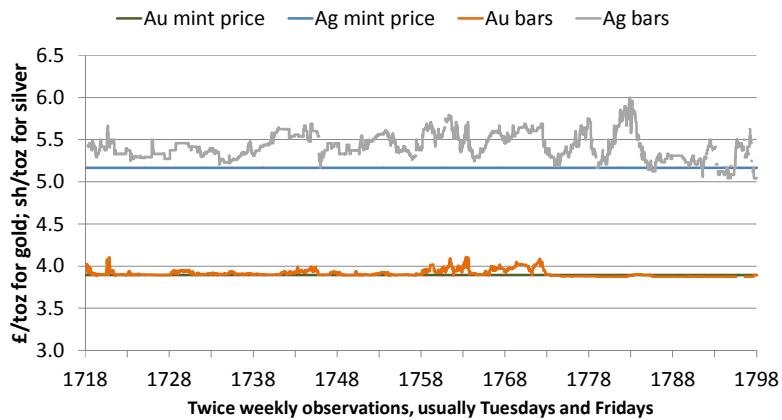


Wheat prices: Harvey, 1973; Clark and Lindert, 2006

3

Mint price and the bullion market, 1718-1797

From Newton's increase in the mint price of gold to Suspension

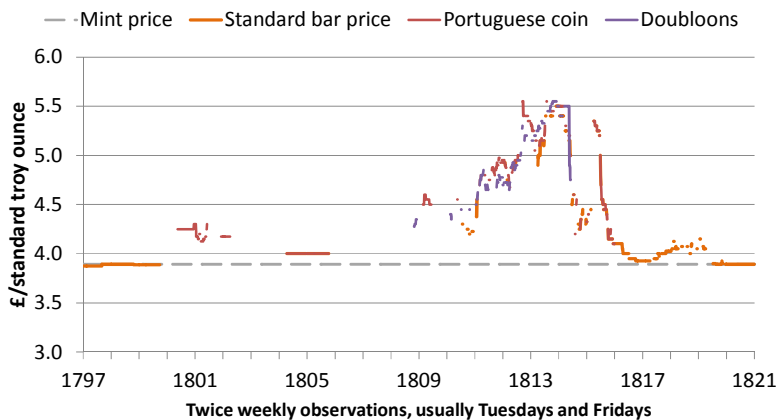


John Castaign, *Course of the Exchange* etc; Bank of England Archive, 2A 109/1; Mayhew, 2011

4

Bank's note convertibility suspended, 1797-1821

Inflation of the sterling price of gold; decline in value of bank money

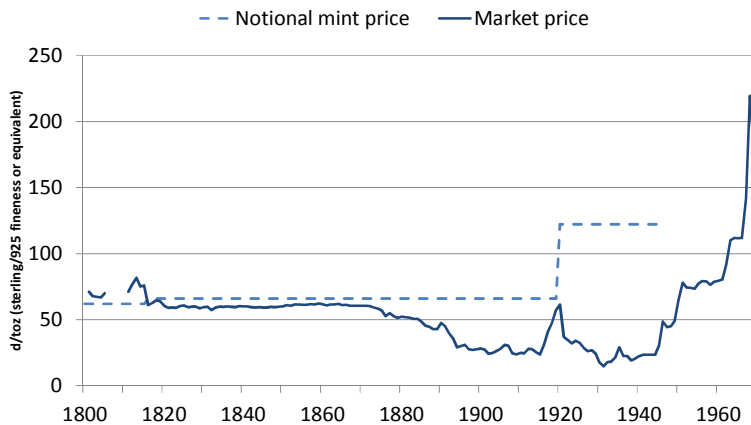


Bank of England Archive, 2A 109/1; John Castaign, *Course of the Exchange* etc from 1698

5

End of silver put in 1816

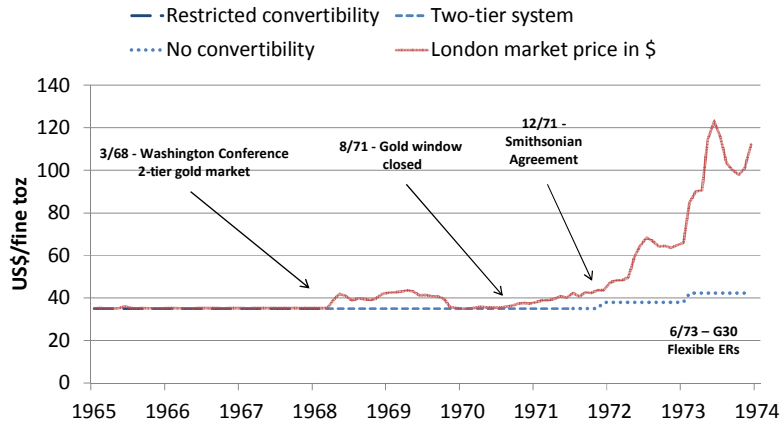
English Mint withdraws committed offer price of coin against silver bullion



Mayhew, 2011; Clark; LBMA; Challis, 1992, p. 480

6

US\$ un-pegged from gold



BoE Statistical Abstract, 1970, 1975, Table 28; BoE IDB, XUMLGPD

7

London US\$ gold price

Daily US\$ fixings start in April 1968

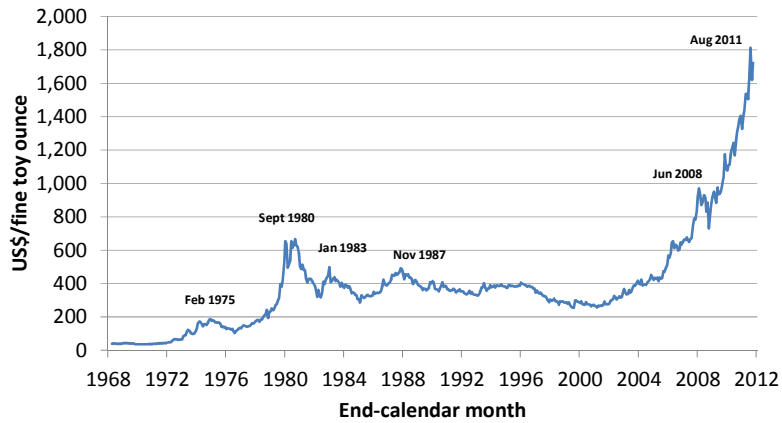
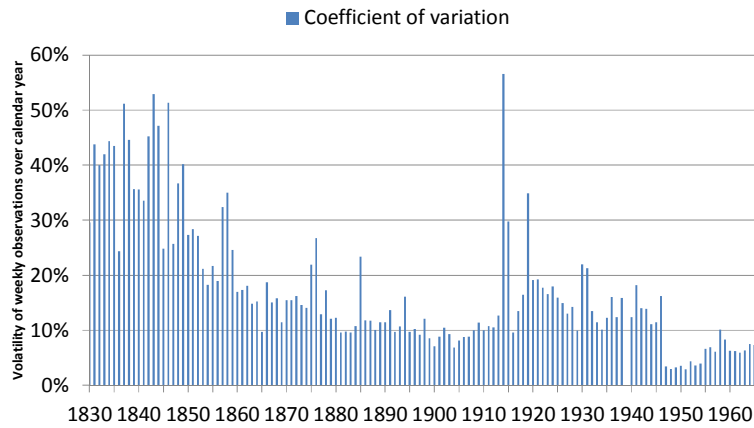


Table 28, Bank of England Statistical Abstract, 1970 and 1975; LBMA; BoE IDB, XUMLGPD from 1979

8

Volatility of bankers' balances at Bank



BEQB, June 1967, Appendix, Table B

9

Components of (un)stable monetary systems

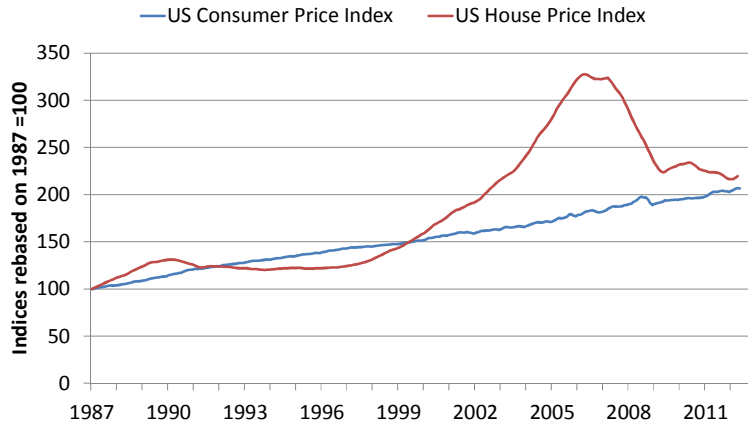
Importance of an extended historical perspective

	Monetary institution	Money	Asset counterpart	Asset protection	Collateral quality
1	Mint	Coin/specie	Bullion	Mint prices	Final settlement asset
2	Bank of England	Notes	Gold	Mint price	Final settlement asset
3	Clearing banks	Deposits	Bills & govt debt	Bank Rate	Lender of last resort (LOLR)
4	Building societies	Share accounts	Home loans	Queue regulator	Sector rescue
5	Retail banks	Deposits	Property loans	Downside risk	State backstop
6	Shadow banks	Repos	Trading assets	Downside risk	Illiquidity risk

10

US house price bubble

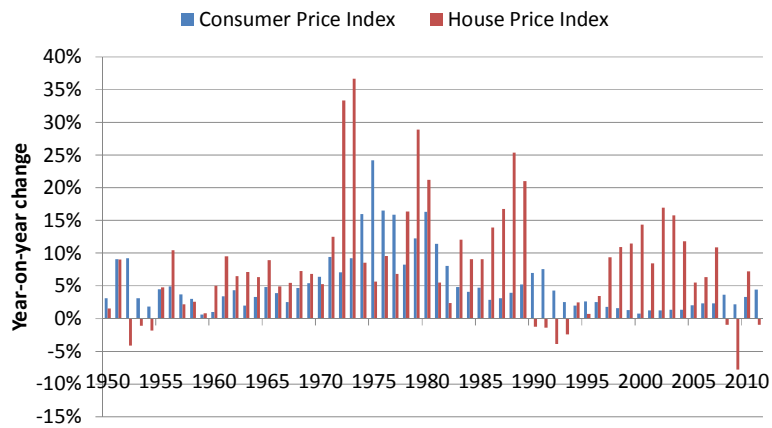
Prices double mid-1990s to mid-2000s



US Department of Labor ; S&P Case-Shiller House Price Index

11

UK inflation – general and credit collateral



12