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Anchors aweigh: the transition from commodity money to fiat money in western economies

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Abstract. In this paper I argue that the transition from commodity money to fiat money in the 1970s was a less dramatic change than suggested by a first glance at monetary history or monetary theory. I show that, historically, the quantity of the commodity-based money was at the discretion of the monetary authority and how, over time, the desire to economize on the commodity backing led to national and international institutions that reduced the extent to which money issues under the commodity standard represented an explicit claim to an intrinsically valuable asset.

Ancre dérapée: le passage d'une monnaie basée sur des produits à une monnaie fiduciaire dans les économies occidentales. Dans ce mémoire, l'auteur suggère que la transition de la monnaie basée sur des produits à la monnaie fiduciaire dans les années 1970 a constitué un changement moins dramatique qu'il n'a pu paraître après un premier coup d'oeil à l'histoire monétaire ou à la théorie monétaire. On montre que, historiquement, la quantité de monnaie fondée sur des produits était en fait définie de manière discrétionnaire par les autorités monétaires et que, avec le passage du temps, le désir d'économiser le produit sur lequel la monnaie était fondée a eu pour effet d'entraîner les institutions nationales et internationales à réduire le lien véritable entre la quantité de monnaie mise en circulation et le droit explicite à un actif doté d'une valeur intrinsèque.

1. INTRODUCTION

For over a millennium western economies used a monetary system that had gold or silver as a nominal anchor, that is, where the link to gold or silver supposedly prevented arbitrary expansions of the money supply (Giovannini 1993, 113). In the

1993 Harold Innis Memorial Lecture, presented at the Canadian Economics Association Meetings, Carleton University, Ottawa. I thank Peter Howitt for his invitation to give this lecture. I would like to thank (without implicating) Mike Bordo, Ann Carlos, Tom Courchene, and David Laidler for their careful reading and insightful comments on an earlier draft of this paper. I would also like to thank the SSHRC for funding this research.

early 1970s the last tie to the gold standard was broken when the Bretton Woods system collapsed, and the United States suspended convertibility of U.S. dollars into gold. Fiat money (for which I will use Wallace's (1980) definition: money that is inconvertible and intrinsically useless) was to be the basis of the monetary system. This paper analyses the transition from a commodity-based monetary system to the fiat money system.

This choice of topic is motivated by both theoretical and historical factors. In theory, there seems to be a vast chasm between a commodity money system, where the quantity of money is determined by nature (possibly at some remove) and the value of money is intrinsic, and a fiat money system, where the determinants of value are puzzling and the quantity of money is a matter of policy. The historical motivation comes from my research into the origins of the Bank of Canada in the course of which I was struck by the confidence with which Canadian policy-makers in the early 1930s anticipated the resumption of the international gold standard (Bordo and Redish 1987). Why the change of heart?

What I am going to present is unfortunately not a complete answer; rather, it is the foundation for a case that the process was more gradual than the simple comparison between attitudes in 1930 and 1970 – or than simple comparisons of economies with fiat money and commodity money – suggests.

The collapse of Bretton Woods has been studied extensively, primarily in the context of the post-World War II economy, although sometimes in the context of interwar economic problems and even the classical gold standard. Here I study the evolution of the system in a broader context: as part of the evolution from a pure commodity money system to a fiat money system.

My view of the collapse of Bretton Woods is the story of a ship on a finite anchor chain, in rising seas: At some point one has to cut the chain to save the ship. I will argue that the seas had been rising not just in the Bretton Woods period, but for many decades previously – and indeed were the motivating force for changes in monetary institutions through the nineteenth and early twentieth centuries. These changes had the effect of lengthening the anchor chain; by 1971, however, there was no more chain to let out. But in addition, these changes, which included the establishment of central banks and the introduction of a fiat element to the money stock, prepared the way for a fiat money standard.

Having lost its anchor, was the ship then doomed to drift (dare I suggest break up) at the whim of the elements? Here historical antecedent is encouraging, because I want to show that under commodity standards – in practice – the anchor was put in place not by fundamental natural forces but by decisions of human monetary authorities.

I am going to take these strands of the argument in chronological order, beginning with how a commodity money standard operated. Then, I shall turn to the way that monetary changes in the nineteenth century represented attempts by individuals and national governments to lengthen the anchor chain, while keeping the anchor. Finally, I discuss post-World War I changes, which were primarily at the international level, up to the collapse of Bretton Woods. These last I discuss more briefly, since here the ground is relatively well worn.

II. THE ANCHOR UNDER A COMMODITY MONEY STANDARD

Textbook versions of a commodity money system model a world in which both the medium of exchange and the unit of account are (for example) lumps of gold (see, e.g., McCandless and Wallace 1991). Prices and debts are denominated in lumps of gold and are paid off in the same. It could be that some agent agrees to verify the fineness and weight of these lumps and stamps a mark on them – in which case we could call them coins – but we are focusing here on the case where the payments will be made by weight of gold not numbers of coins.

This model is useful, since it is the simplest way to capture the elements of a system where the money stock is anchored by natural resource constraints. But in practice, such a monetary system is a fiction, and commodity money standards in even medieval Europe differed from it in an important way: coins were not traded by weight, not even directly by tale, but by their value in a unit of account, which differed from the medium of exchange.¹

Typically, throughout Europe – at least from 1200 on – the monetary authorities proclaimed coins to be legal tender for given unit of account values. Many European countries used a duodecimal unit of account like that of Britain: 1 pound sterling was composed of 20 shillings, each with 12 pence. For example, the groat (a small English silver coin) was valued at 4 pence (4d). Coins were defined in terms of their metal (typically gold or silver), fineness (for example, 22 carat gold, or sterling silver), and weight. Typically, gold and silver coins (both domestic and foreign) were made legal tender at specific values in the unit of account. In practice, especially by the beginning of the early modern period, the monarch had the right both to define the unit of account and to run the mint; if the monarch didn't run the mint s/he would certainly charge a fee (seignorage) for the privilege of running the mint. (In practice, especially for gold coins, where international competition was more intense, these fees were not exorbitant.)

The point of all this is that unlike the situation in the textbook commodity money world, in practice the monetary authority played a role in the commodity money standard, and the monetary authority could benefit (as I show below) from depreciating the currency. The pure comparison of commodity money and fiat money, where the former is rigidly anchored by nature and the latter is at the whim of the monetary authority, is, in an important way, an oversimplification. A simple way of formulating the difference is to say that in the textbook world the money stock (M) is the stock of monetary gold: $M = G$, with G (and M) measured in ounces of gold; under a commodity money standard $M = p_G G$, where p_G is measured in pounds sterling (£stg) per ounce, and therefore M is measured in £stg. p_G is at the discretion of the government, and an increase in p_G is the definition of a depreciation of the currency.

1 Spufford (1988) is the seminal work on medieval money. Ruding (1840) and Feavearyear (1963) document the history of English coinage and de Wailly (1857) the French coinage. Breckinridge (1903) provides a fascinating history of legal tender laws from 1066 on.

There were two primary causes of depreciation. The first was in a sense a technical adjustment: in a world of commodity monies, coins of both gold and silver were necessary to provide coins of a convenient size for both high- and low-value transactions. Yet when both gold and silver coins were given legal tender values, a change in the market price of the metals would imply that one had become undervalued – ‘good’ money in Gresham’s sense. This would either circulate at a premium, or, over time, be driven out of circulation.² To restore the concurrent par circulation of coins of both gold and silver, the monetary authorities would have to change the relative values of coins at the mint, and typically this was done by raising the legal tender value of the undervalued metal.³

The other cause of depreciation was a need for revenue. My favourite example is the depreciation of the pound sterling by Henry VIII (see table 1). In 1540 if you took one pound of fine silver to the mint, the mint would coin 145.94 groats out of the metal (each being 42.67 troy grains of sterling (92.5 per cent fine) silver) worth a total of £2.43. You would receive groats worth £2.38, and the mint and king would keep the difference. In 1542 the king announced that the mint price had risen to £2.64 per pound. If groats trade for 4d each, then an agent could make a profit of £0.21 (£2.64 – £2.43) by selling groats containing one pound of silver to the mint. A rational individual would take the groats to the mint.

What the king did not announce but was quickly realized by most money-holders was that the new groats had 30 per cent less silver than the old groats: the king made 189.9 groats worth £3.17 from each pound of pure silver, making a gross profit of £0.53 from each pound coined. But still, if shopkeepers would not accept the old groats for 4.34d, it would make sense to sell them to the mint. That is, not only did Henry increase the seignorage rate, but – because coins traded at their unit of account value – he could increase the amount of mint output. If you think of seignorage revenue as a tax, his profit came from both the increase in the tax rate, and the increase in the base. And the profits were immense. Henry’s profit from this and subsequent debasements in the 1540s has been estimated at £1.27 million, an immense sum relative to typical mint revenues of about £1,000 per year and, relative to ordinary annual crown revenues, about £200,000 (Challis 1967). In addition, the depreciation led to an unanticipated inflation which provided further gains from his status as a net debtor.

In the early medieval period, when tax structures were in their infancy, depreciation was frequently used to generate seignorage revenue. By the twelfth century, however, the monarch had alternative sources of revenue that had fewer distortionary side-effects. In France and Spain this trade-off was explicitly acknowledged, and monarchs gave up the right to depreciate the coinage in return for hearth taxes

2 Whether undervalued money would be driven out of circulation or circulate at a premium is a matter of current debate, see Greenfield and Rockoff (1992) and Rolnick and Weber (1986).

3 Glassman and Redish (1988) examined the history of depreciation in early modern England and France, and showed that the majority of depreciations were motivated by technical concerns. The notation (PG, *G*) used here could be modified to take account of bimetallism, but for our purposes this would add complexity without adding insight. A simple alternative is to think of PG as a weighted average of the price of gold and silver and *G* as the sum of monetary gold and silver.

TABLE 1
The recoinage and debasement of English groats

	1526	1542
1. Coin weight (grains)	42.67	40.00
2. Fineness (per cent)	92.5	75.8
3. Specie content (grains) (line 1 $\times$ line 2)	39.47	30.33
4. Coins/lb fine metal (5760/line 3)	145.94	189.91
5. Official value of groat	4 <i>d.</i>	4 <i>d.</i>
6. Value of groat at the mint (240 $\times$ line 8/line 4)	3.9 <i>d.</i>	3.3 <i>d.</i>
7. Mint equivalent (£/lb) (line 5 $\times$ line 4)/240	2.43	3.17
8. Mint price (£/lb)	2.38	2.64
9. Gross seignorage (£/lb) (line 7 – line 8)	0.05	0.53
10. Rate of gross seignorage (line 9/line 8)	2.1%	20.1%
11. Value of 1526 groat at the mint in 1542 (240 $\times$ 2.64/145.94)		4.3 <i>d.</i>

SOURCE: Taken from Glassman and Redish (1988, 79).

or excise taxes (Blisson 1979). In periods of war, however, when a monarch could not collect a large sum quickly through taxes or bond sales, it became worthwhile to sacrifice the monetary system.⁴ Nathan Sussman (1993) recently has shown how the dauphin saved his skin during the latter part of the Hundred Years' War (specifically 1415–22) by a massive depreciation.

In summary, since the monetary authority set the price of gold and agents were required to guess the extent to which it would use discretionary behaviour, the commodity standard was not as far from a fiat money standard, as the simple model of commodity money suggests. For the remainder of the paper I want to focus on the transition from the commodity money standard, beginning with the introduction of paper money and fractional reserve banking.

III. CONVERTIBLE NOTES AND CENTRAL BANKING

The substitution of paper notes for coins as a medium of exchange began in the sixteenth century, but the notes were initially 100 per cent backed by coins.⁵ The Bank of Amsterdam established in 1609 is the most famous example, but it was

4 This is consistent with the predictions of a game theoretic model Bordo and Kydland (1991) use to explain periods of depreciation and stability in nineteenth-century Europe.

5 Of course in China paper money had circulated since the beginning of the tenth century (Tulloch (1957)). Early issues were convertible into silver; by 1160, however, inconvertible circulating notes were issued. In the British American colonies many colonial governments issued paper money. The notes, when issued, were typically convertible into specie at some future date or accepted for taxes; however, they frequently became inconvertible subsequently and, when large

TABLE 2
The origins of central bank powers^a

Country	Date founded	Monopoly over note issue	Notes made legal tender	State ownership
England	1694	1844	1833	1946
France	1800	1848	1878	1945
Germany	1875	1875	1909	1948
Japan	1882	1884	1885	N/A
Italy	1893	1893	1893	N/A
United States	1913	1913	1933	N/A
Canada	1934	1935	1935	1938

^a See appendix for notes to this table, including both sources and caveats.

actually predated by banks in Spain and the Italian states (Kindleberger 1984). The earliest fractionally backed paper money is associated with the name of John Law, who in 1716 started a bank in Paris that issued fractionally backed notes. From 1716 to 1718 the notes were convertible on demand into specie; in 1719, however, the notes became unbacked legal tender and shortly thereafter were worthless.

In England and Scotland private note-issuing banks began operating in the second half of the eighteenth century, but in Europe more generally, banking did not become widespread until the nineteenth century (Cameron 1967).⁶ Contemporaneously, a system of central banks developed, that is, a system of typically private institutions with a monopoly over the right to issue notes and whose notes were legal tender (see table 2). What were the motivating forces behind the emergence of central banks? A question important not only in its own right, but because these institutions would become the sine qua non of a fiat money standard.

That the answer is not simple is suggested by the very different paths taken by the various nations. While the same underlying forces motivated the establishment of central banks, these forces were filtered through different political, social, cultural and economic institutions. I'll begin with the underlying features and then describe some of the paths taken. The fractional reserve system gave an impetus to both the private banks and the public sector to try to reduce the reserve ratio: in terms of the earlier notation we now write the money supply as $M = kpgG$, where k is

quantities were issued, depreciated with respect to sterling. Rolnick, Smith, and Weber (1993) argue that the United States went from fiat money systems to a commodity money standard to ensure fixed exchange rates between the colonies and to solve a seignorage incentive problem.

6 One of the major factors that mitigated against convertible notes was the threat of counterfeiting. To reduce the problems of counterfeiting, bank notes were generally issued in very large denominations, and until the twentieth century they were not employed at the retail/wage-paying level. For example, the lowest denomination for a Bank of England note in 1900 was £5 – at a time when the daily wage rate for unskilled labour was about £1.25. The issuers of token money naturally spent considerable resources to reduce counterfeiting. In China the state attempted to avoid counterfeiting by establishing its own paper mills which produced a unique mulberry bark paper (Kranister 1992, 146). The stories of large-scale wartime counterfeiting of enemy notes are well known; somewhat less well known is the fact that greenbacks were green because the recent invention of the camera made black and white backs too easy to counterfeit (Kranister 1992, 301).

the inverse of what I shall call the reserve ratio. Among the private sector banks this would encourage a natural monopoly through the centralization of reserves, and increase the profitability of a monopoly over note issue and consequently of rent-seeking activities with that goal.⁷ Governments were motivated directly or indirectly to share these profits, and to enact legislation that permitted more profits, for example, by enabling the banks to reduce the reserve ratio without increasing the potential for fraud or eliminating the gold anchor.

In the history of western central banks all these factors were in evidence. In 1797 the Bank of England was a private bank that was the government's banker and had a monopoly of joint-stock banking.⁸ The private banks typically held Bank of England notes as reserves. In 1833 the government made Bank of England notes legal tender – except at the Bank itself, where they were convertible into gold.⁹ The government's argument was that during the recent run on the country banks Bank of England notes had been paid out by the country banks and were happily received, but in fact note-holders could have asked for gold which would have exacerbated the crisis. Under the Act of 1833 they – the country bank note holders – would not have that right, but could demand gold for their Bank of England notes at the Bank itself.

In 1844 the Bank of England was granted a monopoly over note issues apart from the grandfathering in of existing issues. Before that the Bank had a *de facto* monopoly over note issue in London only; elsewhere in England, particularly after 1821, private bank notes 'made up almost the entire paper circulation' (Fetter 1965, 6). The main purpose of the Act of 1844 was to establish a rigid link between the amount of notes in circulation and the gold reserves of the Bank. The Act was clearly seen as a response to the weakening of the gold anchor to the monetary system. Adherents of the currency school believed that price level and economic stability required that the quantity of money (which they, but not their opponents, defined as notes) behave as it would under a pure commodity standard. The way that this would be ensured was to give the Bank of England a monopoly over the note issue and then to require that above £14 million all notes be 100 per cent specie backed.¹⁰

The Bank of France was established by Napoleon in 1800. It was initially a private bank and issued convertible notes that were not legal tender, and it did not

7 In 1888 Edgeworth noted the existence of economies of scale in reserve holding, and Wicksell, ten years later, used this principle to rationalize the feasibility of an international paper standard (Laidler 1991, 185–7).

8 In 1826 note-issuing joint-stock banks (banks with more than six partners) were permitted to open if they had no office within sixty-five miles of London (Fetter 1965, 122). The Act of 1833 explicitly provided that non-note-issuing joint-stock banks could operate within the sixty-five-mile radius (Clapham 1945, vol. 2, 128). During the 'restriction,' 1797–1821, the bank had not been obliged to convert its notes into gold, although the notes were not formally made a legal tender (see Fetter 1965).

9 This motion passed by a vote of 214–156, with members of the house muttering darkly about assignats (Fetter 1965, 159).

10 Bank of England note issue was expected to be approximately £20 million (Clapham 1945, vol. 2, 175).

have a monopoly over note issue. The bank obtained a monopoly over note issue in 1848 when, in a liquidity crisis, the provincial banks of issue asked that their notes be made inconvertible legal tender and the government decided this was only possible if they merged with the Bank of France. Thus decades of lobbying by the Bank of France paid off. The notes of the bank became legal tender in 1878. The bank notes were made an inconvertible legal tender in 1870, at the onset of the Franco-Prussian war. When convertibility was restored in 1878, the bank notes remained legal tender.

In Germany the establishment of the Reichsbank in 1875 followed closely on the heels of German unification, although, since it took the place of the state bank of Prussia founded in 1846, that may be a better dating (Holtfrerich 1989). The bank had a monopoly over note issues (apart from the grandfathering in of existing issues) from the outset, reflecting the government's desire for a unified national currency.¹¹ Following the recommendations of a commission of inquiry that examined international practice, Reichsbank notes were made legal tender in 1909. The prevailing view of the commissioners was that most Germans would be unaware that the notes were not already legal tender and that the benefit of making them legal tender would be to reduce the need for private banks to hold gold (National Monetary Commission 1910a).

In the United States the establishment of the National Banking system in 1863 created a unified currency and, since the notes were to be 110 per cent backed by government bonds, provided a ready market for government securities. In both Canada and the United States the government earned some seignorage revenue by state note issues (U.S. notes and dominion notes, respectively) that were convertible into gold on demand (after 1878 for the United States). Interestingly, the U.S. state notes were legal tender, although Federal Reserve notes, issued by the U.S. central bank after its establishment in 1913, were not legal tender in private transactions.

This brief history of the origins of central bank powers has particular implications for our understanding of the emergence of central banks – an issue of interest because while today the role of a central bank is to issue the legal tender money stock, under a gold standard, the role of a central bank is a lot less clear, and yet central banks typically emerged under the gold standard. (This suggests a question I won't address today, concerning whether an institution established to accomplish one set of objectives, reducing the costs and risks of a fractional reserve banking system under a gold standard, is the appropriate institution – in terms of its powers and governance, for example – to accomplish a different objective.)

Recent literature on the origins of central banks has centred on the questions of whether a private fractional reserve banking system will spontaneously generate a lender of last resort (i.e., central bank) or whether a competitive private banking system can operate efficiently in the absence of both government intervention and a monopolistic central bank. The former view is represented by Charles Goodhart's

11 Political unification of the German states in 1871 provoked attempts to unify both the coinage and the bank-note systems. Legislation in 1873 created a unified gold-based coinage that replaced the various bimetallic standards of the German states (Holtfrerich 1989, 231).

(1988) work, and the latter by Larry White (1984) and George Selgin (1988). My analysis, coming at the question from a rather different angle, on the one hand is consistent with Goodhart's view of a natural tendency to monopoly, but on the other hand suggests that central banks became lenders of last resort *because* they had a monopoly over the issue of legal tender notes. The driving force is the desire to reduce the reserve ratio and economize on the resource cost of the metallic backing of the money supply, which in turn leads to the centralization of reserves and the role of a lender of last resort.

Granting legal tender status to paper money was a significant step on the way to the fiat money standard because it lengthened the link between the money stock and the commodity – lengthened the anchor chain. In each case the notes of the central bank were made legal tender essentially to reduce the resource cost of the commodity standard by reducing the amount of the resource that had to be held as backing for the notes.

By the late nineteenth century the western economies had traveled a considerable distance from the commodity money standards of the medieval era. Yet, coins were still an important component of the circulation, convertibility was considered to be of paramount economic importance, and the growth of the Atlantic economy and international trade was frequently attributed to the international gold standard.¹²

The introduction of convertible notes (and the use of bank deposits) affected the ability of the commodity to anchor the monetary system – a matter that was at the heart of economic debate among nineteenth-century theorists. Under a commodity standard, as we have seen, the quantity of coinage represented an endogenous response to the mint price and economic fundamentals.¹³ By the end of the nineteenth century Bagehot's argument that the currency needed to be managed and that central banks should act as a lender of the last resort had considerable acceptance, especially in the United Kingdom. While the system had become less automatic, the requirement of convertibility provided a credible anchor for the system and in turn limited the scope for governments to try to manipulate the currency to earn seignorage.

IV. TWENTIETH-CENTURY DEVELOPMENTS

In the period up to 1914 economizing on gold had largely been a matter of domestic concern and the institutional innovations were at the national level. After 1914 innovations were predominantly at the international level. I begin with the re-

12 By 1878 most western countries had replaced their bimetallic standard with a gold standard.

While the reasons for doing so are a matter of debate (see Redish 1990 for references), the major impact in terms of the story here is that the technical reasons for depreciating the coinage (described in section II above) were eliminated.

13 Jevons (1899, 232) argued that the objections to the issue of inconvertible paper money are firstly the danger of overissue, and secondly the impossibility of varying its amount by the 'natural action of trade': 'Even the best-informed government department cannot be trusted to judge wisely and impartially when more money is wanted. Currency must be supplied, like all other commodities, according to the free action of the laws of supply and demand.'

establishment of the gold standard after its general abandonment during World War I. Two factors dominated attitudes to gold in the 1920s: the possibility of a lack of gold, and hyperinflation in Eastern Europe (Germany, Hungary, Czechoslovakia, Poland). The former moved the world away from commodity money, while the latter reminded everyone of the dangers of fiat money.

From the beginning Britain's return to gold in 1925 was almost a foregone conclusion. In 1918 the Cunliffe Committee on Currency and Foreign Exchange, appointed to consider the problems in connection with currency and foreign exchanges during reconstruction and 'the steps required to bring about the restoration of normal conditions,' released its interim report (see Sayers 1976, vol. 3, 57). As pointed out by Moggridge (1972, 18) the committee 'assumed' the necessity of restoring the gold standard at the old par and spent its time considering how this should be done. The only changes from the traditional gold standard were measures proposed to economize on gold reserves, such as centralizing the gold reserves in the Bank of England and permitting the Bank the option of redeeming its notes in coin or bullion. In its two-page final report, released the following year, the committee did admit to an alternative regime but simply stated: 'We have found nothing in the experience of the War to falsify the lessons of previous experience that the adoption of a currency not convertible at will into gold or other exportable coin is likely in practice to lead to overissue and so to destroy the measure of exportable value and cause a general rise in all prices' (Cunliffe 1919).

In 1924 the Treasury (at the instigation of the Bank of England) established a committee to examine how to merge the war-time Treasury note issues and Bank of England notes. This committee did address the alternatives of (a) resumption of gold convertibility at a different par and (b) a 'managed currency.' Both John Maynard Keynes and Reginald McKenna, who had been chancellor of the exchequer during the war, were witnesses before the committee and argued against the return to gold, but the committee's conclusion followed the recommendations of Montagu Norman, the governor of the Bank of England.¹⁴ In the committee's report the alternative policies were quickly dismissed with the statement that 'there is in our opinion, no alternative comparable with a return to the former gold parity of the sovereign.' Again, however, they emphasized the importance of economizing on gold: the committee concluded that 'the use of gold for domestic circulation is a luxury which can well be dispensed with, and which we are in fact, at any rate during the next few years, not likely to be able to afford' (Chamberlain/Bradbury Committee 1925, 9). In terms of the notation used above, the committee found ways to increase the money stock by increasing k – lengthening the anchor chain – leaving Pg unchanged.

After the committee reported in February 1925, a last analysis of the issue was provoked by a memorandum in which Churchill played devil's advocate and asked Treasury and Bank of England officials to state why a return to gold made

14 The committee's deliberations are carefully analysed in Moggridge (1972, chap. 3). Keynes had argued that resumption at the traditional par would require a significant deflation, and he favoured leaving controls on foreign trade in gold in perpetuity.

more sense than a 'managed currency.'¹⁵ Both sets of officials rallied around gold: 'The gold standard is the best "Governor" that can be devised for a world that is still human rather than divine,' stated Montagu Norman, governor of the Bank of England; 'Everyone upholds the gold standard, because they believe it to be proved by experience to be best for trade,' stated Sir Otto Niemeyer, the senior Treasury official.

In 1925 Churchill introduced the legislation to implement resumption with the following response to adherents of a managed currency: 'When the men who have managed the currency so well, according to the opponents of the present Bill, tell me that they can manage the currency no longer on this basis, and tell me that *it would have been impossible to have managed it so far as they have unless they had always had the return to the gold standard as a goal to steer towards* [emphasis added], ... surely this opinion should carry great weight.'¹⁶

France resumed convertibility (de facto) in December 1926 (de jure in 1928), and prior to this had debated the same issues: whether to resume convertibility and at what par? In France, however, these questions were answered in the face of a war-time inflation much more serious than that of the United Kingdom, and postwar monetary and social instability coloured the outcome. Yet the eventual return to the gold standard was as much a foregone conclusion there as in Britain – debate was about how to stabilize the franc and at what rate, not whether or not to adopt a managed currency. In 1926 Sir Arthur Salter (the English representative on the Financial Committee of the League of Nations) asked the governor of the Bank of France what a central banker's duties involved. He replied: 'to assure at all times the convertibility of bank notes into gold – the universal basis of all credit. In my view all other responsibilities are secondary' (Moreau 1991, 155).

The League of Nations played an active role in encouraging nations to return to the gold standard and to economize on gold. It advised countries to permit convertibility into gold coin or bullion at the issuer's option and to allow reserves to be held in either gold or currencies convertible into gold. An indication of the success of these policies is given in table 3, which shows that many of the now G-7 countries allowed the monetary authorities to hold reserves in foreign exchange and allowed them to interpret convertibility as convertibility into coin, bullion, or foreign exchange. In addition, the League encouraged the establishment of central banks, to facilitate international coordination and the best use of the available gold.

While the anticipated scarcity of gold might have encouraged an international or national move towards introducing fiat currency, the European hyperinflations provided the counterweight. Hyperinflation in Germany and in the new countries arising from the former Austro-Hungarian empire provided a lesson in the perils of inconvertible currencies and suggested that expectations in the event of the

15 The memorandum, dubbed Churchill's exercise, and the responses it provoked are reprinted in appendix 5 of Moggridge (1972).

16 Cited in Kindleberger (1984, 340). This comment may reflect Norman's response to Churchill's 'Exercise': 'Those three years of 'managed finance' have been possible only because they have been made up of steps and deliberate steps towards a golden 1925.'

TABLE 3
Gold backing for G-7 currencies in 1930

Country	Redemption	Required reserves
Great Britain	Gold bullion	On notes: 100% on any notes in excess of £260 million
France	Gold coin or bullion	On notes and credits: 35% in gold
Germany	Gold coin or bullion or foreign exchange	On notes: 40% (of which 0.75 in gold) in gold or day-to-day loans; on deposits: 40% in secondary reserves
Japan	Gold coin	On notes: 75% in gold on any notes in excess of 120 ¥ million
Italy	Gold bullion or foreign gold exchange	On notes and sight liabilities: 40% in gold and foreign gold exchange
United States	Gold	On notes: 40% in gold; on deposits: 35% in gold ^a
Canada	Gold coin or bullion	On notes: 25% on first \$50 million, then 100% in gold ^b

SOURCE: League of Nations (1930)

a These were the required reserves for Federal Reserve notes. A number of other types of paper money were legal tender (e.g., Federal Reserve bank notes and silver and gold certificates) and each had its own requirements. See League of Nations (1930) for details.

b These reserves were for dominion notes issued under the Dominion Notes Act. Since dominion notes could also be issued under the Finance Act, the effective required reserves were less.

introduction of such a currency would be adverse. Virtually the only experience that individuals had with inconvertible legal tender paper currencies (fiat money) were wartime episodes in which printing money was how the war was financed.

By 1928 most western economies had resumed free convertibility of note issues – but this was to be a short-lived era. Beginning in 1929, nations abandoned the gold standard in the face of internal and external gold drains. In September 1931 Britain suspended convertibility of the pound, in April 1933 the u.s. dollar became inconvertible, and in September 1936 the French government finally suspended the convertibility of the franc. Yet the abandonment of convertibility did not lead to a system of floating exchange rates, as much as to an ‘adjustable peg’ system. Each country in turn devalued in what contemporary economists viewed as a beggar-thy-neighbour policy.¹⁷ But in each country the price of gold continued to be a target of the monetary authority, and authorities typically did not revalue their gold reserves to reflect the increase in the value of gold.

Characteristic of attitudes at this time were those of Canadian economists and bankers. In 1933 Frank Knox, giving testimony before the Macmillan Commission on the establishment of a central bank in Canada argued: ‘It may be assumed that

17 The negative connotations of this interpretation have been criticized by, for example, Eichengreen and Sachs (1984).

sooner or later the major trading countries of the world will have to come to some agreement as to a common monetary standard and that they will stabilize their several currencies with respect to each other probably by making them convertible once more into gold' (Bordo and Redish 1987, 410). Jackson Dodds, speaking for the Canadian Banker's Association, stated, 'It is logical to assume that the gold standard (perhaps with modifications) will be resumed in due time by the great trading nations and that the Dominion would naturally desire to follow suit' (*ibid.*, 410).

The new monetary order after World War II very much reflected the different attitude of the United States to international entanglements. After World War I the United States, under President Harding, had adopted an isolationist stance, refusing to join the League of Nations and attending international monetary conferences only as an observer. Beginning with the Atlantic Charter, signed by Roosevelt and Churchill in August 1941, which committed the parties to establishment of a multilateral trading and exchange system after the war ended, the United States took an active role in promoting international institutions to stimulate European economic recovery. As early as 1943, U.S. officials were drafting plans for the International Monetary Fund (IMF) and a new international monetary system. For our story, the relevant point is that although much of the mystique was gone, the systems devised by White in the United States and by Keynes in the United Kingdom, and the compromise system that eventually evolved, all were anchored by gold (Bordo 1993).

The Bretton Woods system (named after the village in New Hampshire where in 1944 officials from forty-four countries ratified the Articles of Agreement of the IMF) was an extension of the interwar gold-exchange standard. As we have seen, under that system some currencies were convertible into gold, others into gold bullion, and others into foreign exchange or foreign gold exchange. Under the Bretton Woods system that actually came into effect in 1959 currencies would fix parities with the U.S. dollar and the U.S. dollar would be convertible into gold; that is, the U.S. agreed to buy and sell gold at \$35 an ounce. The economizing of resources had reached epic proportions and the anchor chain had been lengthened (*k* increased) again.

Although the agreement was signed in 1944, the major currencies did not re-establish free convertibility into U.S. dollars until 1959, and the beginning of the end was already visible by 1960 (at least to some observers, such as Triffin), when a speculative crisis drove the price of gold from \$35 to \$40 an ounce in London. Strong legal barriers to capital mobility and concerted action by central bankers resolved the crisis and led to the formation in 1961 of the London Gold Pool – a consortium of central bankers who agreed to help the United States stabilize the price of gold, while the United States agreed to supply 60 per cent of the gold sold (Bordo 1993, 69). Then in the face of the devaluation by the United Kingdom in 1967 and a run on gold that forced the gold pool to sell \$3 billion of gold in early 1968, the gold pool stopped stabilizing the price of gold, and a two-tier gold market was established.

Under the two-tier system, central banks earmarked a quantity of gold and agreed to trade it among themselves at \$35 per ounce. All other gold would trade in a free market, where the price immediately rose to \$41 per ounce (Schwartz 1989, 342). Simultaneously the United States removed the requirement of 25 per cent gold backing for Federal Reserve notes. In addition, the IMF introduced a potential solution to the relative scarcity of gold: Special Drawing Rights (SDRs). Now the world money supply was given by: $M = kPG(G + \text{SDR})$. However, the quantity of SDRs that the international community would agree to emit was extremely limited. The final demise of the gold link occurred in two steps: in August 1971 U.S. President Nixon temporarily suspended the convertibility of the U.S. dollar into gold; a suspension that became permanent in 1973.

The cause of the collapse of Bretton Woods has been the subject of endless analysis.¹⁸ The proximate causes doubtless include (1) increasing capital mobility; (2) enhanced beliefs in the power of bureaucrats to manage the economy and the money supply and an increased willingness to use that power; (3) the greater acceptance of devaluation as a policy tool; and (4) the age-old use of seignorage to finance a war – the Vietnam war.

A high degree of capital mobility meant that currencies were vulnerable to speculative attack, and in a fractional reserve system this vulnerability threatened any currency that had a fixed exchange rate. The increased use of monetary and fiscal policy as stabilization policies could offset the natural equilibrating processes of the gold-based standard and prevent balance-of-payments adjustment. The increased use of devaluation meant both that devaluation was not the unthinkable event that it had been in the nineteenth century, thus making speculative attacks rational, and that the point of having a nominal anchor was significantly reduced. Finally, while U.S. inflation may have been a proximate cause, in the past wartime suspensions of convertibility had always been, and had been expected to be, temporary.

While the proximate causes of the collapse of Bretton Woods were manifold, the fundamental problem was the same as it had been in the nineteenth century – economic growth far in excess of the growth rate of the gold stock raised the real cost of the commodity-based money.

Were there other choices? In terms of the simple money-supply equation we can identify at least three: a much wider role for SDRs would have permitted growth of the monetary base – but in some senses this is just an alternative way to remove the anchor and replace it with an international fiat money, something the international community was not ready to accept. Alternatively, the United States could have undertaken a major depreciation – yet this would have represented a shifting of the anchor and would have been either a temporary stop-gap or recurrent de-

18 The contributions to Bordo and Eichengreen (1993) provide a thorough review (and bibliography) of the Bretton Woods system. Eichengreen (1993) points out that the explanations can be broken down into two schools – (1) inappropriate U.S. policy and (2) structural/institutional flaws. The former would emphasize that U.S. monetary policy was inconsistent with a fixed price of gold while the latter includes arguments that the increased degree of capital mobility and use of stabilization policy made the adjustment process infeasible.

cision, again, effectively eliminating the anchor. The third alternative, of course, was to engineer a world-wide deflation – to accept the high cost of the anchor; not surprisingly, the United States rejected this choice.

V. CONCLUSION

The approach here differs from the literature in that I have taken a very long perspective. The most recent parts of the transition have been studied carefully by others, especially the twentieth-century parts – Britain's return to gold in 1925, the origin and collapse of Bretton Woods – but I hope to have shown that those incidents can be nested in a bigger picture.

Through the nineteenth and early twentieth centuries policy-makers attempted to keep the anchor for the monetary system despite its costs. In so doing they created central banks and a hybrid part-fiat/part-commodity money: at the margin, notes were convertible – at least into notes convertible into gold – but the convertibility served to make the anchor credible, not to make the money intrinsically useful.

By the late twentieth century there was no way to lengthen the chain further, and monetary authorities chose to abandon the anchor. At the time, the benefits from seignorage and from the freedom to use monetary policy for stabilization purposes made losing the anchor a small cost. Now, as the inconsistency between discretionary monetary policy and 'anchoring' the money stock has become apparent, monetary authorities are searching for a new anchor: investing in reputations for low inflation; determining the optimal degree of independence for a central bank; choosing to form a currency union.

What is surprising about the late twentieth-century fiat money system is not that fiat money is valued, but rather that policy-makers have done such a bad job of finding an alternative (cheaper) anchor and making it credible. This situation is the more surprising when we realize that under a commodity money standard the anchor was placed by human, not divine, hands.

APPENDIX: NOTES FOR TABLE 2

1. *England*

The Bank of England was established in 1694 (Clapham 1945, vol. 1, 18). Bank notes were made legal tender except at the Bank itself, and except for £5 notes, by the Act of 1833 (*ibid.*, vol. 2, 127). The Act of 1844 states that no one except those issuing notes on 6 May 1844 could issue in future, and even such banks (other than the Bank of England) could not exceed their average in early 1844 (*ibid.*, vol. 2, 183). The last private bank notes were issued in 1921 (Feavearyear 1963, 321). The Bank of England was privately owned until 1946, when it became 100 per cent state owned (9 & 10 Geo. vi, c27; Feavearyear 1963, 400).

2. *France*

The Bank of France was established in 1800 (Goodhart 1988, 114), and acquired a

monopoly over note issue in 1848 (Liesse 1909, 62). In that year the notes of the Bank of France were made nationwide legal tender, while those of the departmental banks were legal tender only locally. The local banks were thus led to merge with (effectively become branches of) the Bank of France. The convertibility of notes (and their legal-tender status) was restored in 1850. In 1870 the *cours forcé* was again declared, but when convertibility was restored in 1878, the legal-tender status of the notes was not removed (National Monetary Commission 1910a, 716). The Bank of France came under direct state control in 1936 and was nationalized in December 1945 (Burgard 1988, 95).

3. *Germany*

The Banking Act of 1875 established the Reichsbank which began business on 1 January 1876 (although to a large extent the bank took over from the Prussian state bank founded in 1846; see Holtfrerich 1989, 232). The founding legislation included provisions that limited the competition in note issue: banks were not permitted to issue small notes, quotas on note issues were imposed, and if a bank gave up its quota, that quota reverted to the Reichsbank. By 1906 only four of the thirty-three note-issuing banks of 1876 continued to issue notes (*ibid.*) The notes of the Reichsbank were made legal tender by the 1909 revisions to the Bank Act (National Monetary Commission 1910b, 358). The Reichsbank was privately owned. In 1948 it was replaced by the Bank Deutscher Länder which in turn was replaced by the state-owned Bundesbank in 1957 (Kindleberger 1984, 420).

4. *Japan*

The Bank of Japan was established in 1882 (Wikawa 1929, 817). Legislation passed in 1884 made the bank notes convertible and gave the notes of the Bank of Japan legal-tender status as of May 1885 (Kisch and Elkin 1930, 308). Simultaneously the Bank of Japan was given a monopoly over note issues, but it was not until December 1899 that the circulation of grandfathered in national banks was prohibited. The Bank was initially privately owned, but the Bank of Japan law of 1942 mandated 55 per cent ownership by the state (Aufrecht 1961, 425).

5. *Italy*

The Banca d'Italia was founded in 1893, but like the Reichsbank, it essentially took over from an existing bank, the Banca Nazionale, whose roots reached back to 1844 (Goodhart 1988, 130). By 1893 there were only three note-issuing banks in Italy, and they continued to issue notes (limited in amount by government decree) until 1926, when the Bank of Italy was granted a monopoly (Faro 1929, 779). (From 1874 to 1883 the notes of all issuing banks were legal tender but inconvertible.) Under an annual amendment to the Bank Act of 1893 bank notes were made legal tender from 1893 to 1914 (Goodhart 1988, 177). The Bank of Italy is privately owned (with ownership restricted to financial institutions (Aufrecht 1967, 422), but the government is (indirectly) the major shareholder.

6. United States

The Federal Reserve System was established in December 1913 and began business in November 1914. Federal Reserve notes became a legal tender for private transactions in 1933 (they had been receivable for federal government transactions since 1913). Until 1935 national banks could issue bank notes (secured by U.S. government bonds); after that date the liability for the notes was transferred to the Treasury, and they have been gradually retired and cancelled (Friedman and Schwartz 1963, 442). In addition, Treasury notes of 1890 and a fixed quantity of U.S. notes (greenbacks) circulated. The system is owned by the member banks.

7. Canada

Legislation establishing the Bank of Canada was given royal assent on 3 July 1934, and the Bank began operations on 11 March 1935 (Watts 1993, 13). The Bank was originally privately owned, but in 1936 its status changed to 51 per cent public ownership and in 1938 to 100 per cent public ownership (*ibid.*, 14). Bank of Canada notes immediately replaced dominion notes, and the note issue privilege of the chartered banks was gradually phased out, between 1935 and 1950 (*ibid.*, 29). The Bank of Canada Act made Bank of Canada notes legal tender. From 1867 to 1914 the federal government had issued dominion notes that were legal tender and were freely convertible into gold (except between 1914–26, and 1929–35). Notes of the chartered bank were legal tender between a bank and its creditors but not between individuals under the Finance Act of 1914.

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