

**Was London the conductor of the international  
orchestra, the second violinist or just  
the triangle player?  
A survey of the literature on asymmetries  
in balance of payments adjustment during  
the classical gold standard.**

by  
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## ABSTRACT

This paper surveys the literature on asymmetries in balance of payments adjustment during the classical gold standard and on the role of London and the Bank of England in managing the system. It reviews the writings of several authors including Keynes, Hawtrey, Bloomfield, Friedman and Schwartz, Triffin, Bordo and Schwartz and Eichengreen. The focus is on the period from January 1876, when the Reichsbank started operations, to December 1913.

The main conclusion is that the balance of payments adjustment between the three largest European industrial countries (the UK, Germany and France) was more symmetric than is implied by Keynes' "conductor of the international orchestra view", with the burden of adjustment falling more on the UK than is commonly believed. The rules of the gold standard did not per se induce an asymmetric adjustment, unlike the Bretton Woods system. But asymmetries can arise also from differences in preferences of the Central banks and of the public, two examples being Germany's low inflation preference under the European Monetary System or the strong French propensity to hoard gold under the gold standard, and especially from differences in countries' structural/institutional features like 1) the relative size of the economy and its importance in world trade, 2) the size of the countries' gold stock, 3) the spreading of the use of key currencies (sterling, marks and francs) as a substitute for gold in central banks' balance sheets (the gold exchange standard), 4) the extent to which a country is an international net creditor/debitor and/or an exporter of raw materials, 5) the use of gold devices (capital controls). The paper also looks at each one of these institutional features, how they changed through time and how they influenced balance of payments adjustment.



Was London the conductor of the international orchestra, the second violinist or just the triangle player? A survey of the literature on asymmetries in balance of payments adjustment during the classical gold standard.<sup>1</sup>

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"During the latter half of the 19th century the influence of London on credit conditions throughout the world was so predominant that the Bank of England could almost have claimed to be the conductor of the international orchestra. By modifying the terms on which she was prepared to lend, aided by her own readiness to vary the volume of her gold reserves and the unreadiness of other Central Banks to vary the volume of theirs, she could to a large extent determine the credit conditions elsewhere." (Keynes, 1930, Vol. II, p. 306/7).

### Introduction

In the often quoted statement above Keynes describes the classical gold standard as a very asymmetric system dominated by London. His view as summarized in the above statement has had a great influence on later thinking on the subject. However, a detailed analysis of his writings shows a more complex and less extreme view of how the gold standard was working. In addition, especially on the eve of world war I the German economy had overtaken the British one and also in the US economic growth had been in the preceding decades much higher than in UK. The declining relative power of the UK must have influenced the degree of asymmetry present in the system.

At the opposite extreme McCloskey and Zecher (1976, p.65) assume that the balance of payments adjustment between the main industrial countries was

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symmetric and consider, maybe provocatively, the Bank of England as "the second violinist, not to say the triangle player".

This paper surveys the literature on asymmetries in balance of payments adjustment during the classical gold standard and on the role of London and the Bank of England in managing the system. Thus the paper deals only with how countries adjusted to each other and not with how gold standard countries as a group stabilised (or destabilised) the world price level. We review the writings of Bagehot (1873), Keynes (1913, 1930), Hawtrey (1927, 1932), Cassel (1935), Viner (1937), Haberler (1937), Whale (1937), Meade (1951), Bloomfield (1959, 1963), Ford (1960), Friedman and Schwartz (1963), Triffin (1964), Scammell (1965), Lindert (1969), McCloskey and Zecher (1976), Kindleberger (1978, 1988), Neuburger and Stokes (1979), Bordo (1984), Bordo and Schwartz (1984), Eichengreen (1985, 1987, 1992), Sommariva and Tullio (1987, 1988) and Giovannini (1989) to see what they thought about asymmetries in the balance of payments adjustment mechanism during the classical gold standard and about the centrality of the role of London. We focus on the period from January 1876, when the Reichsbank started operations, to December 1913 and this is for the purpose of this paper, the period we call the "classical gold standard".

The main point we would like to make is that balance of payments adjustment between the three largest European industrial countries (the UK, Germany and France) was much more symmetric than is implied by Keynes' sentence quoted above, with the burden of adjustment falling more on the UK than is commonly believed. Put differently, the UK felt shocks originating in Germany and elsewhere and had to take defensive action more often and more strongly than is commonly believed. A corollary of our analysis is that the role of London should be downgraded with respect to Keynes' "conductor of the international orchestra view", while the role of Berlin and maybe Paris should be revalued accordingly. Viceversa, the adjustment between the UK and the countries at the center on the one hand and the countries at the periphery on the other was very asymmetrical, as

pointed out by several authors, in particular by Hawtrey (1930), Ford (1960) and Triffin (1968) and we do not object to this view.

One factor which may have led to exaggerate the belief that the classical gold standard was working asymmetrically and to overemphasize the role of London as the "conductor of the international orchestra" is the fact that most influential writers were British and probably had more the balance of payments adjustment between the UK and the rest of the British Empire (and commodity producing countries) in mind than the one between the UK and Continental Europe; in addition at least Keynes knew very well the monetary system and the balance of payments adjustment mechanism of one important British colony ( see "his Indian Currency and Finance", Keynes, 1913) and his may not have been an isolated case. Despite his reference to London as the "conductor of the international orchestra", Keynes himself was well aware in other passages her weaknesses to foreign shocks and that "the height of her financial supremacy" had been reached "when the last quarter of the 19th century began" (Keynes, 1913, p. 19) i.e. before our observation period begins.

Returning to the balance of payments adjustment between industrial countries which were on the gold standard it should be pointed out that the rules of the system do not per se induce an asymmetric working of international adjustment, unlike the Bretton Woods system. But asymmetries can arise also from differences in preferences of the Central Banks and of the public, two examples being Germany's low inflation preference under the European Monetary System or the strong French propensity to hoard gold under the gold standard. Asymmetries can arise especially from differences in countries' structural/institutional features of the national economy and/or the monetary system like 1) the relative size of the economy and its importance in world trade, 2) the size of the gold stock of the Central Bank in relation to its liabilities, the size of the gold stock in circulation and the related issue of the development of the banking system and of demand deposits, 3) the spreading of the use of key currencies (sterling, marks and francs) as a

substitute for gold in Central Banks' balance sheets (the gold exchange standard), 4) the extent to which a country is an international net creditor/debtor and/or an exporter of raw materials, 5) the use of gold devices (capital controls). Some of these characteristics are closely related and often undistinguishable from national preferences.

A few words on how and why each of these structural features influences the degree of asymmetry in international adjustment and how we intend to measure them are in order:

1) Size. We measure the size of the UK, Germany, France and the US in terms of GDP/GNP and exports. Why size is important for the issue of "who adjusts to whom" is intuitive. Yet, despite the importance of size, of the post world war II authors cited above only McCloskey and Zecher report data on relative GDP; the older authors can of course hardly be blamed for this omission, although they must have had data on commodity exports at hand. One could include under this item the composition of exports and their degree of diversification by sector, as they affect a country's vulnerability to external sectoral demand and price shocks. However, we will discuss the composition of exports together with the net debtor/creditor position of a country (feature 4 below).

2) The metal stock. Here we have to distinguish between the amount of gold holdings of each country's Central Bank and of gold holdings in circulation. The first affects the ease with which the Central Bank can afford to react to foreign official discount rate increases and to gold losses from its own reserves. If its gold stock is very large in relation to the legal minimum reserve ratios, like in the case of France, it can dispense altogether with a Bank rate increase. The gold stock in circulation is important because if it is large in relation to the total stock of means of payments, again like in the case of France, the money multiplier is small and an outflow of gold from the country will lead to a limited multiple contraction of credit, shifting a proportionately greater burden of adjustment onto surplus countries. We shall see how different the gold stocks and the money multipliers



were in the three countries, how they changed through time and which authors were aware of the importance of this factor.

3) The development of the gold exchange standard. Bloomfield (1963) and Lindert (1969) have documented the use of foreign exchange (pound sterling, marks and francs) as a substitute for gold in Central Bank's balance sheets. Their use became widespread especially after 1900. That the spreading of the gold exchange standard introduced profound asymmetries in balance of payments adjustment between the reserve currency country and the "periphery" was already very clear to some of the older authors, particularly Keynes, Haberler, Viner and Meade, although one had to wait the full development of the money multiplier theory to grasp the full implications of it.

4) The net creditor/debtor position. This feature is closely connected with the issue of the size, depth, breadth and resiliency of the national money, capital and gold market. Here the argument is that it is easier to stop a capital outflow by a capital exporting country than to induce a larger than usual capital inflow by a capital importer in time of distress; however, there seems to have been an exception to this rule, as we shall see later. We shall treat under this heading also the degree of diversification of exports because low diversification, shallow financial markets and high dependence on capital imports from abroad are what characterized less developed countries and colonies.

5) The use of so-called gold devices. Although the use of gold devices cannot properly be considered as a characteristic of the economy or the monetary system, they can nevertheless be related to the "effectiveness" of Bank Rate on the one hand and the nation's inclination to hoard gold (point 2 above), an inclination the French have excelled in well into the 1960s. In today's terminology we would call the use of gold devices "controls on international capital flows". They tend to shift the burden of international adjustment on other countries, provided the latter do not use them to the same extent. We shall treat them together with the changes in the degree of international capital mobility stemming from other sources.

We organize the review of the literature as follows. In Section 1 we discuss the symmetry of adjustment in Hume's price-specie flow model, we show that Keynes contradicts his "conductor of the international orchestra" view in other passages of his "Treatise on Money" and we discuss the other views of the role of London encountered in the literature, namely those of Kindleberger (1978,1988), Cassel (1935), Scammel (1965), Eichengreen (1992) and McCloskey and Zecher (1976). In Sections 2-6 we look in turn at what importance the various authors attributed to each of the structural/institutional characteristics mentioned above in influencing the degree of asymmetry of the system and how the dramatic changes of the characteristics during the 38 year period under study most likely affected the sharing of the burden of international adjustment. We therefore also supply information on how the characteristics changed during the 38 year period considered. We gathered some data ourselves from various statistical sources, but we also found information in the writings of the authors mentioned above. Thus Sections 2 to 6 combine History of Economic Thought with Economic History. In Section 7 we discuss international cooperation and asymmetries. Section 8 concludes.

1. The degree of symmetry/asymmetry in balance of payments adjustment and the role of London in Hume, Keynes, Kindleberger and others.

Perfect symmetry in Hume

In Hume's price-specie flow model the adjustment between countries belonging to the gold standard is perfectly symmetrical. A trade deficit causes an outflow of specie and a fall in the price level which is proportional to the reduction in the money stock, the reverse happening abroad until trade equilibrium is reestablished. This "sequential" adjustment: first the proportional change in prices<sup>3</sup>,

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<sup>3</sup>The proportionality between prices and money is clear from following sentence: "Suppose that four-fifth of all the money in Great Britain is annihilated in one night, and the nation reduced to the same condition, with regard to specie, as in the reigns of the Harrys and Edwards, what would be the consequences? Must not price of all labour and commodities sink in proportion, and everything be sold as cheap as they were in those ages?" (Hume, 1752, p. 43).

then the beginning of the trade adjustment is unrealistic even for Hume's time in view of the sizable international integration reached already at his time by at least some goods markets (the law of one price)<sup>4</sup>. In addition his model does not consider the role of income changes, of raw material price changes and of capital flows. Finally it neglects the implications of the financial system including the role of the Central Bank(s) in the adjustment of the balance of payments.

Later writers introduced the above mentioned "complications" into the model and gave a much more realistic picture of how the balance of payments adjustment mechanism was working during the classical gold standard. They emphasised in particular the role of capital flows (together with discretionary Bank Rate policy) for short run adjustment and of spending changes (aggregate demand/purchasing power changes) for more fundamental adjustment, while deemphasizing Hume's relative price mechanism. In turn, spending changes were supposed to be caused mainly by monetary factors (gold flows and Bank Rate policy). In this respect Hawtrey, Keynes and the adherents of the monetary approach to the balance of payments of the 1970s belong to the same school. However, relative prices and spending changes are not incompatible with each other as balance of payments adjustment mechanisms and can therefore be combined in the same model<sup>5</sup>.

The introduction of all these "complications" seems to have had an interesting side-effect: the symmetry of balance of payments adjustment of Hume's model seems to have been somewhere lost on the way. The real growth of the British economy ahead of that of every other country since Hume's time, the growth of the British empire and of the London financial market, coupled with the greater awareness on the part of the Bank of England of its role as a Central Bank,

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<sup>4</sup>Italian economists of the 17th and 18th century were well aware of the law of one price and tended to attribute more importance to the direct expenditure effect than to relative price changes. For a detailed analysis of the balance of payments and exchange rate theories of Italian classical writers see Tullio (1981, Chapter 1).

<sup>5</sup>For a two-country and three equation model inspired by the reading of Italian classical writers, explaining inflation and international reserve flows in each country and in which the relative price mechanism of the price-specie flow is combined with the direct spending effect of the monetary approach see Tullio (1981, Appendix 1.1 of Chapter 1).

especially after publication of Bagehot's Lombard Street in 1873, must have contributed to this changed perception.

### The special role of London in Keynes

It is clear for instance that the sentence by Keynes quoted at the beginning of this paper represents a dramatic change in the thinking about the degree of asymmetries in international adjustment with respect to Hume's price specie flow. At the end of the above sentence it is implied that the desire by foreign (read French?) Central Banks to accumulate gold enhances the power of London's Bank Rate to influence foreign money markets<sup>6</sup>. However, most authors and also Keynes himself in other parts of the Treatise, state that a higher foreign gold stock increased the independence of foreign Central Banks:

"and the wider the margin of safety in Central Banks' aggregate reserves, the less willing will each be to respond reciprocally to the vagaries of the others" (Keynes, 1930, Vol. I, p. 356).

As we shall see in greater detail in Section 3, most authors also believed that the very low gold reserve of the Bank of England reduced its latitude for independent action and increased its vulnerability to foreign shocks. Quoting again from Keynes:

"Some Central Banks may have a considerable short period latitude for independent action; others, as for example the Bank of England, much less". (Keynes, 1930, Vol. II, p.283).

And in the quotation reported in Section 3, page 19 he discusses in even greater details the role of the gold stock in causing asymmetries (Keynes, 1930, Vol. II, p. 286). Elsewhere he introduces the size of one country in relation to the others as

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<sup>6</sup>It also implies that foreign central banks are more likely to follow London's Bank Rate on the way up (in order not to lose gold) than on the way down (in order to attract gold). And therefore it implies that London's power is stronger for Bank rate increases than for decreases. In principle the above hypothesis could easily be tested with the data used by Tullio and Wolters (1996).

an important factor in determining the sharing of the burden of adjustment, although nowhere in his writings we found data showing how large the UK was in relation to the rest of the world.

"But apart from small movements and short periods, each Bank is necessarily governed by the average (italics in the Treatise) policy of the Banks as a whole. If our Bank is a large Bank, it will contribute more to the average and so will get more of its own way than a small Bank can."  
(Keynes, 1930, Vol II, p. 285/6).

The vulnerability of one country to foreign shocks depends also on how far away shocks originate. After stating that the difference between gold points was a function of distance and reporting that it was about 1/2 of 1% between London and Paris, as opposed to about 3/4 of 1% between London and New York and 1.5% between London and India, he argues that as a result:

"the mere propinquity of London to Paris will tend to throw on her more of the short period burden of French gold requirements than on New York" (Keynes, 1930, Vol. II, p. 327).

In his *Indian Currency and Finance* (1913, p.19) he states that the height of London's financial supremacy had been reached when the last quarter of the 19th century began and he was well aware of the threat to London and to the stability of the gold standard which a move of India from a sterling exchange standard to the gold standard would have posed. It should be recalled that the main suggestion of the book was that India should remain on a sterling exchange standard exactly to avert that threat. In conclusion the main point we want to make is that Keynes did not seem at all so sure that London was really the "conductor of the international orchestra" and in any case he contradicts himself. He may have had some suspicion that on the eve of world war I London may have been more like the conductor of the orchestra of a sinking ship.

There is another at least apparent contradiction in Keynes' writings about the gold standard which, although less relevant for the the main thrust of this paper, may be still worth mentioning. Before world war I he was fighting for the survival of the international gold standard by trying in his "Indian Currency and Finance " to convince India and the British government to refrain from moving to gold. After world war I he became a staunch opponent of the return to gold by the UK, as demonstrated by the following witty and colourful sentence:

"Thus, almost throughout the world, gold has been withdrawn from circulation. It no longer passes from hand to hand, and the touch of the metal has been taken away from men's greedy palms. The little household gods, who dwelt in purses and stockings and tin boxes, have been swallowed by a single golden image in each country, which lives underground and is not seen. Gold is out of sight-gone back into the soil. But when gods are no longer seen in a yellow panoply walking the earth, we begin to rationalize them; and it is not long before there is nothing left." (Keynes, A Treatise on Money, 1930, Vol II, Chapter 35, p. 291).

But of course a few things had changed between 1913 and the 1920s. In any case he hasn't been a good prophet. The world had to wait until August 15 1971 to see the end of gold's influence on world's monetary affairs!

#### Kindleberger's hegemonic stability theory and other asymmetric views

London plays a very central role also in another theory of the gold standard, the "hegemonic stability theory". Kindleberger argued that the classical gold standard was stable because there existed a dominant power willing and able to provide the required leadership and contrasted the pre-World War I period with the interwar period when the UK was not powerful enough to stabilize the system and the United States were unwilling to do so. In Kindleberger's words:

"The world economy was relatively stable from 1850 to 1914 when the UK provided leadership with free trade, the gold standard and the British Navy. The transition from Britain to America was drawn out and fateful. Now, 40 years after World War II the economic strength and resolve of the US are faltering. Will there be a similar disturbed and disturbing interregnum?" (Kindleberger, 1988, p. 154).

According to Kindleberger the country stabilizing the system should undertake to provide a market for distressed goods, a steady if not countercyclical lending and a rediscounting mechanism for providing liquidity when the monetary system is frozen in panic.

Other authors went even further than Keynes and Kindleberger in emphasizing the centrality of London. Scammell and Cassel went so far as to equate the gold standard of the period under analysis to a sterling exchange standard (Scammell) or even to a sterling standard (Cassel).

"Thus the picture of the gold standard operations in the period before 1914, is one of a close interchangeability of gold and sterling which gave to the Bank of England not only the role of regulator of the British monetary system but, in great part, that of regulator of the gold standard and the international payment system" (Scammell, 1965, p.104).

And on the same page, in comparing the pre-1914 gold standard with the post World War I gold standard, Scammell states that before 1914 only one reserve currency existed, the pound. This is plain wrong, as shown by Bloomfield (1963) and Lindert (1969). In addition Scammell, like Keynes, seems to contradict himself somewhat when he states:

".....much of the onus of adjustment fell on Britain who in this period of expansion was capable of making what were no more than rolling adjustments to her monetary position without embarrassment." (Scammell, 1965, p. 107).

Cassel considered the classical gold standard as a "British standard" :

"...(that the international gold standard worked so well) can only be explained by the basic position that the pound held in the system. Indeed, the pre-war gold standard system may not inadequately be described as a sterling bloc held together by London's position as the world's financial clearing center and by the service of the pound sterling as a generally recognized means of international payments (Cassel, 1935, p. 4-5).

Both Scammell and Cassel had a partial view of the gold standard in the sense that they probably focused on the relationships between the UK and those countries like Japan, India and all British colonies which were on a sterling standard. They probably did not know how fast the German and the US economy were rising as the century was coming to an end and that by the time the Reichsbank had started to accumulate to a small extent pounds in its reserves, the Reichsmark had already become a reserve currency itself, the most widely used in Continental Europe, if one disregards french francs reserve holdings by Russia (Lindert, 1969).

Another very asymmetric view of the classical gold standard was Triffin's (1964) who emphasized terms of trade changes between the UK and less developed countries in the balance of payments adjustment process. We shall treat his contribution in Section 5.

#### Back to symmetry: Eichengreen and McCloskey and Zecher

Eichengreen (1992) has challenged Kindleberger's hegemonic stability theory and implicitly all theories of the classical gold standard which exaggerate London's centrality and the unconditional asymmetry of balance of payments adjustment. He argues that the interwar period is hardly exceptional for the absence of a hegemon and that there was no country that single handedly managed international monetary affairs prior to world war I. According to him "the classical



gold standard was a decentralized, multipolar system" whose smooth operation was not attributable to stabilizing intervention by a dominant power. And we tend to agree with Eichengreen rather than with the "conductor of the international orchestra" view in which Keynes believed only half-heartedly, as we hope to have shown above, or with the "hegemonic stability theory"<sup>7</sup>.

McCloskey and Zecher (1976) in their application of the monetary approach to balance of payments adjustment during the classical gold standard hold a view which is quite in line with Eichengreen and Hume in that it denies a special role to London and considers adjustment to be rather symmetric. In their words:

"Apparently the Bank was no more than the second violinist, not to say the triangle player, in the world's orchestra" (McCloskey and Zecher, 1976, p. 65).

Their view is an exaggeration and we consider it a bit crude and as distant from reality as Cassels', but maybe they just wanted to be provocative. It represents the opposite extreme with respect to the hegemonic stability theory and Keynes' conductor of the international orchestra view. It is unrealistic because it does not take into consideration the widespread use of the pound as an international reserve currency, the influence of London within the British empire, the concentration in London of the world's gold market, the fact that the UK was in 1913 still the biggest world supplier of manufactured goods and especially capital goods and that the law of one price on which their model is based applied only to a limited number of commodities, but not to the general consumption basket because of the existence of non traded goods. Of the older authors, especially Hawtrey<sup>8</sup> and Viner were well aware of the role of non traded goods in international adjustment and in reducing a countries' influence to foreign shocks.

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<sup>7</sup>Eichengreen (1992) attributes the successful working of the gold standard to credibility (of fixed exchange rates and of internal convertibility) and to cooperation among central banks. It is worth mentioning that in his 1985 book he held the view that cooperation was not so important. We shall take up the issue of cooperation in Section 7.

<sup>8</sup>See Hawtrey (1932) pages 148-150. Incidentally Hawtrey is also a precursor of the "stock view of international capital flows" rediscovered by Branson (see Branson, 1970).

We should mention in passing that Friedman and Schwartz in their monetary history of the US show that changes in relative price levels played an important role in the balance of payments adjustment between the US and the UK during the period under analysis, contrary to what suggested by the law of one price (Friedman and Schwartz, 1963, p. 141 and Chart 9, p. 103).

### The econometric evidence

Since the advent of econometrics a number of studies have looked at interest rate interrelationships during the classical gold standard, using official or private discount rates. Lindert (1969) found that the influence of London's official discount rates on the exchange rate was higher than Berlin's, although he expressed two reservations about his econometric results. The first is that his results may be explained by the relative inaction of foreign Central Banks. The other being that he looks at the effect of relative discount rate changes on exchange rates and not on capital flows. Neuburger and Stokes (1979) found instead that German private discount rates led by one month French rates and that French rates in turn led British rates by three months. Giovannini (1989) using weekly official discount rates found no evidence of temporal precedence in the changes in the British rate. Instead lagged values of the German rate are significantly correlated with both the British and the French rate. All the studies mentioned cover the latter half of the period. Tullio and Wolters (1996) using multivariate Granger-causality tests and impulse response functions separately for the periods 1876-1895 and 1896-1913 found strong feedback effects between the three main gold standard countries, with a slight dominance of London.

Eichengreen (1987) using monthly data of official discount rates found that lagged values of the British rate were very significantly correlated with both the French and the German rates. He found evidence of a weaker sort that movements of French and German rates induced a response by the Bank of England. However, Giovannini (1989, footnote 30) replicated Eichengreen tests, but was unable to

reproduce his results. By replicating Eichengreen's tests he found that lagged values of the British rate were not significantly correlated with the German rate, while lagged values of the French rate were significant in the regression of the British rate.

In conclusion most econometric studies tend to suggest either strong feedbacks between the main centers (Tullio and Wolters, 1996) or even a dominance of Germany and/or France over the UK (Neuburger and Stokes, 1979 and Giovannini, 1989). These findings do not support the views which consider the role of London in the system as being substantially more central than that of Germany and France. They are rather in agreement with the view of Eichengreen (1992) or with that of McCloskey and Zecher (1976).

Be that as it may, as far as asymmetries in UK's external adjustment is concerned, with McCloskey and Zecher we come back full circle to Hume. The next five sections deal with the role played in the History of Economic Thought by the five structural/institutional features mentioned in the introduction and how the various authors felt they were affecting the symmetry/asymmetry of the adjustment. In particular the next section deals with the role of the relative size of countries which was taken into account by McCloskey and Zecher more than by anyone else. At the beginning of each of the following sections we supply as far as possible data on these characteristics, before turning to the History of Economic Thought.

## 2. The size of Great Britain and her importance in foreign trade<sup>9</sup>.

McCloskey and Zecher combine the small size of the UK with a somewhat extreme version of the law of one price and conclude that the UK had on the one hand a very marginal influence on world's "averages" and, on the other, that it had very little independence in monetary policy. In the spirit of the monetary approach to the balance of payments a monetary expansion in the UK would be followed almost immediately by a gold loss. They are the only ones who report data on GDP

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<sup>9</sup>For a similar analysis concerning the role of the US during the Bretton Woods period and of Germany during the EMS period, see Russo and Tullio (1988).

and say that in 1913 UK GDP amounted to only 13% of world GDP as opposed to 27% for the US (McCloskey and Zecher, 1976, p. 65). Their conclusion that London may have been just the triangle player has been already cited in Section 1.

Also Keynes was aware of the importance of a country's size in influencing the world's "average" and in reducing the influences of foreign shocks, as shown in his sentence quoted above on page 9.

Table 1 shows that taking the UK, Germany, France and the US as a group, the share of UK GDP fell from 23.7% in 1880 to 17.4% in 1910. Germany was substantially smaller than UK in 1880 (18.7% of the group), but was comfortably ahead of the UK in 1910 (19%). The relative importance of France fell dramatically during the period (from 17.4% to 11.6%), while the US experienced a gigantic leap forward: from 40.2% in 1880 to 52% in 1910! The geometric growth rates of real GDP from 1880 to 1910 were (in increasing order): 1.55% per year in France, 1.79% in the UK, 2.38% in Germany and 3.69% in the US<sup>10</sup>.

Table 2 presents data on the share of exports of each country in the total of the group from 1872 to 1908. The changes are even more dramatic. The share of US exports doubled from 14.2% in 1872 to 28.1% in 1908. The share of the UK fell from 41.6% to 29.6%, while Germany gained 5 percentage points and France lost 7. However, in 1908 the UK was still the biggest exporter. At the end of the period the US were still a major exporter of agricultural products so that the figures given above on the rise in US exports may overestimate the threat to UK dominance. Viceversa Germany had become during the period a major exporter of manufactured goods<sup>11</sup>.

The rising economic power of the US and Germany and the UK's increasing vulnerability to shocks originating there is shown by following two "case studies". The first case study is from Hawtrey (1927) and refers to the German decision to

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<sup>10</sup>The figures for 1910 reported in Table 1 above imply that US GDP was 2.9 times UK GDP, while the data reported by McCloskey and Zecher imply that in 1913 it was only 2.1 times. Our sources are different than theirs.

<sup>11</sup>Their share in total German exports increased from 63.1% in 1880 to 74% in 1910. And the share of machines and electrical equipment increased from 1.5% to 10.8% during the same period. (Sommariva and Tullio, 1987, Chapter 1).

adopt the gold standard which led to large purchases of gold after 1870 and started the long phase of falling world (and UK) prices which lasted until 1895. In 1873 Bank Rate in London was changed 24 times, many more times than in any other year before or after<sup>12</sup>. The effect of the German decision was magnified by the fact that all countries that were on a silver or bimetallic standard and did not want to see their currency depreciate had to follow Germany on gold. However, it is undeniable that Germany appeared very soon after unification as a major player on the world monetary scene.

The second example is from Eichengreen (1992). He reports of the increasing vulnerability of the Bank of England's gold stock and of Bank Rate in London to US gold demands, especially after the turn of the century. There were both strong cyclical effects as the US demand for gold and US gold imports were strongly procyclical as well as seasonal effects connected with US harvests. The fact that the US did not have a Central Bank to manage the national gold standard reduced the elasticity of the total US money supply to the cycle and to seasonal money demands and exacerbated London's vulnerability to US influences.

### 3. The size of the gold stock and the money multiplier.

Table 3 contains the stock of precious metals in the balance sheets of the Bank of England, the Reichsbank and the Bank of France in 1880, 1900 and 1910. In 1880 the gold stock of the Bank of France was about the same as the one of the Bank of England; by 1910 it had increased fivefold, while the Bank of England's stock had increased only by 30%. By 1910 the Bank of France had 65% of the three bank's total gold stock and the Bank of England 17%. As a ratio of exports the stock of precious metals (including silver) of the Bank of England fell from 12.5% in 1880 to 8.6% in 1910, while during the same period the Bank of France increased its stock from 56.6% to 61.5% (Table 4). Precious metals of the Reichsbank fell as a ratio to exports from 18.9 to 13.9% while as a ratio to the

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<sup>12</sup>London charged the official discount rate 6.7 times per year on average from 1876 to 1895 and 4.9 times from 1896 to 1913; see Table 5.

total stock of the three banks it remained stable. Thus the Reichsbank cannot be accused of having pursued an aggressive policy of gold purchases after 1880<sup>13</sup>. In relation to money stocks the differences in metal reserves between the Bank of England and the Bank of France were even larger. Eichengreen (1992) reports from Meade that in the latter half of the 19th century in England the ratio fell often below 2%. Sayers (1957) stated that the Bank of England used a powerful Bank Rate to defend convertibility on the basis of a "thin film of gold".

The small Bank of England's gold stock made the maintenance of convertibility on her part more difficult especially in times of crises. By increasing her vulnerability to foreign shocks it reduced the degree of independence of her monetary policy and forced her to increase Bank Rate more often. It made the solution of the dilemma between domestic and external objectives (if there was any) more difficult and costly, although other factors worked in the opposite direction, like the concentration of the gold market in London, the increasing international mobility of capital, the increased effectiveness of Bank Rate in influencing London's market rates and hence capital inflows, the fact that the UK remained throughout the period by far the biggest international lender of long term capital and above all the increasing use of pounds as an international reserve asset.

On the other hand the huge stock of precious metals of the Bank of France aided by her alleged more frequent use of gold devices increased the degree of independence of her monetary policy and strongly reduced the influence of British and German monetary conditions on France. From 1876 to 1895 the Bank of France changed the official discount rate only 21 times as opposed to the 133 times of the Bank of England and 66 times of the Reichsbank. From 1896 to 1913 the changes were 14 for the Bank of France, 88 for the Bank of England and 70 for the Reichsbank (Table 5).

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<sup>13</sup>During times when the world production of gold exceeded world demand for industrial uses, countries did not need to take away gold from others to be accused of pursuing an aggressive gold acquisition policy: "The distribution of newly mined gold obviated to a certain extent the necessity for gold movements between non-producing countries. A country could suffer a relative loss of gold through failing to acquire its normale share in the new supplies" (Whale, 1937, p. 50/51).

Triffin states for instance:

"Discount and interest rate changes .....had to be resorted to frequently by the Bank of England to defend its very slender gold reserves. The much greater reserve levels of the Bank of France enabled it, on the other hand, to cushion temporary deficits out of its own reserves, with much rarer recourse to discount rate changes" (Triffin, 1964, p. 124).

and in the following sentence Keynes also seems to imply that it may have been more often the case that France was influencing England than viceversa:

"If our (Central) Bank is ready to allow wide variations in the amount of its (metal) reserve-resources, this greatly increases its power to influence other Central Banks to keep step with it; for it increases the length of time during which it can persist with its own independent policy and the extent by which it can increase or decrease the reserve-ratios of other Banks by decreasing or increasing its own." (Keynes, 1930, Vol II, p 286).

Viner analysed the effects on the rest of the world of the policy to economise gold pursued by the Bank of England and identified one beneficial and one negative effect, hinting that in the end the negative effect might have prevailed:

"The practice of extreme economy in the maintenance of bank reserves did have as an accidental by-product the beneficial effect that it guaranteed to the metallic standard world that as far as England was concerned there would be no hoarding of gold and that all gold reaching that country would quickly exercise an influence in the appropriate direction for international equilibrium on interest rates and the volume of bank credit. But it tended to intensify the growing tendency for instability of business conditions within England itself. Without willingness at times to maintain greater metallic reserves than were absolutely necessary to secure convertibility of the paper currency and without excess reserves which could be released during times of pressure as an alternative to credit contraction, there could be no "management" of a metallic standard in the interest of internal stabilization, and it is arguable that even the outside world had more to gain

from greater internal stability in England than it would have had to lose by the occasional "sterilization" by the Bank of England of several million pounds of gold. While the English currency was undoubtedly a "managed" rather than a purely automatic one, the main objective appears to have been to achieve the maximum economy of reserves i.e. the maximum banking profits, consistent with maintenance of convertibility. (Viner, 1937, p.269/70).

The above sentence by Viner is important also because it explains why England managed the gold standard on such "a thin film of gold" and because it does not support the view that London was the "conductor of the international orchestra" or the "hegemonic stabilizer". Viner seems rather to suggest that UK was an influential country in charge of managing the international gold standard which was at the same time also pushed and pulled around possibly by the growing weight of foreign economies like the US, France and Germany and by the increased internationalization of financial and goods markets. It seems to us that London's financial market and the Bank of England could rather be seen as the place/institution to which all shocks originating in the world, both real and monetary, including the powerful shocks stemming from changes in the world demand and supply of monetary gold, were soon transmitted and from there they were re-transmitted back to the world. In this sense the Bank of England and London's financial markets were skillfully "muddling through" when receiving shocks from all over the world and re-transmitting them.

So far we have looked in Tables 3 and 4 only to the precious metal stocks of Central Banks. Now we analyse the role of the distribution of the public's monetary assets among gold and silver coins, bank notes and bank deposits and hence the role of the commercial banking system for balance of payments adjustment. In other words we introduce the money multiplier. At one extreme, where a) the stock of gold in circulation is very large, b) notes issued by the Central Bank have a very high metal backing and c) the commercial banking system is very small, the money stock and the monetary base tend to coincide and



the money multiplier is closer to one. At the other extreme, where not much gold circulates, the cover ratio of note issues by the Central Bank is small, and the banking system and the use of checks are very developed, the money multiplier tends to be much larger than one. The distinction is important because the larger the multiplier, the more a given change in the monetary base (gold inflow or outflow from abroad) tends to have a magnified effect on the stock of money and hence interest rates and aggregate demand (and prices). France tended during the period under analysis towards the first extreme, while the UK, where the banking system and the use of checks were very developed, tended towards the second. Germany took an intermediate position. It is very difficult to find comparable data especially for bank deposits, the use of checks and the development of the banking system and hence it is almost impossible to make even a rough estimate of the multiplier. We shall present the data we found and rely for the main on the statements of contemporaries.

The main differences between the British and Continental European monetary systems were according to Keynes:

".. the essential characteristics of the British system are the use of checks as the financial medium of exchange and the use of the bank rate for regulating the balance of immediate foreign indebtedness. The development of foreign monetary systems began in the last quarter of the 19th century. At the time London was at the height of her financial supremacy, and her monetary arrangements had stood the test of time and experience. Foreign systems therefore were greatly influenced at their inception by what were regarded as the fundamental tenets of the British system. But foreign observers seem to have been more impressed by the fact that the Englishman had sovereigns in the pocket than by the fact that he had a cheque-book in his desk" (Keynes, 1913, p. 18/19).

and according to Hawtrey:

" France in modern times always needed a large stock of currency. A larger proportion of the people's cash resources has been held in the form of currency and a smaller proportion in the form of bank credit than in other wealthy countries....In the greater part of the continent credit was regulated very much on the French model. But nowhere was there such an accumulation of metallic currency as in France, because nowhere was there such a combination of financial strength with a restricted use of credit." (Hawtrey, 1932, p.199).

That also the reaction of the banking system played a critical role in the adjustment process with the money multiplier generally tending to move in the opposite direction as the stock of gold was emphasized by Whale (1937) and Ford (1960). In addition to Marshall (1899), Saeger (1913) and Viner (1937) it was clear that role of the banking system in the multiple expansion of credit and the size of the multiplier were important, although they do not use the terminology we would use today. For instance Whale (1937) distinguishes the adjustment process between different parts of one country (England/Scotland) from the adjustment between different countries because in the latter case "direct monetary transfers mean movements of reserves on which a multiple superstructure of credit is based." Viner (1937, p. 394) distinguishes a "primary" expansion of means of payments resulting from changes in the amount of specie from a "secondary" expansion resulting from changes in the amount of "uncovered non-specie currency", including the banking system's liabilities. In the same section entitled "primary and secondary changes of the means of payments", Viner quotes in full a long sentence by Marshall in which he compares England with India; in the former a gold inflow causes a primary and secondary expansion and in the latter only a primary expansion, because bank money is not very developed<sup>14</sup>. (Viner, 1937, p.402 and Marshall, 1899 and 1926, p.282). And Seager states:

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<sup>14</sup>In section 5 we will show how India adjusted to a balance of payments deficit in 1907. No multiple contraction of credit on a noteworthy scale seems to have occurred.

"Such importation (of gold) will before long itself cause prices to rise, there being more money to serve as a medium of exchange than before, while the withdrawal of gold from other countries will in time cause their prices to fall. These results will follow the more promptly because ordinarily the new gold will find its way into bank reserves and will add to the use of credit as a medium of exchange much more largely than it adds to the country's supply of standard money. In the same way its exportation will serve ordinarily to deplete bank reserves and to cause a contraction of credit that will lessen the supply of media of exchange by much more than the amount of gold lost." (Saeger, 1913, p. 370 quoted also by Viner, 1937, p. 403)

As to the metallic cover of notes and Central Bank's short term liabilities (point b above) they are shown in Table 4 from 1890 to 1910. The table shows that in 1910 the precious metal cover of notes and other short term liabilities (principally deposits) issued by the three main Central Banks was 71.3% for the Bank of France, 44.4% for the Bank of England and 46.8% for the Reichsbank. This characteristic tends to reduce the size of the multiplier in France with respect to the UK. As to the distribution of the money stock between precious metals, notes and commercial bank deposits (point c), it is very difficult to find data which are comparable through time and across countries, especially for France. A very rough idea is provided in Table 6 where we report the ratios of total deposits of joint stock banks to the total assets of the Central Bank for the UK and Germany. The ratio increased in the UK from 5.7 in 1880 to 14.7 in 1907, while in Germany it was 0.5 in 1880 and 3.1 in 1907. Thus the currency/deposit ratio must have been very much lower in the UK than in Germany and the multiplier much higher, even though the banking system grew more rapidly in Germany during the period.

The conclusion from the analysis of this section is that the small gold stock of the Bank of England and the large money multiplier in the UK tended to magnify the automatic effects of international gold flows (of exogenous shocks to the British balance of payments) on the domestic economy much more than in Germany and especially in France and hence to throw more of the burden of

adjustment on the UK, an hypothesis which does not exclude that the UK in turn adjusted to a very large extent at the expense of raw material countries.

#### 4 . The development of the gold exchange standard.

Until the publication of the important articles of Bloomfield (1963) and Lindert (1969) on the use of the pound, the Reichsmark and the french franc as reserve currencies by Central Banks around the world before 1913, the prevailing view was that only the pound was an international reserve asset and that it was less widely used than was actually the case. As stressed by Lindert:

"To identify the years of World War I and its aftermath as a period of transition from a gold standard to a gold exchange standard thus seems misleading as well as artificial." (Lindert, 1969, p. 15).

Bloomfield showed how rapidly the holdings of foreign exchange by foreign central banks increased after 1890 (and especially after 1900) and Lindert showed that in 1913 sterling ranked no better than third as a reserve currency in Continental Europe including Russia (which had a strong preference for french francs) and second without her. However, at the world level sterling was still by far the primary reserve currency at the eve of World War I. These findings have two major implications: first they testify that by the last decade of the last century the financial markets of Berlin and Paris must have had depth, breath and resiliency on a scale unknown until then<sup>15</sup>. France must have by then recovered the loss of

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<sup>15</sup>It should not be forgotten that the data on foreign exchange holdings by Central Banks were not easily available, nor were the liabilities of reserve center commercial banks by holder known. Keynes says: "... one finds also certain other obstacles in the way of Gold-Exchange management working out in an entirely satisfactory way. In the first place, there is not always accurate and up-to-date knowledge of the amount of liquid resources which one Banking System is holding as a reserve within the territory of another Banking System. Consequently changes in these amounts are not always as avert and palpable as are movements of actual gold. Indeed, this secrecy, which allows a Central Bank's reseves to fluctuate in amount without this being generally known, is sometimes a recommendation in the eyes of the Bank in favour of its holding foreign liquid resources rather than gold in its own vaults." (Keynes, 1930, Vol. I, p. 355). Other reasons for the development of the gold exchange standard besides the obvious one of the scarcity of gold in the world, which, however, cannot explain why the biggest development occurred in the 1890s and in the first 13 years of this century, are given by Hawtrey, Lindert and

credibility stemming from the 1871 suspension of convertibility and from the war with Germany. Germany in turn needed time to reap the advantages of unification and to make itself felt in world goods and financial markets. Second they revolutionize the understanding of the adjustment mechanism and of the degree of asymmetry in international adjustment.

It is well known from the working of the Bretton Woods gold exchange standard that if countries in the periphery invest their dollar reserves in US government bonds or interest yielding non bank liabilities, the balance of payments adjustment is very asymmetrical and that the burden of adjustment falls fully on the periphery. In addition, as shown by Swoboda (1978), the monetary policy of the US has a greater influence on the world money stock and the world price level than justified by its size; in other words the "effective size" of the reserve currency country is increased by the reserve policy of the periphery. If reserves are invested in US commercial bank deposits the asymmetries are slightly less marked, while if they are kept with the Federal Reserve System the asymmetries disappear as US commercial bank reserves fall when there is a deficit in the US balance of payments. The investment of dollar reserves by the periphery in Treasury bonds and bills and in commercial bank deposits shields US commercial bank reserves from balance of payments deficits and effectively sterilizes the US money supply from deficits (except for slight effects on the money stock held by domestic residents in case of investments in bank deposits). These mechanisms were at work to an increasing degree in the last two decades or so of the classical gold standard<sup>16</sup> and they were very well known at least to Keynes, Hawtrey, Haberler, Whale, Meade, Triffin and Lindert. However, one had to wait the full development

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Kindleberger. Hawtrey maintains that: "... this reserve of foreign bills adequately served the purpose of a gold reserve and it had two great advantages, in that it yielded an interest and that its increase or decrease did not unsettle the world market in gold... But this method if carried too far would seriously threaten the stability of the value of gold." (Hawtrey, 1927, p. 61) and Kindleberger: "Just as bank notes and bills of exchange are more efficient monies than coins, so foreign balances dominate bullion under stable conditions, being easier to use in transactions, free of the need of transport, and directly useful without conversion into national money." (Kindleberger, 1978, p. 68).

<sup>16</sup>Between the UK and some countries like Japan and India they must have been important also before 1890.

of the theory of the money multiplier for a formal analysis to be developed by Swoboda.

Before illustrating the economic thought of Keynes, Hawtrey, Haberler, Whale, Meade, Triffin and Lindert on this matter it is appropriate to present some data to put the whole analysis in a proper perspective. Table 7 shows that the holdings of foreign exchange by the Reichsbank did increase after the mid 1890s; however, in the years 1911-13 they were still a minor item of the balance sheet (less than 5% of total assets). For the Bank of England they were even less important. Table 8 shows the holdings of foreign exchange by currency of the Swedish Riksbank in 1913 as estimated by Jonung (1984). Foreign exchange holdings were 54.5% of international reserves, 60% of foreign bills and deposits and 52% of foreign bonds were held in Reichsmark; the proportions held in pounds were 24 and 37% respectively. These data confirm Lindert's finding that at the outbreak of World War I the Reichsmark was already a very important reserve currency in Europe. Table 9 shows that in 1913 Russia, Japan and India were the largest holders of official foreign exchange; their holdings were 28, 78.3 and 62.2% of the sum of their foreign exchange and gold. For the whole of Africa, Asia and Australia the ratio estimated by Lindert was a very high 66.7%. Finally an interesting piece of information on the spreading of official and private holdings of pounds in the world is the proportion of deposits at foreign and colonial joint stock banks in London (or at their branches) to total deposits of joint stock banks in England, Scotland, Wales and Ireland. The data are presented in Table 10. They show that colonial banks had already a high market share in the UK in 1878 and that their share fell only slightly during the succeeding three decades. The market share of foreign banks instead was around 5% in 1878, increased to 9% in 1890, 11% in 1900 and more than doubled to 24% in 1908. The timing of the increase in the market share of foreign banks is remarkably parallel to Bloomfield's and Lindert's account of the development of the official and private use of pounds in the world.

Keynes was aware of the asymmetries introduced into balance of payments adjustment by the development of the gold economizing use of sterling balances on the part of foreign Central Banks. He talks in this connection of a "lack of reciprocal action" and argues that those who complain of the "lack of reciprocal action" cannot at the same time complain of a lack of real economy of gold i.e. if there are asymmetries then there must also be economy of gold. (Keynes, 1930, Vol. I, p. 353).

Whale, after stating that the practice of using foreign balances as reserves instead of gold may certainly have had the effect of making adjustments more "one-sided" (Whale, 1937, p. 50) states that, after increasing its lending, the lending country may experience an increase in interest rates and a gold outflow, but if the borrowing country holds pound reserves rather than gold reserves, the transfer may occur more "smoothly" for the lending country and that in the borrowing country additional money is created on the basis of money held in the lending country. He concludes that this holds only if the banks in the borrowing country treat their foreign (overseas) balances as being exactly equivalent to gold reserves and proceed to make them the basis for a multiple expansion of notes or deposits. But often they let their foreign balances grow relative to their deposits, restrained presumably by some intuitive recognition that any greater expansion of credit would soon have to be reversed. (p. 58). He was also aware of the different implications of investments of reserves in bank deposits and in interest earning assets:

"The character of the process is also affected by whether the banks of the borrowing country continue to hold their external funds in liquid form or convert them into interest-earning assets held in the lending center" (Whale, 1937, p. 58).

Particularly impressive are the detailed accounts of the working of a gold exchange standard by Haberler and Meade. Both state very forcefully that a gold

standard is inherently symmetric and that the gold exchange standard introduces asymmetries in balance of payments adjustment.

"The transition from the gold standard .....to a system where a number of countries hold no gold is bound to have an inflationary effect on the world as a whole. A change in the opposite direction tends to have a deflationary effect..... The reserve country or countries, even if they themselves are on gold, need not be afraid of losing gold to the dependent exchange standard countries....Much will then depend on the precise form in which these reserves are kept.... From this argument, it would seem to follow that an upswing (or downswing) starting in the reserve country will be likely to spread more easily to other parts of the world, and go farther than it would under gold standard conditions, because the exchange-standard countries will benefit (suffer) both in respect to their trade and in respect of their reserves while the reserve countries will not, as under the gold standard, lose (increase) their reserves. Similarly, an upswing (downswing) starting with the exchange standard countries will be less likely to spread, and will go less far, than under the gold standard." (Haberler, 1937, p. 433-435).

Haberler's analysis contains all the ingredients of Swobda's 1978 model on the working of Bretton Woods with the asymmetries it created, the different degree of asymmetries depending on the way reserves were invested and the magnified effect of the reserve currency country's monetary policy on world's monetary conditions. In addition Haberler looks at the implications of the gold exchange standard for the world's business cycle (the title of his book is "Prosperity and depression"). In the light of the information we have supplied in this paper on the structural characteristics of the UK and Germany and on the spreading of the gold exchange standard from 1876 to 1913 and assuming that they were all known to Haberler, as most likely they were, we think it is safe to say that Haberler must have believed that the balance of payments adjustment between UK and Germany was rather symmetric. This belief is reinforced by the following sentence somewhat further on in his book:



".....it is well known that throughout the 19th century the British monetary system was operated on a very narrow gold reserve. This narrowness of the monetary base made for a jerky credit policy, because it forced the Bank of England to react sharply to slight cash drains. Thus it contributed to monetary instability throughout the 19th century." (Haberler, 1937, p. 468/9).

Meade introduced two novel elements in the discussion. First he distinguished the case in which the monetary authority of the reserve currency country treats bank deposits of foreign exchange countries like deposits of ordinary citizens from the case it does not and second he introduced third country effects. As to the first point, if the monetary authorities of the reserve currency country treat bank deposits of foreign exchange countries like deposits of ordinary citizens adjustment is asymmetric; on the other hand, if they treat their increase like a loss of gold for instance out of fear of conversions, adjustment will be symmetric like under the gold standard. As to third country effects, he analyses a balance of payments adjustment between a country holding foreign exchange reserves (say India) and a country on a gold standard (say Germany). If India develops a balance of payments deficit as a result of increased German export penetration and Germany acquires as a result sterling balances which it presents for conversion, the Bank of England loses gold. Thus imbalances between third countries affect credit conditions in London. We conclude that the emergence during the period under study of the US and Germany, both operating on the gold standard as major exporters may have increased London's vulnerability, especially in the latter part of the period (this is our conclusion, not Meade's).

Besides Whale and Haberler also Ford and Triffin stressed the fact that "per se" the use of sterling as an international reserve asset reduced the pressure on the British balance of payments: