

OPEN MARKET OPERATIONS

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Introduction

Open market operations are the buying and selling of securities, foreign currency, or financial instruments, by the central bank. They are called open market operations because they are usually conducted by the central bank's trading desk placing orders to buy or sell in markets for those securities, foreign currency, or financial instruments. These operations are undertaken on the initiative of the central bank. This distinguishes open market operations from discount operations, undertaken on the initiative of commercial banks that sell securities to the central bank in order to obtain reserves to give themselves a more liquid asset portfolio (Toporowski 2006).

Open market operations are one of the ways in which central banks make their policy effective, whether that policy is to control the level of reserves or credit in the economy, or the rates of interest at which commercial banks lend or take deposits. Historically, as indicated below, open market operations have been used when other instruments such as changes in the rate of interest have failed. However, their potential tends to be underestimated, perhaps because the effects of such operations depend on the complexity of the financial system in which those operations are conducted.

1. The origin of open market operations

It is common to date the start of open market operations to an almost accidental discovery by the US Federal Reserve (Fed) in 1922. The Federal Reserve had been active in supporting member banks with extensive loans during the First World War to commercial banks, whose cash ratios had fallen because the issue of banknotes had not kept up with inflation and the high level of economic activity. The loans proved to be a profitable part of Federal Reserve banks' balance sheets as the Federal Reserve increased its discount rate on cessation of hostilities, when the war-time ban on gold exports was removed. However, by 1921, the United States was in severe depression, which discouraged lending (and borrowing) at a time when America's trading partners in Europe, notably the UK, France and Germany, were experiencing similar difficulties, complicated by hyperinflation in Germany and elsewhere, and the trading of their currencies below their parities with gold, in which most of their war-time debts were denominated. In this situation, American exporters and bankers required foreign payments in gold or the few currencies (such as the Swiss Franc) that remained on the gold standard. An inflow of gold into the United States allowed US banks, in particular the New York commercial banks, to repay their loans from the Federal Reserve. The Federal Reserve Discount Rate had peaked in 1922 at 7%, a rate last seen in the crisis of 1907 that precipitated the establishment of the Federal Reserve in 1913 with a mandate to provide reserves in a more accommodating fashion than had previously happened under the informal system operated by JP Morgan. After reaching its peak the Discount Rate was rapidly and significantly reduced down to 4.5% (see Hawtrey 1926, chapter V).

The result was a squeeze on the Fed's interest income, as interest rates fell and its loan portfolio contracted, and the Reserve banks decided to diversify their portfolios by buying

government securities. This was followed by increased repayments of Fed loans. It was the newly-established Statistics Department of the New York Fed that alerted the Federal Reserve to the fact that member banks were repaying their loans from the Fed with the reserves that they were receiving in payment for the government bonds that the Fed was buying. Significantly, too, loan repayments were not concentrated in the regions where the local Federal Reserve was buying government bonds, but were geographically dispersed, so that bond-buying in Kansas City might give rise to loan repayments in Chicago or New York. The conclusion was drawn that the buying of government bonds affected the credit system in the whole country, rather than just the local market in which the buying was taking place; in other words, that open market operations had *systemic* effects. (Burgess 1964).

The result of this discovery was a decision by the Governors of the Federal Reserve in March 1923 to establish the Open Market Committee of five Governors as a Committee of the Federal Reserve Board. Open market purchases of securities in 1927 were considered a loosening of credit and had the effect of bringing about an outflow of gold from the United States (Hawtrey 1933, pp. 289-290). The regional Federal Reserve Banks resisted central control of their respective securities purchases and sales and arguments over their powers to determine the assets in their balance sheets continued through until 1935, when the Banking Act effectively abolished the separate portfolios of the individual Federal Reserve Banks.

The Federal Reserve's 'accidental' discovery of open market operations was perhaps a learning experience by what was, then, the youngest of the key central banks in the international monetary system. The older central banks, with experience of the gold standard

going back to its establishment in the middle of the nineteenth century, had been trading in securities, if not operating explicit open market operations for decades, if not centuries, before the American discovery. Hawtrey noted that, before the abolition of the Usury Laws in 1833, ‘... when the Bank of England was experimenting in the control of credit, but discount policy was still shackled by the usury laws limiting interest to 5 per cent, the Bank’s chief reliance was on the purchase and sale of securities in the market.’ (Hawtrey 1926, p. 142).

Indeed, the Bank of England, as other central banks before the twentieth century, had been established explicitly to assist with funding the British Government, with the privilege of issuing banknotes against the government bonds that they held. Needless to say, these responsibilities entailed transactions in the securities held in the Bank of England’s portfolio. In his impertinent *Proposals for an Economical and Secure Currency* of 1816, David Ricardo had noted that, on the 5 January 1797, the Bank of England held bonds (‘funds yielding interest’) to the value of just over £15million. In the following year, this portfolio had increased to £18,951,514. By 1799, the amount of these bonds had increased to £21,912,683. In 1800 the portfolio had been reduced slightly to £20,883,128, before rising again in 1801 to £22,522,709 and, in 1802 to £24,319,247. This therefore constituted a substantial portion of the Bank’s assets, and its profits were augmented by the sums that the Bank was paid for managing the debt of the British, Irish, German and Portuguese governments (Ricardo 1816).

Once the Usury Laws were abolished, by successive legislation from 1833 to 1854, exaggerated powers of economic and financial control were attributed to changes in the rate of interest. However, the rate of interest proved to be a not always helpful or effective

instrument of monetary control, and least so when the ruling policy doctrine that emerged in the nineteenth century required a quantitative, rather than a price, restriction on the banknote issue to the amount of gold reserves available to back that issue. The currency theorists, who proved to be most influential, were of the opinion that the rate of interest would be sufficient to sustain that gold link, through some kind of an international specie-flow adjustment in response to interest rate differentials. But this was confused with arguments over the supposed role of the rate of interest in determining the equilibrium between saving and investment (Corry 1962, Hawtrey 1933, p. 136).

The result was the Bank Charter Act of 1844, which gave the Bank of England the monopoly of the note issue in England and Wales, but now tied that note issue to gold reserves. The Act was a watershed in the practice of central banks and was widely discussed and emulated as the gold standard emerged to become the mechanism for international banking transactions. Its significance for open market operations lay in the shift in the purpose of those operations. Open market operations to provide liquidity for markets in longer-term securities were effectively abandoned. With the discount rate proving to be sluggish in effecting the inflow of gold reserves, open market operations were now subordinated to the task of controlling the note issue. By then, in any case, the Bank of England was operating in the discount market, trading securities with much shorter-term maturities.

The discount market was, until the 1970s, the effective money market in London. This reflected the way in which banking developed in Britain, with country banks managing their cash positions by discounting their bill holdings with the London discount houses. The

discount houses themselves would, in times of cash shortage, turn to the Bank of England to discount trade bills and Exchequer or Treasury bills. The practice had been established at the end of the eighteenth century that the Bank of England would discount such bills. But the Bank's ability to make a market in them was constrained by the usury laws (limiting interest to a maximum of 5%) and, subsequently, by the need to keep its note issue within the bounds of its gold reserves and the fiduciary issue, and the Bank Rate that was its main policy instrument. The Bank would therefore alleviate modest cash shortages on a routine basis unless an obvious and compelling payments emergency arose in the discount market (Hawtrey 1933, pp. 117-122). In cases of such emergency the Bank of England learned to provide accommodation, borrow gold reserves, and raise interest rates, as the emergency demanded. But, in normal times open market operations were restricted because Bank Rate seemed to offer an effective instrument of monetary control.

But Bank Rate made better press headlines than it delivered in practice and open market operations were brought back as it gradually became standard practice for central banks to buy securities in order to alleviate the effects on commercial banks, or discount houses in London, of an outflow of gold. Walter Bagehot in his classic *Lombard Street*, published in 1873, had noted the Bank of England's practice of buying securities in a 'panic' to alleviate cash shortages among banks and merchants, and famously encouraged this operation (Bagehot 1873, p. 52). The preferred securities tended to be short-term, for the simple reason that they were less subject to fluctuations in their price. By the end of the nineteenth century, open market operations had become a way of enforcing the Bank's policy rate of interest, the Bank Rate. Selling securities was referred to as 'making Bank Rate effective', at a time when the inter-bank market of the commercial banks operated using Treasury Bills. Keeping the

money markets 'short' of liquidity obliged commercial banks to sell securities to the Bank. In this way, open market operations came to be, not so much an alternative to interest rate policy, but more a necessary supplement to such policy (Sayers 1957, pp. 49-52, Sayers 1936)ⁱ.

By the twentieth century, central banks in Europe used open market operations to offset such outflows or just to bring market rates of interest back to the central bank's official or preferred rate (Hawtrey 1934, pp. 55-56; see also Sayers 1957, chapter 5). By the mid-1930s, after the abandonment of the gold standard, when reduced interest rates failed to stimulate an economic recovery, it became common to blame the burden of debt for this failure in monetary policy. Ralph Hawtrey called it a 'credit deadlock', or what Irving Fisher called 'debt deflation', a situation in which economic activity is frustrated by excessive debt which makes firms unwilling to borrow even at low interest rates. Hawtrey then recommended that 'a credit deadlock which is impervious to cheap money may (thus) yield to treatment of through open market purchases of securities' by the central bank. Such operations would make banks more liquid and therefore more inclined to lend (Hawtrey 1938, p. 256. See also Sandilands 2010).

The scope and scale of the operations varied between countries according to custom, the structure of banking markets, and statutes of the central bank. The Banque de France, for example, was not allowed until 1938 to use open market operations to control credit, but could use them to 'smooth out' the flow of reserves to banks (Wilson 1962a, pp. 48-51). Similarly, the central bank of the Netherlands, De Nederlandsche Bank, was restricted in its open market operations until 1937, and subsequently by a shortage of Treasury bills.

Nevertheless, according to one authority, De Nederlandsche Bank was responsible for one major innovation that was to have a lasting effect on later open market operations, the repurchase agreement, first used by De Nederlandsche Bank in December 1956 (Wilson 1962b, p. 227), although its priority in this innovation is disputedⁱⁱ.

The history of open market operations confirms their use usually as an alternative to interest rate policy, when that policy cannot be used, and as a supplement to such policy when it appears to be ineffective, as hinted at by Hawtrey. Thus, in the two and a half decades or so following the Second World War, when interest rates were controlled by central governments rather than central banks, open market operations were extensively used by central banks for the purposes of credit control, and to control exchange rates through open market operations in foreign currency. The emergence of the Eurocurrency markets of unregulated transactions in credit and foreign currency, in the 1960s, made control of credit and exchange rates increasingly difficult, as well as casting doubt on the wisdom and usefulness of open market operations whose effects beyond the immediate counterparties of such operations were becoming less and less predictable. This was the background to the publication by the Bank of England of *Competition and Credit Control* that recommended a move towards the more extensive use of market mechanisms including more targeted open market operations (Bank of England 1971, Goodhart 2014). This discussion was the prelude to a period of banking and financial crisis in which, as with the 2007-2009 crisis, central bank activity was concentrated on securing financial stability.

By the 1980s, monetarist theory provided the ruling doctrine of central bank operations. In the view of the theory's chief exponent at the time, Milton Friedman, open market operations had a special place in the control of the money supply: the sale of securities reduced commercial bank reserves and a stable credit multiplier ensured that the total amount of credit in the economy would be set by the amount of those reserves. The sale of securities to a commercial bank would be paid for by a transfer from that bank's reserve account at the central bank to the central bank, which would then cancel those reserves. The purchase of securities would be paid for by the creation of reserves that are credited to the reserve account of the commercial bank that sells those securities. The effect on commercial bank reserves is the same, whether the central bank buys from a commercial bank or from a customer of a commercial bank. In the latter case, the purchase price is credited to the commercial bank's reserve account at the central bank, and the commercial bank credits the same amount to its customer's account. In the case of a sale, the customer's account is debited with the amount that the commercial bank transfers from its reserves to the central bank. For Milton Friedman, open market operations were the way to regulate the money supply (Friedman 1959 and Bank of England 1983).

The classic statement of monetarist central bank practice, Goodfriend and King (1988) urged that open market operations be used to supply reserves to the banking system, which could then allocate those reserves through the money market. If discount window assistance is provided, it should be sterilised, that is the central bank should sell in the open market the assets that it had bought through the discount window. In this way the overall reserve position of the banking system is kept constant, and the central bank, in effect, sells assets on behalf of the distressed bank. However, this procedure is considered by the authors to be inferior

because it requires the central bank to monitor and supervise the bank to which assistance is being provided. Goodfriend and King contrast this 'monetary policy' with 'banking' by which unsterilised assistance is providedⁱⁱⁱ.

Open market operations therefore reached a peak when central banks adhering to this reserve position doctrine sold securities in an attempt to regulate the level of reserves in the banking system (Bindseil 2004a and Goodhart 1975, pp. 156-160). A brief period of exchange rate targeting between 1986 and 1991, following the Plaza Accord of 1986, by which the US Treasury and the Federal Reserve, the West German Bundesbank, the Banque de France, the Bank of Japan, and the Bank of England agreed to devalue the US dollar, was marked by a reversion of open market operations to transactions in foreign currencies.

Since the 1980s, the policy framework directing central bank operations has centred upon the central bank's policy rate of interest as the key instrument of monetary policy. Initially it was felt that this needed to be reinforced by open market operations to ensure that the supply of reserves met demand in the money market at an equilibrium rate of interest that was the central bank's preferred rate. However, it was quickly realised that the official rate could be enforced more effectively simply by maintaining a narrow enough 'corridor' between the deposit and lending rates for reserves at the central bank. In the practice of the European Central Bank this was done through 'standing facilities' for commercial banks to deposit reserves at the central bank and borrow reserves at the central bank's official rates. These facilities allow commercial banks to borrow reserves from the central bank, or to place excess reserves with it. Thus, standing facilities are a way in which commercial banks can influence,

at their discretion, the balance sheet of the central bank, since decisions to use standing facilities are made by commercial banks, rather than the central bank.

By the early years of the twenty-first century, open market operations to reinforce the policy rate of interest had virtually been abandoned by central banks. The notable exception was Japan, where the Bank of Japan has been buying securities since the turn of the century in a desperate effort to stave off deflation (Doi, Iohri and Mitsui 2007). In the developing countries, open market operations in convertible currencies are commonly used to stabilise exchange rates that have a large influence on the domestic price level (Levy-Orlik and Toporowski 2007). Even in countries, such as Thailand, where the central bank is targeting inflation, and where the exchange is officially allowed to float, central banks will often intervene in the foreign exchange market to prevent a depreciation of the domestic currency that could put upward pressure on the domestic rate of inflation.

2. Open Market Operations today

In conducting open market operations it is sometimes useful to distinguish between ‘outright’ purchases and sales of securities, and ‘reverse’ purchases, or ‘repos’ or reverse sale agreements with participants in the money market. A reverse purchase agreement, for example, involves the purchase of risk-free longer-term securities, such as government bonds, for which payment is added to the reserves held at the central bank of the counterparty bank. The agreement then specifies the sale of those securities back to the counterparty bank after a certain period. In the European Central Bank's practice this was initially two weeks, but is now one week. The difference between the purchase and sale price is in effect the rate of

interest on the temporary addition to its reserves that the counterparty bank now obtains. This rate of interest on repurchase agreements ('repos') became the official policy rate of the European Central Bank, the Bank of England and most European central banks during the 1990s. These open market operations may be repurchase agreements, providing reserves to counterparty banks, or they may be reverse sale agreements, reducing the reserves of banks.

For central banks, repurchase agreements have the attraction that reserves supplied are not supplied as loans to counterparty banks but are exchanged for top quality assets from banks' portfolios. Their other attraction is that they allow central banks to inject (or withdraw) reserves over a fixed time horizon. This temporary accommodation offers central banks a way of acceding to any current requirement for reserves from commercial banks, without a commitment to provide such reserves in the future that could remove the incentive to sound bank management that a reserve system is supposed to provide^{iv}.

Once repurchase agreements are in operation, then obviously their effect on the money markets is the net outstanding amount at any one time. So if there are weekly repurchase agreements, the central bank's manager responsible for money market operations decides, when the agreements expire, whether to renew them, or to increase or decrease the amount. An increase in the amount of purchase agreements (or decrease in sales agreements) would supply additional reserves. A decrease in purchase agreements outstanding (or increase in sales agreements) would reduce bank reserves.

The other kind of open market operations are outright purchases and sales of securities without commitment to sell or buy back. These are longer-term portfolio operations of central banks, and may include central bank issues of their own paper such as, for example, the short-term Euro notes that are issued by the Bank of England.

Outright purchases and sales of securities or foreign currency are undertaken with a view to changing the asset portfolio of the central bank, and hence provide reserves to the banking system, or reduce those reserves until such time as the central bank wishes to change its reserve provision. Reverse purchases ('repos' or resales) involve entering simultaneously into an agreement with the selling (buying) bank to sell (or buy) back the securities at a fixed later date. Repos therefore provide (or reduce) reserves by a fixed amount for a fixed period of time. The price difference between the purchase and resale of the securities therefore constitutes the discount equivalent to the rate of interest on the reserves sold (or bought). Repos thus allow central banks to fix the period of time for which the reserves are provided (Bindseil and Würtz 2007).

From the 1990s onwards, the Bank of England and subsequently the European Central Bank have used the repo rate as their policy rate, in the belief that this facilitates control over the rates of interest in the inter-bank market, without significantly affecting the liquidity of the markets in the longer-term securities that were the subject of these operations (Toporowski 2006).

2.1 Quantitative Easing

The reliance of central banks on the repo rate as their key policy instrument was challenged in the financial crisis that broke out in 2008 and subsequently, as repo rates approached zero without significantly reversing the onset of deflation. The response of central banks to the banking and financial crisis in 2008 was a dramatic switch to outright purchases, targeted in large measure at improving the liquidity of markets for long-term securities, but also applying a ‘monetary stimulus’ to slowing economies. The US Federal Reserve, the Bank of England, and, on a more modest scale, the European Central Bank, bought large quantities of securities at, or near, the bottom of the market to inject liquidity. This allowed the central banks to earn capital gains as the market recovered (Fawley and Neely 2013; see also Bank of England 2015). But central banks operate with thin capital so these operations have left central bank balance sheets looking remarkably similar to those of hedge funds. Between 2007 and 2015, the balance sheet of the Federal Reserve expanded by a factor of 5 to nearly a quarter of US GDP. By comparison, the assets of the European Central Bank have increased by around 50%, the assets of the Bank of Japan have increased from 20% of Japanese GDP to nearly 60% of GDP. Perhaps most extraordinary among European central banks, the assets of the Swiss National Bank, which, in 2011, had committed itself to a fixed exchange rate against the Euro, rose from 17% of Swiss GDP in 2007 to nearly 80% before the Bank abandoned the peg against the Euro in January 2015.

The large scale purchases of long-term securities by central banks, or quantitative easing as it was dubbed, marked a return to open market operations by central banks (Gagnon et al. 2010, Benford et al. 2009). These differ from more traditional open market operations in that they are undertaken without any target level of bank reserves, interest rates, or bond prices, but

with a pre-announced value of securities to be purchased by the central bank. Pre-announcement is intended to maximise the effect of the purchases on liquidity in the market for the securities, by causing a rush of private investors to acquire the securities before their prices rise as a result of central bank purchases. The purchases themselves inject reserves into the banking system with a view to stabilising that system and encouraging lending (Joyce, Tong and Woods 2011).

3. Open Market Operations and the Structure and Operations of the Financial System

The standard textbooks on monetary economics and banking suggest that open market operations are merely another instrument in the tool-box that central bankers bring to their work in monetary policy, bank supervision and so on. However, as the history of open market operations reveals, context is everything in understanding what such operations do, what they can do, and how we understand what they are doing. Whatever their purpose, the context determines their scope and effectiveness and this justifies a consideration of those broader factors that affect such operations.

3.1 Banking and Capital Market Systems

One of the determinants of the scope and effectiveness of open market operations is the structure of the financial system. The standard distinction is that between bank and capital market systems (see Allen 1995; also Mayer and Vives 1995). Bank systems were common, until recently, in continental Europe (e.g., Germany, France, Italy) and East Asia (India, Japan, Thailand). In such systems, banks lend to household and commercial customers for

terms that are both short and long and hold the loans on their balance sheets, even extending them by agreement with their customers. Markets for long-term securities exist in such systems. But the securities traded in them are largely government paper, and typically the commercial banks themselves make markets in the securities issued by the largest corporations.

In bank systems, open market operations are restricted by the smaller size of the capital market, although this means that central bank buying and selling of securities has a much bigger impact. At the same time, commercial banks may be much more dependent on liquidity from the central bank because their loan book is much less liquid than are the loan books of banks in capital market-based systems. Typically, commercial banks in bank systems ease their liquidity by trading government securities among themselves and avail themselves of discount facilities at the central bank. But the greater stability of bank systems tends to facilitate the planning of liquidity by commercial banks with the result that there is less resort to liquidity hedging and a reduced need for central bank open market operations when that hedging breaks down.

Capital market systems are usually identified with the financial systems of the United States, Great Britain and those countries whose financial systems have been formed in the image and likeness of their English-speaking counterparts. As their name suggests, these systems have much more active capital markets which allow commercial banks to manage their liquidity more effectively by holding large quantities of negotiable securities. Capital market systems are nowadays supposed to be more efficient than bank systems because the market in loans

facilitates ‘price discovery’ (Hasbrouk 2007). However, an older view regards the liquidity of the secondary market, or the market for ‘old’ securities, as it used to be called, as the key factor determining activity in the financial system (Lavington 1921, p. 225). The liquidity of the secondary market, in turn, determines prices in that market, and these are the prices at which borrowers may issue new securities (Keynes 1930/1971a, pp. 222-223). Accordingly open market operations are deemed to play a much more important role in regulating capital market systems.

In addition to overlooking other important features of financial systems, the commonly made dichotomy between bank- and capital market-based systems ignores the appearance in many countries of conglomerate banks, that is banks that are members of conglomerate groups. These may be found even in financially advanced countries with sophisticated financial markets^v. By pooling liquidity the conglomerate can economise on financial resources. By cross-shareholding, the owners of conglomerates can retain control while maximising outside share capital. Because of their industrial activities, conglomerates seem to offer a ready transmission mechanism of central bank monetary policy. However, the internalisation of financing and capital allocation within conglomerates reduces their resort to outside financing and hence to the banking and financial markets through which the monetary transmission mechanism is supposed to work. Moreover, the conventional wisdom among bank regulators disapproves of bank conglomerates because of their lack of transparency and un-diversified asset portfolios. Nevertheless, the predominance of such conglomerates in developing and emerging market economies may be a factor in limiting open market operations to foreign currency securities and government paper.

3.2 Financial Trading

Financial systems are not just immutable traditions, or ‘havens of familiar monetary practice’^{vi} specific to particular countries and hallowed by the routine business of generations past. Financial systems themselves have evolved, and with them have evolved the open market operations of central banks and their predecessors. The principal factor in this evolution has been the evolution of financial trading.

The earliest central banks (the Swedish Sveriges Riksbank established in 1668, and the Bank of England in 1694) were established specifically to manage government debt, in return for the right to issue banknotes. It is, therefore, not surprising that their trading of securities concentrated on government paper, as well as paper issued by the companies chartered with trading concessions by the government, such as the East India Company. At the time these were private banks with the distinction of having limited liability.

Their business rapidly developed and changed with the proliferation of trade and the bills of exchange that merchants used to finance trade. In the Netherlands, De Nederlandsche Bank was established in Amsterdam, rather than in the capital, The Hague, because Amsterdam was the commercial centre. London also became a crucial centre for trade in such bills because the Bank of England’s privilege of note issue allowed the Bank greater latitude in the discount trade than other banks, limited by their reserves of gold and Bank of England notes, could offer. At the same time, the short maturity (up to three months) of commercial and Treasury bills meant that any ‘fiduciary’ note issue to discount bills could be rapidly cancelled when the bills were redeemed on maturity. The reflux of bank notes in the discount

trade was the basis of the 'Real Bills Doctrine' according to which, the note issue to buy bills could not be inflationary (Humphrey 1982). The Currency School proceeded by a critique of this doctrine, arguing that the note issue to discount bills was inflationary. The doctrines of monetarism thus have their roots in the credit practices of the merchants of the City of London and the discount business of the Bank of England (Niebyl 1946 chapter 7). However, the question of the maturity of the instruments traded by the central bank has an important influence on the scope and effectiveness of open market operations and is discussed in section 4 below.

3.3 The establishment of Joint Stock Companies

The third watershed in the evolution of open-market operations came in the second half of the nineteenth century with Companies Acts allowing the routine establishment of joint stock companies. This greatly expanded the amount of non-government bonds that could be traded in open market operations. On the whole, central banks have avoided buying and selling shares in companies^{vii}. But corporate bonds have been more regularly used as collateral for central bank loans and, on some occasions, added to central bank portfolios through open market operations. Through such operations, the central bank was able to influence the liquidity of the secondary market for long-term securities, as well as bank liquidity.

3.4 The Second World War

Open market operations were used through the first decades of the twentieth century up to the Second World War, with particular challenges during the inter-War decades when international debt hung over and depressed European economies. The Second World War

was the fourth major watershed in the evolution of open market operations. Having experienced the difficulties of external debt management, in the inter-War period, Governments now tried to ensure that as much as possible of their debt was domestic, and central banks assisted with open market operations to facilitate the financing of the war effort through the banking system, at low rates of interest.

After the Second World War, the wartime debt overhang and the new era of the welfare state provided fresh challenges for government debt management. A particular innovation of this time was the tap stock, a government bond issued in Britain to the Bank of England which would then sell it on into the bond market to regulate liquidity in that market. As colonies achieved independence, new central banks were established to manage currencies in place of the currency boards that had supplied currency in the colonies. For the most part, the newly-independent countries lacked developed financial markets and so offered few opportunities for open market operations except in foreign currencies to maintain exchange rate pegs (see Allen 2014, chapters 6 and 12).

3.5 The Abolition of Foreign Exchange Controls

The final watershed arose with the widespread abolition by countries in Europe, North America and Japan of foreign exchange controls in the final decade of the twentieth century. As under the gold standard, the major financial centres now operated in integrated cross-border markets. But, unlike under the gold standard, banking was no longer national, but increasingly cross-border. In these circumstances, any central bank undertaking open market operations is in effect operating in global markets and may therefore need to operate on a

sufficient scale to have global impact, even if that central bank only wants to have local impact. This watershed marks the beginning of the withdrawal of central banks from their previous regulation of liquidity in capital markets. At this point it is helpful to consider more systematically the policy that guides open market operations.

4. Open Market Operations and the Policy Framework

The academic discussion of open market operations is heavily tilted towards their monetary implications, that is their effects on the supply of money or bank reserves, or the rate of interest on borrowing money (see, for example, Allen 2007). This has been reinforced by the statutory frameworks adopted by central banks in Europe banning the buying of government stocks, on the grounds that this may be inflationary and certainly contrary to the central bank's chief goal of maintaining the value of the currency unit for which it bears an unique responsibility^{viii}.

4.1 The Reserve Position Doctrine

The monetary consequences of particular operations therefore dictate the kind of open market operations that are undertaken. The **reserve position doctrine** (that the central bank should operate its monetary policy in order to control the amount of reserves of commercial banks) would indicate that open market operations should be conducted in one of two ways:

Either the central bank should buy or sell short-term paper, because the buying of the paper or bill will reverse itself when the bill matures, and is repaid by its issuer, to its current owner, the central bank, by a transfer of bank reserves to the central bank^{ix}. If the central bank

wishes to effect a lasting increase or decrease in the quantity of bank reserves, then the central bank should buy or sell longer term securities. A lasting increase or decrease in commercial bank reserves may be obtained by using short-term paper, but this may require a higher turnover in the portfolio of discount bills that may be costly and unnecessary.

Alternatively the operations may be conducted using repurchase/resale agreements which allow the central bank to 'inject' reserves into the inter-bank markets, or take reserves out regardless of the maturity of the securities bought and sold in operations which are reversed by the central bank by agreement with its counterparty, but at a term that the central bank can set.

However, in the case of emerging markets, the reserve position of commercial banks is heavily affected by capital inflows and outflows. Capital inflows expand commercial bank reserves either as claims on foreign currency deposits that a commercial bank acquires, or as reserves at the central bank if the latter buys in the foreign currency reserves, usually to stabilise or depreciate the exchange rate. These inflows and outflows of reserves caused by exogenous factors may then require open market *sterilization* operations in order to stabilise the quantity of commercial bank reserves.

There is, however, an additional complication in using open market operations in order to regulate the amount of bank reserves. This complication arises from an implicit assumption in the reserve position doctrine that open market operations do not affect the liquidity of markets for longer-term securities and, hence, the velocity of circulation of commercial bank

reserves¹. If that velocity is, in fact, affected by the open market operations undertaken to *stabilise* the commercial banks' reserves, then the possibility arises that stabilising commercial bank reserves may destabilise the capital market and other forms of credit, as in fact happened during the 1980s, when the Bank of England depressed the capital market by 'overfunding', that is selling more stock than was required by the government borrowing requirement (Bank of England 1984).

4.2 The rate of interest as the key policy instrument

If, however, the central bank is using **the rate of interest as its key policy instrument**, which most central banks have been doing since the latter half of the 1980s, then, as indicated earlier, open market operations may be wholly unnecessary: The monetary transmission mechanism is usually presumed to operate through the inter-bank market and that can be kept on target simply by keeping a suitable 'corridor' of interest rates for deposits and loans of reserves at the central bank. Open market operations may then be undertaken in order to increase or reduce the liquidity in the financial markets.

4.3 Fiscal implications of open market operations

Finally, open market operations have fiscal implications, as well as the more obvious monetary and liquidity effects. A central bank is a government agency and, traditionally, open market operations have been undertaken using government bonds. Such bonds held in the central bank portfolio have therefore, in a financial sense at least, been bought back by the

¹ See Toporowski 2006.

government. The interest paid on them adds to the profits of the central bank and those profits are an income to the government sector. So, for example, by 2014 the gross debt of the Japanese government amounted to almost two and a half times the Gross Domestic Product of Japan. However, in massive open market operations since 2001, (see Sandilands 2010, Doi, Ithori and Mitsui 2007), the Bank of Japan has acquired half of those bonds, so that the net debt of the Japanese Government is really only half of the total gross debt; the remainder is merely a book-keeping transfer within the government balance sheet.

Open market operations, therefore, have fiscal implications. Insofar as it contains government bonds, the portfolio that the central bank holds reduces net government borrowing. Insofar as it contains private sector securities, it consists of claims by the central bank on the private sector. The exception here is the European Central Bank and the central banks in the Franc Zone, which belong to groups of governments. The latter do not engage in open market operations using government paper, while the ECB uses a wide range of private sector bonds in its open market operations and its operations in government securities are controversial and carefully scrutinised.

In considering the intrinsic link between open market operations and fiscal policy, it is worth mentioning the views of two rival economists with very different monetary theories who reflected on this link, but nevertheless came to not altogether dissimilar conclusions. Henry Simons is well known for advocating 100 per cent reserves in the Chicago Plan for Banking Reform that he drew up in 1933. But he also drew the logical conclusion from this, that the Federal Reserve, whose loose credit policies he blamed for the speculative ‘bubble’ in the

stock market before 1929, should be abolished. This would allow the concentration of responsibility for monetary policy in the US Treasury which, through its open market operations in US government debt, effectively determines the quantity of money in the banking and financial system^x.

His rival John Maynard Keynes also reflected on the role and principles by which open market operations should be conducted. In his *Treatise on Money* he commended the use of open market operations as the essential way of regulating the reserves held by commercial banks^{xi}. Subsequently, Keynes came to the conclusion that open market operations held the key to managing the liquidity of the market in long-term securities. This liquidity determines the long-term rate of interest, rather than the official central bank rate of interest. For Keynes, that long-term rate is the rate of interest that is relevant to the fixed capital investment which determines output and employment. This view played a key part in his advice to the government on debt management (Keynes 1945/1980, pp. 396-400; see also Tily 2007, chapter 7). Thus he commended open market operations to maintain the liquidity of corporate and government bonds and keep down the cost of long-term finance for business. Keynes's analysis was the foundation for the 'stable bond market' policy of the post-War period. At the time this was justified by the high proportion of commercial bank assets that was held in the form of medium- and long-term government securities. Open market sales of such securities could therefore squeeze the balance sheets of commercial banks more effectively than changes in the discount rate (Sayers 1948, pp. 121-122). Keynes's close collaborator, Richard Kahn, went even further and urged the extension of the scope of monetary policy and open market operations to include the whole yield curve, rather than just the short or long-term rates of interest, or the reserve position of banks (Kahn 1972).

Conclusion

Open market operations by central banks, providing liquidity through the trading of debt, are arguably the oldest activity of central banks, predating the use of the discount or interest rate as an instrument of policy. The use of such operations is essential in times of banking ‘panic’ or crisis, and they have been used at other times to manage the reserve position or liquidity of banks or to support the official rate of interest in the money market. Thus the effectiveness of such operations depends, not only on the state of the economy, but also on the complexity and liquidity of the financial system. Recent open market operations in the form of repurchase agreements or ‘quantitative easing’ has not altered these fundamental characteristics of such operations.

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ⁱ Hicks suggested that the Bank of England exceeded its official mandate in this regard (Hicks 1967, p. 168).

ⁱⁱ In his *Treatise on Money* Keynes noted that, before the First World War, "open market policy" in the modern sense was virtually unknown. The Bank of England would occasionally supplement its bank-rate policy by the sale of consols for "cash" and their simultaneous repurchase for "the account" (anything up to a month later) which was an indirect way of relieving the money market of the equivalent quantity of resources for the unexpired period of the stock exchange account.' (Keynes 1930/1971b, pp. 204-205).

ⁱⁱⁱ For a later view, see Goodfriend 2003.

^{iv} '...an efficient, safe and flexible framework for banking system liquidity management...should retain incentives for banks to manage their own liquidity actively and prudently.' Bank of England, 2004, p. 218.

^v For example, the General Electric Company or Berkshire Hathaway, in the United States; the *zaibatsu* Mitsubishi and Sumitomo in Japan; Koç Holdings in Turkey; or Anglo-American Corporation in South Africa.

^{vi} Oliver Sprague, an advisor to the Government of the United States and the Bank of England in the 1930s was referring to the gold standard in League of Nations (1930).

^{vii} A major exception was the rescue of the Hong Kong Stock Exchange by the Hong Kong Monetary Authority in 1998. See Goodhart and Dai 2003.

^{viii} This may be contrasted with an earlier, but no less authoritative, view at that time that '... it is important that the central bank should be, from the start, the government's banker. In highly developed systems, the importance of coordinating debt management and credit policy is universally recognized, and this state of affairs

will come more naturally if the central bank always handles all (or nearly all) the government's financial business. This is not merely a matter of technical arrangements; it is also at least as importantly a question of the direction from which the government seeks financial advice ...' (Sayers 1957, p. 119).

^{ix} This is the principle of reflux behind the Real Bills Doctrine that a note issue to discount trade bills could not be inflationary.

^x According to Simons, the monetary authorities '... must focus on fiscal policy as its mode of implementation', with public expenditure being the means by which to inject money into the economy. He went on '... The Treasury might be given freedom within wide limits to alter the form of public debt – to shift from long-term to short-term borrowing or vice versa, to issue and retire demand obligations in a legal-tender form. It might be granted some control over the timing of expenditures. It might be given limited power to alter tax rates by decree and to make refunds of taxes previously collected...' (Simons 1936, p. 175).

^{xi} : 'The new post-war element of "management" consists in the habitual employment of an "open market policy" by which the Bank of England buys and sells investment with a view keeping the reserve resources of the member banks at the level which it desires. This method – regarded as a method – seems to me to be the ideal one.' (Keynes 1930/1971b, p. 206).