June 2005

Almost A Century of Central Bank Cooperation

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The Bank for International Settlements was created in 1930 primarily to administer the Young Plan, including reparations loan repayments from Germany. But the "first object" of the BIS, as defined in its statutes, is to "promote the cooperation of central banks…" – to provide a place of meeting for central bankers to exchange information, discuss common problems, agree on shared aims, set common standards, possibly even provide mutual support. This objective must be viewed against the background of the 1920s, when there had been episodic, typically bilateral cooperation among central banks. Indeed episodes of such cooperation can be found in the pre-1914 period, for example a gold loan by the Bank of France to the Bank of England during the Baring Crisis of 1890, or discounting by the Bank of France of English bills in 1906, 1907, 1909, and 1910, thereby relieving pressure on the gold reserves of the Bank of England (Bloomfield, p. 56). Indeed, examples can be found from even earlier, including the Latin and Scandinvian currency unions (Schloss, p.7-24).

With the post-1918 breakup of the Austrian , Ottoman, and Russian empires many new countries were created, needing central banks and economic stabilization. The League of Nations had a program to assist the new states in setting up their financial systems and stabilizing their economies. An early inter-war example of cooperation was the loan in 1923 from the Bank of England to the National Bank of Austria in anticipation of proceeds from a League of Nations stabilization loan. Similar loans were made later to Bulgaria, Estonia, Hungary, Poland, and Romania, among others, usually by the Bank of England, of which Montagu Norman was governor. Gradually a network of loans, succeeded by lines of credit, developed between central banks, often with conditions imposed (Einzig, 1930, chap. 2; Clarke).

A second purpose of inter-war cooperation was to prevent a scramble for gold, as new and old central banks alike attempted to establish the basis for restoring gold convertibility. An understanding was reached that central banks would not acquire gold in London, even newly mined South African gold, without the concurrence of the Bank of England (Einzig, p.18). These various arrangements, though often

effective, were too vague and too reliant on infrequent personal contacts to be systematic. Hence the need, it was argued, for regularizing and institutionalizing contacts among central bankers, in a place such as the Bank for International Settlements.

One of the most celebrated channels of central bank cooperation during the 1920s was the close friendship and frequent contact between Benjamin Strong, president of the Federal Reserve Bank of New York 1914-1928, and Montagu Norman of the Bank of England. The Federal Reserve had been created only in 1914, and in the 1920s its 12 regional banks were still shaping their roles, their relationships with one another, and their relationships to the Board of Governors in Washington. New York however was clearly the pre-eminent market for foreign exchange in the United States, and its Federal Reserve Bank had the most frequent contact with financial developments in Europe and elsewhere. Britain famously returned to gold convertibility of the pound in 1925, at the pre-war parity, and then struggled to maintain convertibility during the next six years. Sympathetic to the Bank of England's problem, Strong during 1925-27 leaned toward providing such help as he could through the Federal Reserve. Concretely, the New York Fed (with the approval of the Board and the Secretary of the Treasury) opened a line of credit of $200 million in early 1925 to help backstop Britain's return to gold convertibility in April. The credit was never drawn.

A celebrated/notorious example of central bank cooperation occurred in the fall of 1927, when, following a meeting with Benjamin Strong by Norman, Charles Rist of the Bank of France, and Hjalmar Schacht of the German Reichsbank, the Federal Reserve lowered the discount rate from 4 to 3.5 percent. The Federal Reserve Bank of Chicago held out at 4 percent until ordered to lower its rate by the Board. This allegedly was to help Britain, in particular, to avoid raising interest rates in an already depressed economy, following gold resumption in 1925. Later former Governor Adolph Miller suggested that the subsequent course of events would have been very different had this reduction not occurred, and hinted that the stock market boom and subsequent crash of 1929 might have been avoided. This episode will be discussed further below.

The opposite of cooperation – hostel action -- can also be found. Schacht (p. 221-222) reports an obviously coordinated withdrawal of French banking funds from Berlin during a tense period of negotiation on the Young Plan in 1929.

What do we mean by "Cooperation"?

What are the possible ways in which central banks might cooperate? Mutual financial support and coordinated actions in monetary policy have already been mentioned, but they certainly do not exhaust important avenues of cooperation. One might distinguish broadly six types of cooperation, in roughly increasing order of intensity.

The first is simply to exchange information, providing basic facts for each major national market on outstanding credits, new borrowings, central bank regulations, and the like. Economists usually assume full information is available, particularly when it is published. But collecting that information in usable form is itself a chore, and that chore can be eased if central banks provide it directly to one another.

The second, a natural extension of the first, is to standardize concepts and fill gaps in information. Some central banks may collect information that others do not, but would find useful. Some forms of credit, e.g. from outside each country, may escape the national statistical-gathering net, but be identified when information is exchanged and subsequently the gaps may be filled.

A third is to exchange views about how the world works, and on objectives of central bank policy. Since central banks have at least some similar responsibilities in all countries, and since in open economies the actions of central banks in large financial markets can strongly influence the conditions in other financial markets, large or small, having some knowledge about the views of the senior officials of the large central banks both provides useful information about economic and psychological relationships in those markets, and useful information about how their central banks are likely to respond under different contingencies.

A fourth is to exchange information on the economic outlook – that is, not on facts, but on perceived short- and medium-run prospects. Such an exchange can be helpful in several ways, since others may assess the same contemporary facts differently, by emphasizing some more than others or providing alternative interpretations, and thus act as a corrective (or reinforcement) to one's own interpretation of the outlook. It may also provide some advance guidance as to how other central banks may act in the near future, even without actual discussion of future actions.

A fifth is to standardize concepts and even regulations, adjusting as necessary the information that is collected, so that the information collected by different central banks can be directly compared, even added up, and that it is as complete as necessary to perform central bank functions. Some standardization may be directed at increasing convenience and/or reducting costs, e.g. the standard weight and fineness of gold to be acceptable by central banks operating under a gold standard.

A sixth channel of cooperation, the most demanding and what many people think of as the sole form of cooperation, is commonly agreed actions. This in turn can be sub-divided in various ways. Central banks could agree to give one another advance notice of up-coming actions. They could require prior approval of actions occurring in the markets of other countries. They might agree on generic rules of behavior, including proscriptions, e.g. on how foreign exchange reserves are to be held. They might agree on mutual financial support, either episodic or a framework for providing support, as under the European Monetary System of the late 20th century. And they might coordinate their actions, e.g. intervention in foreign exchange markets or even movements in discount rates or changes in regulations.

Examples of all these kinds of cooperation can be found in the history of the last 75 years. Indeed some of them are discussed directly in the Fifth Annual Report (for the year ending March 31, 1935) of the BIS, which explicitly discusses central bank cooperation in the BIS context. The BIS is clear, however, that despite their cooperation each cental bank retains fully its freedom of action to respond to each situation as its judgment dictates. That is, its discussion downplays the sixth channel mentioned above, joint action, except regarding rules of behavior and actions in the markets of others.

Who are Central Banks?

If our topic is cooperation among central banks, we need to understand not only what is cooperation, but also to clarify what exactly we mean by central banks. Most central banks evolved out of private institutions, which at some point were endowed with special statutory powers, e.g. a monopoly on the issue of banknotes, and perhaps also special responsibilities, e.g. with respect to short-term financing of the government. Gradually they were transformed into public institutions, e.g. through government appointment of governors and perhaps other senior officials, eventually often through outright

nationalization. This process started in the 1930s (e.g. Bank of New Zealand, Bank of France in 1936, when Prime Minister Leon Blum assumed appointment of virtually all the Regents, Bank of Canada in 1938), but was greatly accelerated by the financing and other requirements of the Second World War and its immediate aftermath. The Bank of England was nationalized in 1946, the Reserve Bank of India in 1948.

From the beginning the Federal Reserve System of the United States had a peculiar status. Although created by Federal legislation in 1913, it is technically owned by its member banks, who appoint 72 of its 108 regional bank directors, who in turn select the regional bank presidents (subject to approval by the Board of Governors in Washington), who in turn participate in framing monetary policy. The seven governors are appointed by the President of the United States, subject to confirmation by the Senate, for 14-year non-renewable terms, with the chairman (currently Alan Greenspan) appointed for a renewable four year term. Originally the Secretary of the Treasury and the Comptroller of the Currency, both public officials, sat as ex officio members of the Board of Governors, but that provision was eliminated in 1934. The Federal Reserve thus remains a curious hybrid, a privately-owned, quasi-public institution, whose sole function is central banking (including bank regulation and supervision).

Central banks have long valued their independence and, when not literally independent of government, their operating autonomy. Immediately before and during the Second World War most central banks became the agents of their governments, in particular of ministers of finance, de facto if not literally nationalized until later. They regained their autonomy of action only gradually (the Federal Reserve in the celebrated "accord" of 1951, when the Fed ceased to support the government bond market), with many central banks achieving statutory independence only in the 1990s.

Even then, important ambiguities sometimes remain, for example with respect to setting of exchange rate policy and managing exchange rates. Whether decisions are made by governments or by central banks is not always clear, nor who runs exchange risk, although execution is almost invariably the task of central banks. Thus "central bank cooperation," or lack of it, often reflects the decisions of governments, not of central banks themselves. This ambiguity was concretely acknowledged when central bank governors were invited to join the Group of Ten in 1962 and the informal G-5 ministers of finance meetings starting in 1973, and their representatives also attended many meetings of the deputy finance

ministers. Even during the 1920s, when the ethos of central bankers was to keep governments at a respectable distance, and Benjamin Strong of the Federal Reserve Bank of New York took the lead in cooperating with European central banks, Strong regularly reported his intensions to the Board of Governors and to Secretary of Treasury Mellon (who at that time sat with the Board), and thus had their actual or tacit approval in his various proposals and actions.

Central Bank Cooperation since 1930

As noted, an explicit purpose of the BIS was to encourage cooperation among central banks. It could hardly have begun at a less auspicious time. The convening function was exercised at once, as governors of the equity-holding central banks gathered once a year, and their representatives gathered almost monthly from the opening of the BIS in April 1930. As the first few Annual Reports suggest, these gatherings did some useful coordination, e.g. on the standard of gold bars to be acceptable by member central banks, and as a clearing house for information on the physical location of monetary gold, so that gold transactions among central banks could if possible avoid or reduce shipment costs from capital to capital. It also advanced the notion of foreign exchange clearing through the BIS, so central banks could engage in foreign exchange transactions without directly affecting local foreign exchange markets.

The BIS also convened or served as host to a number of conferences on technical issues of interest to central banks, and provided (partly through such conferences, partly through private consultations) technical assistance to the newly-created central banks of central and eastern Europe. But the rapid decline in economic activity and prices that we now call the Great Depression overwhelmed the capacity of central banks to cooperate closely beyond such technical matters. The second Annual Report proudly proclaims that in May 1931 the BIS convened representatives from 24 central banks, including 20 governors – the largest number ever assembled. But it was not enough to contain the looming crisis. Before the departure of the British pound from gold convertibility in September 1931, however, the BIS both encouraged and participated in a series of short-term stabilization loans, starting with Yugoslavia and eventually including Hungary, Austria, the German Reichsbank, and Danzig. All in all, a total of sfr. 740 million had been lent in (ultimately futile) emergency loans to central banks, mostly during the international financial crisis of the summer of 1931, of which sfr.211 million were funds of the BIS itself (Schloss, p.81). But such

transactions disappeared after September 1931. Events overwhelmed the limited capacity of central banks to cooperate: even loans to the Reichsbank at the height of the summer crisis, as well as the Hoover Moratorium, were critically delayed by political sensitivities in France over the issue of reparations (Eichengreen, 1992, pp.264-278). In any case, central bank support loans during this period often imposed conditions similar to those desired by private financial capital, thus reinforcing rather than countering pressures from the market (Simmons, p.282).

The first three Annual Reports contain a section called "central bank collaboration." This was dropped in the fourth (1934) report, presumably because there was little such collaboration to report. It was revived in the fifth (1935) report, to enable an extensive discussion of the desirability of central bank collaboration under headings covering why? what? and how? (the entire passage is included in Schloss, pp.63-71). Subsequent reports revert to "developments affecting central banking" that first replaced central bank collaboration in the fourth report. The key objectives of central bank collaboration were stated to be support for a stable monetary system based on gold, and to smooth the business cycle and contribute to greater equilibrium in the general level of economic activity. Note the absence of any reference to price stability, although some would interpret that to be implicit in a gold standard (see Cooper, 1982, for a contrary view).

Central bank cooperation did not cease in the 1930s, however. Britain remained the world's largest trading country, and had only recently lost its position as premier capital market to the United States. When sterling left gold in 1931, many other currencies – about half the world's total – chose to leave with it, and many currencies remained pegged to sterling. This gave rise to the "sterling bloc", which during and after the Second World War evolved into the Sterling Area. The essence of the Sterling Area is that associated countries pegged their currencies to sterling (although the peg was occasionally changed), they bought and sold local currencies against sterling, and they held the bulk of their central bank reserves in sterling in London rather than in gold, dollars, or some other form. At first it was informal, describing practice, but it became more formal with introduction of exchange controls by the United Kingdom (and others) in 1939. With limited exceptions, the entire Sterling Area formed a financial zone of free movement of currencies (especially sterling, the leading currency), with all members operating under similar exchange control regulations. The exchange controls continued after the Second World War, and so

did the Sterling Area. In addition, some members of the Area had built up large sterling balances during and immediately after the war, in effect providing Britain with goods and services during the war on short-term credit, continually rolled over. By 1952 the Sterling Area was composed of Britain and its many colonies, now independent former colonies such as Australia, Burma, Ceylon (now Sri Lanka), India, Ireland, Pakistan, New Zealand, and South Africa (but not Canada), and Iceland, Iraq, Jordan, and Libya (Bell, p.48). At various times other countries were also adherents. The nature and stringency of controls changed over time, but the Area gradually atrophied during the 1960s as member countries put increasing increments to reserves into forms other than sterling, and especially after May 1966 when Britain placed restrictions on capital flows to the developed members of the Area (Australia, Ireland, New Zealand, and South Africa). Sterling balances became a continuing source of concern overhanging sterling (on which more below), and the area disappeared in 1979, when Britain abolished exchange controls and moved to full currency convertibility. In the meantime, the scope for currency convertibility (in practice, use of sterling for payments outside the Sterling Area) was gradually extended, first through bilateral payments arrangements between Britain and non-member countries, then especially through Britain's membership in the European Payments Union, starting in 1950, since the entire Sterling Area participated in that arrangement through Britain.

The key decisions during this period were made by governments, often embodied in legislation. Central banks were the agents of government, whether formally independent or not, both in intervention in the foreign exchange markets and in administration of exchange controls. The point here is that the Sterling Area was a cooperative system, with the aim of protecting and ultimately strengthening the position of sterling in international markets, but in so doing preserving a degree of commercial and financial freedom within the Area.

European Payments Union

Europe's trade and payments were heavily restricted into bilateral channels immediately after the Second World War. Several attempts were made both to liberalize and to multilaterialize trade, especially within Europe, starting in 1947. They led in 1950 to the creation of the European Payments Union (EPU) by the Organization for European Economic Cooperation (OEEC, predecessor to the OECD), which had

been established to administer the European side of the Marshall Plan assistance from the United States. The EPU was initially endowed with $350 million of Marshall Plan funds. Policy was in the hands of the inter-governmental OEEC Council, but the BIS was the agent that kept the books and provided clearing facilities. A key feature of the EPU was its provision for unlimited intra-month credit among participating European central banks, netted and cleared at the end of each month with partial payments in gold or hard currency (mainly US dollars), with debtors paying less than creditors (initially mainly Belgium) received – hence the importance of the initial endowment in dollars. By the end of 1952, two-thirds of intra-European trade was free of restriction, while only 11 percent of imports from North America were restriction free (Solomon, 1977, p.19). Intra-European trade was gradually liberalized (with occasional reversals, especially France in 1957-58) and the terms of EPU settlement gradually hardened until European currencies became convertible de facto for current account transactions in the last few days of 1958 (Germany alone had also made its currency convertible for capital transactions), although formal acceptance of that commitment under Art. VIII of the International Monetary Fund waited until 1961. With convertibility, the EPU was terminated. As noted above, the entire Sterling Area was covered by British membership, as were the remaining colonial territories of other European countries. While the BIS played mainly a facilitating role, the EPU was a vehicle for central bank cooperation in the form of automatic short-term mutual credits (see Tew, ch. 12; Eichengreen, 1993).

Supporting the Pound and the Dollar, 1960-1973

Article VIII convertibility of the European currencies (the Japanese yen joined them in 1964) reflected not just recovery from the Second World War, but rapid economic growth, significant improvements in productivity, and improved competitiveness, as reflected in export performance. France had gotten an additional boost from the devaluation of 1958. Indeed, Germany and the Netherlands revalued their currencies by five percent in 1961 (according to Gilbert, 1980, p.104, the five percent was Chancellor Adenauer's compromise between the conflicting advice he received: ten percent and no change).

The United States lost $2.3 billion in gold in 1958, still seen as a welcome redistribution of monetary gold excessively concentrated in the United States by the late 1940s. Gold sales diminished in

1959, but rose again in 1960 to $2.1 billion. The US administration began to be concerned about the balance of payments position. At this time also Robert Triffin of Yale put forward his famous dilemma: a growing world economy needed additional international reserves; during the 1950s they were predominantly provided by increased official holdings of US dollars that were convertible (by monetary authorities only) into gold, as well as by gold sales by the United States, but eventually the credibility of this gold convertibility must come into question as official dollar holdings outstripped US gold holdings.

The United Kingdom had not experienced the robust productivity improvements of other western European countries (or Japan), had experienced more inflation than some, and still had large sterling liabilities held by Sterling Area countries that increasingly traded outside the Sterling Area. In 1957, in the wake of the Suez crisis, Britain prohibited the use of sterling in third country financing and tightened exchange controls in other ways, just as Germany was abolishing controls on all international transactions – thus giving birth to the eurodollar market, whereby British banks accepted deposits in US dollars and re-lent them at short-term, thus continuing a long tradition of British financing of international trade, but now no longer in sterling.

Thus the 1960s, which saw the real birth of multilateral central bank cooperation envisioned but stillborn in 1930, was characterized by a number of financial improvisations designed initially to protect the British pound but secondarily also to protect US gold reserves: 1) the gold pool, 2) a network of swap facilities among central banks, 3) concerted central bank loans to the UK, and 4) management of the eurodollar market, or at least certain aspects of it. Other innovations, such as the General Arrangements to Borrow (GAB) by the IMF, did not directly involve central banks, but they were generally financial agents of governments. (At that time only the Federal Reserve System, the German Bundesbank, and the Swiss National Bank were genuinely independent of the executive branches of government – although subject to legislation – and even then ambiguities remained with respect to foreign exchange transactions.) Moreover, from the beginning central banks were represented in the Group of Ten (eleven, counting Switzerland, which was not then a member of the IMF), set up to oversee the GAB and international financial matters more generally.

Gold Pool. In 1954 Britain had re-opened the London gold market, the resusitation of one of many commodity markets that had historically been located in London. Thus new gold (mainly from South

Africa, secondarily from the Soviet Union) could be readily purchased by private parties. The price was determined by supply and demand. After 1958, however, the United States worried about the psychological implications of a London price of gold significantly above the official price of $35 per troy ounce. Such an event occurred in November 1960, and eight central banks agreed to sell gold into the market. The following year the "gold pool" among eight central banks (US, UK, Belgium, France, Germany, Italy, the Netherlands, and Switzerland) was formed to sell gold into the London market when the price threatened to rise above $35.20. The US share was fifty percent (59 percent after France withdrew in June 1967). It was understood that any gold sold by other central banks (for dollars) could be replenished by converting the newly acquired dollars into gold at the Federal Reserve, hopefully with a lag. This arrangement endured until March 1968, when the "two-tiered" gold market was introduced. The pool purchased gold from the market in 1962-63, more than replenishing its sales in 1961. A crisis erupted in 1967-68, associated with the speculative crisis around the British pound, but following an acceleration of inflation in all the Group of Ten countries, in the United States from 1.2 percent in the consumer price index in 1964 to 3.0 percent in 1967 and 4.7 percent in 1968. The gold pool sold $400 million in the first ten months of 1967, mostly in October, and an additional $3.0 billion from November 1967, following the devaluation of sterling, to the following March, when gold pool sales ceased and the "two tier" system was adopted, with the statement that the participating central banks would no longer sell gold to private parties and "no longer feel it necessary to buy from the market" in view of the prospective creation of SDRs. Many other central banks indicated their acceptance of this agreement (which was requested). France did not formally accept it, but adhered to it.

Between September 1967 and March 1968 US and UK gold reserves dropped by 18 percent, with lesser declines by the other participants. The two-tier agreement was formally abandonned in November 1973, after the United States ceased gold convertibility (in August 1971) for official holders of dollars, the official price of gold had been raised, in two steps, to $42.22 an ounce, and when the market gold price was around $100 an ounce. According to the IMF rules, central banks thereafter would be able to sell gold to the market, but not buy it at a price above the official price (Solomon, 1977, pp.114-124).

Central Bank Swaps. Another mechanism of central bank cooperation introduced during this period, like the gold pool aimed in part at protecting US gold reserves, was the network of "swaps" created

around the US Federal Reserve, although later extended also between pairs of other central banks. A swap line was an arrangement whereby each of two central banks deposited an equivalent amount of its currency in the other central bank, usable by the second central bank either for market intervention or (in the case of the Fed) to purchase dollars from the other central bank that might otherwise be converted into gold. The deposits were typically for three months, renewable, but it came to be understood that they should not be renewed for more than one year. The form was first suggested by Koszul of the Bank of France, and the first swap of $50 million was opened with France in March 1962 (Coombs, 1976, p.74). It was renewed once, but not drawn upon, so after six months it was placed on standby, in effect a line of credit, the form which most swaps were subsequently took. To avoid gains or losses in the event of changes in exchange rate parities (such as then prevailed), a standing order was placed to repay any swap that was drawn upon immediately before such change in parity. Swap arrangements totaling $2 billion had been established between the Federal Reserve and eight other central banks by the end of 1962. By 1975 the total had grown to $20 billion with 14 central banks and the BIS (Coombs, p.78). These arrangements continued to 2004, with maximum authorized foreign exchange holdings of $25 billion. In addition, the mechanism had been adapted by East Asian central banks already before the Chiang Mai initiative of 2000, whereby the central banks of China, Japan, and others agreed to bilateral swaps with other central banks of East and Southeast Asia.

The swaps were activated and used by Canada in 1962 and by Italy in 1963-64 (when the Bank of England and the German Bundesbank also provided credits), as well as by the United States on several occasions in the 1960s. Most of the activated swaps were quickly repaid as speculative sentiment reversed and the drawing central bank regained reserves, but on a few occasions they ran one year and by agreement with the US Treasury were repaid by selling foreign-currency-denominated “Roosa bonds” to the relevant central bank, or by a US drawing on the International Monetary Fund. The latter had been made technically feasible by the creation in 1961 of the General Arrangements to Borrow (GAB), whereby eleven countries agreed to lend to the IMF if necessary to enable a US drawing, or indeed for drawings by others if the IMF was short of usable funds. In the event, the GAB was first invoked to help sterling, then the French franc.

Concerted Support for Sterling, and the French franc Britain was plagued throughout the 1960s

with a weak balance of payments, inflation higher than the United States and some other European countries, and balances in sterling amounting to the equivalent of $5-6 billion left over from the Second World War. Sterling came under pressure following the revaluations of the German mark and Dutch guilder in early 1961, and eight European central banks provided short-term financial support to the Bank of England totaling a $910 million, described by Gilbert (p.64) as the first concerted central bank support package. The remaining outstanding "Basle" credits were repaid by drawing on the IMF in July 1961. Coombs, the official responsible for the international activities of the Federal Reserve Bank of New York and a major player in central bank cooperation during his 15-year tenure there (1960-1975), describes these "Basle credits" as "a major breakthrough in postwar international finance…European central bank cooperation had not only saved sterling, but had also protected the dollar against heavy gold drains." (Coombs, p.37).

This pattern was to be repeated on several occasions. Indeed, there was almost continuous central bank help to the Bank of England through Basle arrangements during 1964-68. The announcement and use of a new support package typically reversed the speculative pressures, permitting some repayment; the remaining outstanding credits would be repaid by drawing on the IMF, which occurred in late 1964, May 1965, December 1967, and June 1968 (Tew, ch. 15). Eventually eleven central banks were involved, including those of Canada, Japan, and the United States. The newly created GAB was first activated in 1965 to support IMF loans to Britain rather than the United States. Federal Reserve swap line with the Bank of England was increased in stages from $500 million to $2.0 billion in March 1968, when the two-tiered gold arrangements were introduced, and several such increases were included in the announced support packages. Despite this support, sterling was devalued in November 1967 (Cairncross and Eichengreen, ch.5). Indeed, Bank of England Governor O'Brien used a monthly BIS meeting to canvas his central bank counterparts on the acceptability of a sterling devaluation, and received assurances that so long as it did not exceed 15 percent other (European) countries would not follow, as they had in 1949 (Gilbert, p.69). The parity of sterling was changed from $2.80 to $2.40, a devaluation of 14.3 percent from the persective of Britain's competitors if British export prices were unchanged in sterling, but 16.7 percent when seen from the perspective of British importers, who could expect to see the prices of imported goods rise by that amount if they did not change in foreign currency.

In addition to these support packages, two "Basle Group Arrangements" were offered to the Bank of England, one in June 1966 for up to $1 billion, the other in August 1968 for up to $2 billion, to provide special support in the event overseas holders of sterling balances drew down those balances significantly. The second agreement required the Bank of England to reach agreement with major official holders of sterling to draw down their balances only in case of balance of payments need (i.e. to avoid cashing in sterling for other reserve assets)(Tew, ch. 15; Gilbert, pp. 68, 71).

Altogether, Britain had debt outstanding associated with successive rescue operations totaling $8 billion at the end of 1968, of which more than half had been repaid by mid-1970 (Tew, p.270).

Canada also got support from several central banks during early 1968.

During the period of sterling difficulties the French franc had seemed to be in fine shape. Thanks to the devaluation of 1958 and the more conservative policies under De Gaulle's Fifth Republic, France ran payments surpluses. It was during this period that President De Gaulle raised questions about the desirability of the prevailing international monetary arrangements and expressed displeasure at the "exorbitant privilege" of the United States arising from the dollar's use as a reserve currency. In various ways France added to the strains on the system, by conspicuously converting recently acquired dollars into gold and, for example, by withdrawing from the Gold Pool in 1967 and circulating rumors that other central banks would soon do so (Solomon, 1977, p.114). During May 1968, however, France experienced widespread student protests, reinforced by widespread strikes. Police had to be called out in force, and financial markets turned skittish about the French franc. France drew on central bank support from the Federal Reserve, other members of the European Community, and the BIS, totaling $1.4 billion. The speculative movement subsided, but resumed again in 1969 in connection with on-again, off-again speculation on a revaluation of the German mark. Again central bank support was provided to France by the Federal Reserve, Belgium, Germany, Italy, the Netherlands, and the BIS. The franc was devalued by 11 percent during August 1969, a period of temporary quiet.

Management of eurodollars. As noted above, the London-based eurodollar market had come into being in 1957 when Britain place restrictions on the use of sterling for third country financing. By the mid 1960s it had become sufficiently significant that seasonal movements of funds into and out of the eurodollar market, particularly around accounts reporting days at the end of each quarter for "window-

dressing," affected the movement of official foreign exchange reserves significantly. Moreover, movements out of eurodollars at such window-dressing dates sharply increased short-term eurodollar interest rates, which in turn could draw funds from New York and worsen the US payments deficit as it was then officially reckoned (the so-called liquidity deficit; the United States ran a current account surplus throughout the 1960s). Led by the Swiss National Bank, agreement was reached in Basle to avoid these private withdrawals by encouraging repurchase agreements with a central bank, whereby the central bank would purchase dollars for local currency before the window-dressing date, to be automatically reversed after the date in question; or to offset them by placement by central banks of their newly acquired dollars in the eurodollar market before the window-dressing date, to be reversed afterward. Such operations at the end of 1967, including placements by the BIS, amounted to $1.4 billion (Coombs, pp. 196-98, 200).

Later, a different problem arose with the eurodollar market. A number of central banks had developed the practice of placing some of their dollar reserves in the eurodollar market. These funds were of course subsequently re-lent by the accepting banks. Such relending created a source of dollars not directly related to the US payments deficit, providing a kind of multiplier on US-originated dollars. When in the early 1970s speculation against the dollar resulted in large reserve accruals by other central banks, these accruals were augmented by this "carousel" effect. Agreement was accordingly reached in March 1971 that G-10 central banks would henceforward not place their dollar reserves in the eurodollar market, but rather would hold them directly in the United States (Solomon, 1977, p.177). This agreement did not apply to other central banks, so the practice continued, albeit on a smaller scale.

The emergence of the eurodollar market, outside the national monetary system of any country, created the need to acquire information and track its evolution, simply in the interests of understanding what was happening. This role fell to the BIS, which was requested by the G-10 in 1964 to collect and collate information on international claims and liabilities of the leading banks in those countries, in the context of available financing for payments deficits and an early attempt at "multilateral surveillance" (Solomon, 1977, p.68). Thus began a process of regular monitoring of cross-national international banking claims, which by 2004 covered 38 countries. Regular discussion of the euro-currency market, with an attempt both to define and to quantify it, began in the 34th Annual Report (1964). The BIS

played an analogous role for world demand and supply of gold, and in the 1990s began to track cross-border transactions in derivatives.

Depreciations of the dollar

Market pressures shifted from the pound and the franc to the dollar in the early 1970s, resulting in August 1971 in suspension of the gold convertibility of the dollar for foreign monetary authorities; in December 1971 the dollar was devalued relative to other leading currencies, most with respect to the Japanese yen; and the notional price of monetary gold was raised. From May 1970 to March 1973 currency parities were gradually abandoned, starting with the Canadian dollar, and with that fixed exchange rates among the major currencies. While central banks were involved as supporting actors, these dramatic developments were more directly in the hands of finance ministries, and thus fall outside the focus of this paper.

In some circles the monthly (later, bimonthly) BIS meeting of central bankers was considered a cabal where policies were determined away from the glare of publicity and even against the interests of national economies. In fact, as Coombs reports (p. 198), "at the Basel meetings little if anything in the way of coordination of national monetary policy was ever accomplished. Each governor reported his problems but rarely forecast policy recommendations." Indeed, after the inauguration of the Nixon administration in the United States in January 1969, when Paul Volcker became the senior US Treasury official responsible for international financial policy, according to Coombs the role of the Federal Reserve in international matters was drastically curtailed, and the "action center…at Basel fell into disuse." (p. xii) It later revived, and indeed in 1996 nine additional central banks were invited to join the BIS (Brazil, China, Hong Kong, India, Korea, Mexico, Russia, Saudi Arabia, and Singapore). By 2004 the membership had grown to 55 central banks, and private shareholders had been bought out. Of the 55 members, 33 (and 13 of 17 Directors) were European, so the BIS remained a heavily European institution. (It was still handling German payments on the Dawes (1924) and Young (1929) loans, and was expected to do so until 2010, nearly 90 years after the Dawes loan was made.)

There was one respect in which the "cabal" proved vitally useful. In September 1971,

after suspension of gold convertibility and the imposition of an import surcharge by the United States on dutiable imports, but before the December Smithsonian agreement on the currency realignments, Arthur Burns, chairman of the Federal Reserve Board, requested Jelle Zjilstra, governor the central bank of the Netherlands and chairman of the BIS governors, quietly to canvas his European counterparts as to what change in currency values would be acceptable. Zjilstra produced a report on the desirable change in the US current account and the exchange rate changes required to bring it about, including a modest "devaluation" of the dollar against gold, i.e. a rise in the dollar price of gold (France considered such a step necessary for a negotiated deal). US officials felt that the numbers were too small, but it provided a concrete basis for the negotiations that took place later in the fall (Solomon, 1977, pp. 196, 202).

During the turbulent decade of the 1970s most economic cooperation, when it occurred, was driven by governments, by ministers of finance or even foreign ministers and heads of government, institutionalized from 1975 by the annual economic summit meetings, which continued three decades later. After the dollar crisis of the early 1970s, major currencies floated against one another (except within the European Monetary System, on which more below), the world economy experienced two major increases in oil prices, followed by recessions and an acceleration of inflation. Publics everywhere wanted to know what was happening, and what their governments were going about it – not conditions conducive to quiet cooperation among central banks. In any case, governors of central banks were involved in meetings of the G-5 (later G-7) finance ministers and their deputies; and they had participated, along with government officials, in Working Party Three of the Economic Policy Committee of the OECD since its beginnings in 1961. Thus central bank staffs were engaged in preparations for the international discussions of monetary, financial, and exchange rate policies, and of reform of the international monetary system, even if the tune was called by ministries of finance or heads of government.

To combat inflation more effectively and more persuasively, the Federal Reserve under Paul Volcker's new chairmanship had a major change in operating procedures during the fall of 1979, a shift from targeting short-term interest rates to targeting some measure of the quantity of money. Volcker had worked in the Treasury Department in the early 1960s and again during the first Nixon administration. He subsequently served as president of the Federal Reserve Bank of New York for four years before being appointed Fed chairman in 1979, in part because of his international connections and the respect he

commanded abroad as well as in the United States. Before being implemented, the proposed change in policy was vetted with Otmar Emminger, chairman of the German Bundesbank, and with other central bankers assembled in Belgrade for the annual IMF and World Bank meetings, partly to alert them to the pending change (which had not yet been agreed within the Federal Reserve), partly to get their reactions and implicit approval for it (Volcker and Gyohten, p.168).

The 1982 Debt Crisis

The resulting sharp increase in short-term interest rates signaled the Fed was really serious about combating inflation, but it also produced an unexpectedly deep recession, despite which interest rates were held up well into the recession, coming down only in July 1982. Warnings of pending debt problems in some developing countries had already surfaced; many had borrowed heavily in foreign currency during the two oil shocks, at floating interest rates. Now they experienced first rising and then high interest rates even while demand for their exports declined as the United States and other major markets slipped into recession. Normally debt service would be expected to decline under these conditions, but the decline did not come until the second half of 1982.

Mexico was in the final year of its president's six-year, non-renewable term, typically a year of high government spending to facilitate the election of the chosen candidate of the PRI, the ruling party. 1982 was no exception (see Kraft). Mexico's reserves were put under great strain, and the Bank of Mexico, with Fed complicity, engaged in overnight window-dressing of its reserves around reporting dates. The hope was to get through the presidential election so that the newly elected, economically literate president, Miguel de la Madrid, could install an IMF-approved stabilization program that would provide the basis for continued foreign lending to Mexico, something the haughty and economically illiterate Lopez Portillo refused to contemplate.

The Fed's $700 million swap facility with the Bank of Mexico was activated after the election in July (but before the inauguration in December). The crisis erupted in August as Mexico nearly exhausted its reserves, and a support package of $1.85 billion was assembled, half from the United States, half from Japan and various European central banks. Volcker (p.201) comments on this emergency loan as follows: "it was a remarkable example of international financial cooperation…the agreements really rested on

mutual trust among financial officials and perhaps most particularly among central bankers. By virtue of experience, tenure, and training, they are almost uniquely able to deal with each other on a basis of close understanding and frankness…we didn't have to spend a lot of time explaining to each other the nature of the emergency." This emergency arose from the threats to national banking systems whose leading banks had engaged heavily, excessively as it turned out, in lending to developing countries, as well as the threat to Mexico and other Latin American countries of a financial collapse.

Volcker is too kind to add that the financial officials in the first Reagan administration were strongly inclined to a hands-off approach to exchange rate and financial issues, on the supposition that the "market knows best," and even when it doesn't government intervention is likely to make things worse. The lead in dealing with the 1982 debt crisis was taken by the Federal Reserve, out of its concern for the functioning of the financial system, and the US Treasury found itself playing catch-up at first, although later Treasury resumed its lead role, with the Baker Plan of 1986 and the Brady Plan of 1989. The role of central banks receded also as the financial prospects of the commercial banks improved.

Plaza and Louvre

The US dollar appreciated sharply from early 1980 to early 1985, from 1.7 DM/$ to 3.4 DM/$, and by lesser amounts with respect to the Japanese yen. By 1985 the weak competitive position of American manufacturing led to strong protectionist pressures in the Congress. Newly installed Secretary of Treasury James Baker took the lead to get the G-5 finance ministers and central bank governors to issue the so-called Plaza Agreement in September 1985, to the effect that the dollar was too strong and that they "stand ready to cooperate more closely to encourage [appreciation of other currencies] when to do so would be helpful." Against the background of a stated US policy toward non-intervention in foreign exchange markets during the first Reagan administration, this communique, the first issued by G-5 ministers and governors although they had been meeting together for more than a decade, carried a strong message to financial markets. It was backed up by concerted sale of dollars in foreign exchange markets in Tokyo, Frankfurt, London, and New York. Indeed, concerted intervention had begun on a smaller scale in January 1985, before the dollar reached its peak.

The dollar fell continuously following the Plaza agreement and throughout 1986, to the point at which Japan began to worry about the implications of a strong yen for the Japanese economy. US-Japanese

conversations occurred between finance ministries and the Bank of Japan began to buy dollars. Following a G-6 (G-5 plus Canada) meeting in the Louvre in February 1987, ministers and governors announced that "further substantial exchange rate shifts among their currencies could damage growth and adjustment prospects," with the suggestion in some quarters, never officially confirmed, that a target exchange rate zone had been established. Again concerted exchange market intervention occurred, this time buying dollars on a substantial scale to stabilize the rates. Altogether during the period early 1985 to early 1991 there were 17 episodes of concerted intervention in exchange markets, mainly dollar purchases in 1987, mainly dollar sales in 1988-1990 (Dominguez and Frankel, p.16).

Exchange market intervention by major central banks was less common during the 1990s than it had been in the late 1980s, but several notable concerted interventions occurred, sometimes on a larger scale and with attendant public announcement, especially to strengthen the dollar against the yen in August 1993 and again in August 1995, and against the German mark in the summer of 1992 and again in May 1995; and to strengthen the yen against the dollar in early 1992, early 1995, and in June 1998, and the mark against the dollar in early 1990 and July 1991. The newly established European Central Bank also intervened in support of the euro in September 2000, in collaboration with the Federal Reserve, the Bank of Japan, and other central banks (Dominguez, pp. 230-240).

Most of these interventions were sterilized in the first instance, to neutralize their effects on domestic monetary conditions, although over time the impact of the interventions were often allowed to affect the money supply. And ministries of finance were typically implicated in the decisions. Even in the case of the ECB, embarrassingly independent of the political process, the Ecofin Council of Ministers was consulted before intervention (Dominguez, p.233).

As noted above, it was virtually unknown for monetary policy as such to be coordinated, at least across the Atlantic. Monetary policies were occasionally discussed in the OECD's Working Party Three, and arguably sometimes led to subsequent action, e.g. in March 1971 when Europeans eased and the Federal Reserve tightened in the presence of large short-term outflows from the United States (Solomon, 1977, p.178). A clear exception occurred in March 1986, when the dollar was still depreciating following the Plaza agreement. Fed chairman Volcker was concerned about a runaway decline, and was therefore hesitant to lower US interest rates even though weakening domestic economic conditions would support

such a move, and the Reagan administration made known its desire for lower rates. Several Reagan appointees to the Federal Reserve Board out-voted Volcker and his supporters on whether to lower the discount rate, in what has become known as the "palace coup." As the full implications of this revolt began to sink in, two of the governors offered later in the day, before public announcement of the change, to reverse their votes. Volcker in turn pledged to support a lower rate if he could persuade the Bundesbank and the Bank of Japan to lower their rates at the same time, thus neutralizing any effect on the dollar exchange rate. This he succeeded in doing. Indeed he had talked with his counterparts in January about the possible need for a concerted reduction in interest rates, so they were prepared for his request. A second reduction in the US discount rate, coordinated with the Bank of Japan, took place in April (Funibashi; Volcker and Gyohten, pp.272-274). And monetary authorities together took prompt action to avoid possible financial crisis and recession following the stock market crash of October 1987 (Volcker, p.285).

European Monetary Cooperation

There is a long and complex history of attempts at monetary cooperation in Europe, following the EPU. Indeed, such cooperation was envisioned, in general terms, in the 1957 Treaty of Rome, and a Committee of the governors of central banks of the European Community, which typically met in Basel on occasion of the BIS meetings, was established in 1964. Here is not the place to review that history in detail, which can be found in Gros and Thygesen (2nd edition, 1998) or Apel. Suffice it to say that technical and political issues were commingled in these discussions, that central banks were generally under instruction from their political masters, but that central banks – and especially the German Bundesbank – had a strong if not always determining voice in the discussions and negotiations. Sometimes they even ignored political decisions, as in the case of the European Monetary Cooperation Fund (EMCF) of 1973, to be sure with the acquiescence of the political masters, who were conscious of unresolved differences in emphasis and priorities among themselves and chose not to resolve them, at least for a time.

Consultations on a wide range of technical issues occurred almost continuously over the years, as Europe moved successively through EMA and the Werner Plan to the ECMF, EMS, Delors Plan/Maastricht Treaty, EMI, eventually to Economic and Monetary Union (EMU) and the creation of the European Central Bank (ECB) and the European System of Central Banks in 1998. Central banks were involved in almost all

these discussions, the major exception being the European Monetary System (EMS), which was planned from the Chancellory of Helmut Schmidt with the presumably deliberate exclusion of the Bundesbank, although the latter institution was engaged in detailled planning and execution once the main outlines were drawn.

Beyond standardizing, compiling, exchanging, and assessing information, central bank cooperation was especially required, over the years, on two fronts: market intervention, and short-run financial support. Under the Bretton Woods system as embodied in the IMF Articles of Agreement, countries were enjoined to have currencies convertible for current account transactions, to declare par values in terms of the gold dollar of 1944, and to keep market exchange rates within one percent of par value. This implied a maximum range of flexibility between any two European currencies of four percent, which was deemed too high, so Europeans early on agreed to narrow this possible range to three percent. When, following the Smithsonian Agreement of 1971, currency bands by consensus were widened to +/- 2.25 (permitting a nine percent maximum swing for two non-dollar currencies), the six members of the European Community, later joined by others, agreed in April 1972 to halve their intervention limits, leading to a "snake in the [dollar] tunnel." The "tunnel" disappeared with the generalized move to floating exchange rates in March 1973, but the European "snake" remained, with constantly changing membership (e.g. France withdrew in 1974, rejoined in 1975, withdrew again in 1976). Intervention limits (and the conventions for deciding them) was a continuing issue, as was intra-marginal intervention (which several central banks preferred, both to limit exchange rate movements and to keep markets uncertain about where, within the allowable band, exchange rates would move next), which was viewed as a necessarily cooperative venture, at least in terms of prior notice and exchange of information between the two central banks directly involved.

The second issue was short-term credits among European central banks to support their exchange rate commitments. These arose out of swap arrangements agreed at various times during the 1960s. These were systematized in principle in 1973 in the EMCF, but in fact remained under the management of the central banks. They were further systematized and enlarged in late 1978, in preparation for the launch of EMS in January 1979. To support market intervention at the boundaries of the band, creditor central banks were obliged to extend unlimited credits (= very short-term credit) to debtor central banks, to be repaid 45

days after the end of the month of intervention (up from 30 days under the snake). Beyond that, if the outstanding debt could not be settled, creditor central banks would extend "short-term credit" to debtor central banks up to a specified ceiling for three months, renewable for three months. Thus some form of central bank credit was available for up to eight months. Beyond that, governments would assume responsibility for extending any further credits, subject to such conditions as might be determined by Ecofin, the European council of finance ministers. Even after their enlargement in 1978, these short-term credit facilities were limited, roughly the size of IMF quotas of those participating in the EMS.

The settlement of very-short-term credits could be made up to 50 percent by drawing on gold and foreign exchange (largely dollar) reserves that were mobilized through the EMCF; 20 percent of such reserves were notionally "deposited" in the EMCF as ecu, the synthetic European currency unit. This arrangement had the effect of enabling some gold reserves, whose market price was now way above the official price, and was used for these notional deposits, to be used once again for official international settlements. The Bundesbank, however, was uneasy about all this potential credit, and on request acquired assurances from the German government that if EMS commitments ever conflicted with the objective of price stability, the former would be sacrificed. That is, the Bundesbank would be relieved of its obligation to support currencies that it considered to be in fundamental disequilibrium (on the so-called Emminger letter, see Solomon, 1999, p.72).

In the event, inter-European central bank credits were little used during the 1980s, partly because the national central banks had ample reserves, partly because exchange rates within the EMS were adjusted more often, roughly once a year, than perhaps had been envisioned in 1978.

This situation changed in the early 1990s, after the Maastricht Treaty had been negotiated and signed. Europe experienced a full-fledged monetary crisis in September 1992, which led Britain and Italy to leave the exchange rate mechanism (Britain had joined in 1990), several countries to alter their currency parities (central rates), and to the enlargement of the permissible exchange rate band to +/- 15 percent, in effect preserving the ERM in name only. During the crisis, however, extensive credits were extended, reported (in Dominguez and Frankel, p.46) to have been $30 billion by the Bundesbank on behalf of the British pound and the Italian lire before it ceased support, and a total of $27 billion in support of the French franc, which survived the crisis with no change in central rates.

The ultimate form of central bank cooperation was achieved in 1998 when the ECB was created with sole authority over monetary policy among its eleven (later twelve) members, and the creation of a new common currency, the euro, in January 1999; national currencies were finally withdrawn in early 2002. National central banks continued, largely as operating branches of the ESCB; key decisions were made collectively. Some ambiguity remains about exchange rates, since policy toward exchange rates is reserved for governments, but management of exchange rates, closely related to monetary policy, is the responsibility of the ECB.

Cooperation in Other Regions

Central bank swap, or buyback, arrangements have been agreed among central banks in East Asia, mostly specified in foreign exchange rather than domestic currency (the exception is that between China and Japan, which is technically the Bank of Japan's only swap agreement in Asia; the others are carried by the Ministry of Finance, with BoJ as agent). The central bank of China entered into such arrangements with Hong Kong and Malaysia in 1996 and with Indonesia, Philippines and Thailand in 1997. A network of swaps was formalized in the Chiang Mai agreement of 2000, although the arrangements remained bilateral, and by 2005 they attained a face value of $39.5 billion, although none had actually been drawn. In 2005 an agreement in principle was made to double the amount, and to increase to 20 percent (up from 10 percent) the amounts that could be drawn without an IMF program.

By 2004 the Executives' Meeting of East Asia and Pacific central banks (EMEAP) had eleven members, including Australia, Japan, Korea, and New Zealand as well as China, Hong Kong, and Indonesia, Malaysia, Philippines, Singapore, and Thailand of southeast Asia. In June 2003 they created an Asian Bond Fund, and in December 2004 a second such fund, whereby central banks agreed to put some portion of their reserves in regional bonds, up to $2 billion. (personal communication from Zhang Zhixiang). The BIS acted as agent for the bond funds.

Cooperation in Regulation

Starting as early as 1974 , central banks began to be concerned about the possibly unhealthy implications for the international financial system of unrestrained and unregulated competition among the leading commercial banks of the world, and they began to frame a series of prudential regulations with

regard to which central banks bore ultimate responsibility for banks operating out of their home jurisdictions in currencies other than their home currency, adequacy of bank capital, etc. By 2004 the BIS sponsored standing committees on bank supervision, payments and settlement systems, and the global financial system (formerly euro-currencies). This important area of central bank cooperation will be covered in a separate paper by Ethan Kapstein.

Evaluation

As the foregoing account suggests, there has been extensive cooperation among central banks, especially but not only European central banks, especially since the 1960s but starting well before that. It continues to the present. Has it been a good thing? This may seem like a churlish question, but some economists these days question everything that public institutions do, especially when they try to do it together. It is sometimes seen as a conspiracy of elite technocrats against the true interests of the people. "Moral hazard" is frequently cited as an undesirable consequence of central bank cooperation, even of central banks on their own. Attempts to influence exchange rates are tampering with otherwise efficient market forces.

Most of these criticisms are misplaced. One consequence of central bank cooperation has been much improved collection, standardization, and compilation of financial statistics, and even skeptics of public action usually agree that transparency of information is necessary for a well-functioning financial market. At the purely theoretical level, it can be shown that cooperative solutions to policy choices in interdependent systems can lead to superior outcomes to non-cooperative choices in the same environment. For example, an attempt by monetary authorities to pursue tight monetary conditions to combat actual or threatening inflation, under floating exchange rates, can lead to unnecessary contraction of world output, since competing central banks try to get the advantages of an appreciating currency, which of course cannot be obtained by all countries in the system at the same time (see Cooper, 1985). With n currencies there are only n-1 independent exchange rates, hence a degree of freedom for the system as a whole – the average degree of monetary ease – that can be used to advantage, but requires a convention that at least one country is passive in foreign exchange markets but targets world monetary conditions, or a formal rule for intervention, or active cooperation.

In contrast, however, Rogoff (1985) has shown that in a world of full information, perfect (stochastic) foresight, and wage setting with a one-period lag, central bank cooperation may lead to higher expected and actual inflation because of the loss of the disciplinary effect on monetary policy of a depreciating currency. Rogoff concedes that cooperation is superior to its absence in combating shocks to the system, and concludes that what would be desirable is to find a credible regime for limiting inflation. Interestingly enough, Paul Einzig in explaining the rationale for central bank cooperation in the BIS in 1930 also expressed concern that cooperative arrangements might lead to excessive credit creation and higher inflation, but judged the potential benefits of cooperation to outweigh the potential costs (his book went to press in December 1929!).

It is perhaps worth noting in passing that the second half of the 20th century was the most inflationary period for the world economy on record, with the US GDP deflator rising by sixfold, or 3.7 percent a year, with only a few countries, notably Germany and Switzerland, experiencing lower rates of inflation. It also experienced the highest rate of growth in per capita income ever, at 2.1 percent a year (from Cooper, 2005, drawing on Maddison, 2001). Whether this was a mere coincidence, such that world growth could have been even higher with markedly lower rates of inflation, or whether there was in fact an organic connection between the two phenomena, is something that future experience and analysis will perhaps sort out.

The models suggesting an inflationary bias of central bank cooperation are probably largely irrelevant to the experience of the past half century, since as we have noted there was little cooperation in framing monetary policy per se. Indeed, Maisels (1973, p.221-224) reported that during his seven years on the Federal Reserve Board (1965-72) there were only eight out of more than 100 monetary policy actions in which he noted any influence of international considerations, usually affecting the timing of Fed actions. Thus, in five instances the Fed moved sooner than it might have done on domestic grounds alone in tightening policy to inhibit US reserve losses. In three instances tightening was delayed out of concern for pressures respectively on the pound, the French franc, and the Italian lire. Only one of the eight, in December 1965 concerning sterling, was controversial within the Federal Open Market Committee (FOMC).

Cooper and Little (2000), on reviewing the minutes of the FOMC over a much longer period, find that international factors were frequently mentioned, but were rarely decisive in determining policy. Nonetheless, a statistical test involving a Fed reaction function showed that dollar purchases by the Fed in foreign exchange markets were associated with a subsequent tightening of the Federal funds rate, although dollar sales did not seem to influence US monetary policy (p.93).

Two episodes have been mentioned where, it is claimed, central bank engagement in international cooperation contributed to disastrous results: Federal Reserve help for the British pound in 1927, and the Louvre accord to help inhibit Japanese currency appreciation in 1987-88. Neither claim will stand close scrutiny. Detailed examination of the first case, sketched early in this paper, such as was undertaken by Chandler (1958, p.438ff; also Eichengreen, 1992, pp.212-214; Meltzer, pp.172-178), reveals that the situation was much more complicated than some later portrayals, that the Fed reduction in discount rate was taken overwhelmingly for domestic reasons (partly seasonal), and that even the international element as discussed in the Board involved largely domestic conditions, in that an anticipated rise in the discount rate of the Bank of England, possibly leading to increases in continental Europe, would depress British and European demand for US products, particularly agricultural products, during the fall harvest season. The reduction in the US rate, justified by the Board to itself on domestic grounds, had the additional advantage of forestalling a rise in European rates and a reduction in demand for US exports, but also eased pressure on sterling. The later debate was complicated by the somewhat arbitrary way in which the Board forced a reduction in Chicago's rate, over the objections of the Chicago Fed president and directors. (At that time each Federal Reserve Bank had its own discount rate, but of course as a national financial market evolved this became untenable over time; 1927 was a transition year, but New York feared funds would be pulled from New York and elsewhere to Chicago if the latter's rate was higher.) This was an early example where international considerations – a prospective fall in European demand for US agricultural products – influenced US monetary policy. Help for sterling however did not lead US policy in a direction different from domestic considerations.

It is sometimes claimed that the financial and real estate bubble in Japan in the late 1980s was caused by US pressure, reflected in the Louvre agreement and elsewhere, for Japan to maintain more stimulative monetary and especially fiscal policy than it would have done on domestic grounds alone (e.g.

Siebert, 2004). A close reading of the record, however, such as that provided by Funibashi or Henning, suggests that close to the opposite may be the case: the ruling LDP party of Japan wanted stimulative policy for domestic, partly electoral, reasons. The powerful Ministry of Finance resisted stimulative fiscal policy, which shifted the pressure to the Bank of Japan and monetary policy. Japanese officials were also concerned about undue appreciation of the yen, which would damage the export sector. Again, that pointed toward a stimulative monetary policy. Secretary of Treasury Baker on several occasions called for more Japanese fiscal action, and the Japanese weakly complied. But they found it convenient domestically to rely more on monetary policy and to shift the responsibility to US *gaiatsu* for actions that they wanted to take on domestic grounds, partly to overcome the resistance of the domestic mandarins in the finance ministry. The Louvre Agreement was basically a Japanese initiative.

There has been much controversy over the efficacy of official exchange market intervention under floating exchange rates with high capital mobility. Indeed the G-7 commissioned Juergensen Report of 1983 concluded that the impact of sterlized intervention, that is, market intervention that did not affect the domestic money supply, was at best small and transitory during the period 1973-1981, and these results conformed with the views of many economists and some government officials, especially in the early Reagan administration. If that is the case, cooperation in exchange market intervention is pointless. However, Dominguez and Frankel (1993), using daily official intervention by the Federal Reserve, the Bundesbank, and the Swiss National Bank during the 1980s, find that such intervention can have a significant effect on market exchange rates, particularly when it is coordinated among central banks and when it is unexpected. Dominguez (2003), adding information from the Bank of Japan, reaches a similar conclusion for the 1990s, calling into question the largely theoretical reasoning of economists, with some support from empirical work using much coarser data on intervention. Perhaps the reason is to be found in the fragility of expectations that often prevails in foreign exchange markets, with market participants unclear what the key determinants of exchange rates should be during the next week, quarter, or even years. As Charles Coombs, the New York Fed official responsible for exchange market intervention for 15 years, put it after three years of floating, “by its very nature, the foreign exchange market is a nervous, high risk, ultra-sensitive mechanism, primarily geared to short term developments. Of the tens of billions [now over a trillion] of dollars in daily transactions cleared through the market, only a fraction derive from such

fundamental factors as foreign trade and long term investment. On a day-to-day basis, the market is instead dominated by short term capital movements in search of quick profits…" (1976, p.xiii). Under these circumstances, some guidance from central banks about what officials consider an appropriate rate, or more often a clearly inappropriate rate, can help focus market expectations.

In summary, central bank cooperation has grown extensively, if fitfully and sporadically, since the birth of the Bank for International Settlements and the inauguration of monthly meetings of central bankers in 1930. In Europe of the euro, it has reached the acme of full coordination of policy. Elsewhere, it remains sporadic, but with a much more solid infrastructure of meetings, personal contacts (made easier by jet aircraft and reliable trans-oceanic telephone) and comparable, consolidated information than was available 75 years ago.

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