RICARDO AND THORNTON ON THE "UNFAVOURABLE" RATE OF EXCHANGE

Annalisa ROSSELLI[1]

Abstract

At a distance of nearly two centuries since it broke out, the Bullion Controversy is still an endless source of questions and interpretations. The most recent contributions to the debate have focussed mainly on two points. The first is the position taken by one of most eminent participants in the controversy, David Ricardo. The second is the microeconomics of precious metals flows and the workings of the markets involved: the market for bills of exchange and the market for gold. Here attention has shifted from the question "Why?" (real vs. monetary causes of gold flows) to the question "How?" (which markets move first? Which are the signals that prompt the behaviour of the agents?).

Following this trend, a recent interpretation of Ricardo's monetary theory (De Boyer in this volume and 2007) claims that Ricardo rejected the "gold points" mechanism that Thornton had suggested and was unable to provide a satisfactory explanation for gold outflows. In this note I will argue, instead, that Ricardo, like Thornton, Malthus and most of the participants in the controversy aligned in the Bullionist camp, was well aware of the mechanics of gold movements and, indeed, based his theory on it. However, De Boyer is right in pointing out that there are some obscurities in Ricardo's writings regarding the role played by commodity prices in variations in the

1. Dipartimento di Economia e Istituzioni, Universita' di Roma "Tor Vergata", Via Columbia 2, 00133 Roma – Italy. E-mail rosselli@uniroma2.it, fax: 39-6-2020500.

rate of exchange and in the transmission mechanism of an '*overissue*'. The fact that Ricardo dwelt little on this issue , may have been due to the consideration that it was common ground and required no further clarification, or even to sheer lack of interest, his main focus being the value of the currency, measured by its purchasing power over gold, and not the dynamics of international trade.

Résumé. Ricardo et Thornton au sujet du taux de change "défavorable"

Il y a deux siècles environ que la Controverse Bullioniste agite une série sans fin de questions et d'interprétations. Les contributions les plus récentes à cette querelle ont surtout focalisé sur deux points. Le premier est représenté par la position prise par David Ricardo, un des participants les plus éminents à cette controverse. Le second est la micro-économie des flux des métaux précieux et le fonctionnement des marchés intéressés : le marché des lettres de change et le marché de l'or. Dans les contributions les plus récentes, on abandonne la question du "pourquoi?" (causes réelles vs causes monétaires des flux de l'or) pour privilégier au contraire la question du "comment?" (quels sont les marchés qui réagissent les premiers? quels sont les signaux qui déterminent le comportement des agents?).

Suivant cette tendance, une interprétation récente de la théorie monétaire de Ricardo (De Boyer dans ce volume et 2007) prétend que ce dernier rejetait le mécanisme des " points de l'or" analysé par Thornton et était incapable de fournir une explication satisfaisante aux exportations d'or. Dans cette note on soutient au contraire que Ricardo, tout comme Thornton, Malthus et la plupart des participants à cette controverse du côté des Bullionistes, connaissait très bien le mécanisme des mouvements de l'or sur lequel il fonde, en fait, sa théorie.

De Boyer a toutefois raison quand il souligne qu'il y a des points obscurs dans les écrits de Ricardo concernant le rôle des prix des marchandises dans les variations du taux de change et dans le mécanisme de transmission d'une surémission. Le fait que Ricardo ait négligé ce problème, peut s'expliquer par la conviction qu'il s'agissait en fait une opinion commune qui n'exigeait donc aucune précision ou simplement par un manque d'intérêt, car pour lui la valeur de la monnaie mesurée par le pouvoir d'achat en termes d'or, avait une importance bien plus significative que la dynamique du commerce international.

Classification JEL: B12, B31

Introduction[2]

At a distance of nearly two centuries since it broke out, the Bullion Controversy, the "greatest of all monetary debates" as Hayek once called it (Hayek 1939: 37), is still an endless source of questions and interpretations. However, over so many years it is hardly surprising to find a change of perspective. Unlike the monumental and still classical reconstruction by Viner (1937), rich in details and historical background, the most recent contributions to the debate (Perlman 1986; Marcuzzo Rosselli 1991 and 1994; Deleplace ed 1994) have narrowed their scope and focussed mainly on two points.

The first is the position taken by one of most eminent participants in the controversy, David Ricardo, whose works and correspondence were still partially unknown when Viner was writing. The second is the microeconomics of precious metals flows and the workings of the connected markets: the market for bills of exchange and the market for gold. Here attention has shifted from the question "Why?" (real vs. monetary causes of gold flows) to the question "How?" (which markets move first? Which are the signals that prompt the behaviour of the agents?).

Following this trend, a recent interpretation of Ricardo's monetary theory (De Boyer in this volume and 2007) claims that Ricardo rejected the "gold points" mechanism that Thornton had suggested and was unable to provide a satisfactory explanation for gold outflows. In this note I will argue, instead, that Ricardo, like

2. I am indebted to Ghislain Deleplace, Cristophe Depoortère and to the participants in the Journée David Ricardo at the Université Paris 8 for useful comments and suggestions.

Thornton, Malthus and most of the participants in the controversy aligned in the Bullionist camp, was well aware of the mechanics of gold movements and, indeed, based his theory on it. However, De Boyer is right in pointing out that there are some obscurities in Ricardo's writings regarding the role played by commodity prices in variations in the rate of exchange. The fact that Ricardo dwelt little on this issue, and with little clarity, may have been due to the consideration that it was common ground and required no further clarification, or even to sheer lack of interest, his main focus being the value of the currency and not the dynamics of international trade.

1. Ricardo's aim in participating in the bullion controversy was to show that the English currency was "depreciated" and that its depreciation was proved and measured by the change in purchasing power of the sterling over gold bullion, the "standard" of the currency (Marcuzzo and Rosselli 1991). For Ricardo, the depreciation of the currency was therefore reflected in the high price of gold bullion at home and the low price of the bills of exchange denominated in sterling in all the foreign markets (and indeed in the high price of those denominated in foreign currencies in the London market).

It was an original and new position, as was new the situation which England had got into with the suspension of convertibility in 1797. Examples of depreciation of the currency in the past were well known; it had happened before that the price of gold or silver bullion was higher than the mint price, but these cases had always been accompanied by a debasement of the coin in circulation. The market price of an ounce of bullion had a natural upper limit in the number and denomination of coins that had to be melted to obtain an ounce of the same metal; it was obvious that the price of bullion rose above the mint price when this number increased, as a consequence of the metal content of the coins being lower than the legal amount. And yet, at the time of Ricardo's early writings, the few guineas still in circulation were not debased, nor had they been in the previous years. Nevertheless, the price of gold bullion was higher than the mint price. Instead of the paper currency adjusting in value to that of the coin which it represented, it was the coins (the few that were still around) that had adjusted their value to that of the depreciated paper currency, as Ricardo repeatedly stated (III, 18).[3] This had led to the absurd situation in which one ounce of gold in coins, if exchanged at their face value, could not buy one ounce of gold bullion (III, 56). No wonder most of the guineas had been melted down, albeit illegally, and sold on the market as bullion.

3. In his third letter to the *Morning Chronicle* of 23 November 1809, Ricardo replied to Hutches Trower. Following the traditional lines, Trower had argued that silver was the standard of the currency and the high price of gold bullion was accounted for by the conditions of the silver coins, whose metal content was much reduced at the time. Ricardo replied that Trower's explanation of the high price of gold bullion was wrong, since gold, and not silver, was the standard of the currency, and provided a long argumentation to support his contention (Ricardo III: 28-33). From now on references to Ricardo's works will be to the Sraffa's edition (Ricardo 1951-55); the Roman numeral indicates the volume and the Arabic numeral the pages.

With the price of the bullion higher than the mint price the effect on the rate of exchange was inevitable, no matter what the cause of this increase. As Ricardo explains in his letter to the *Morning Chronicle* of 29 August 1809, which marked his first appearance in print, and in several other passages of his works and letters in the following years (III, 71-2, 161; VIII, 2), no merchant would ever pay a bill of exchange which entitles him to a given amount of gold or silver abroad more than he would have to pay to buy and ship the same amount of gold or silver to the foreign country. When he has to pay more for the bullion at home, he will also pay more for a bill of exchange. This higher price *appears* as a fall in the rate of exchange,[4] or as an "unfavourable" rate of exchange, as any rate of exchange lower than mint parity was conventionally called,[5] but this fall in the rate of exchange did not reflect the demand and supply for foreign currencies and, therefore, the state of the balance of trade (or of payments). When gold could no longer be obtained at the Bank at the mint price, an "unfavourable" rate of exchange could be simply the consequence of the difference between the market price of gold and the mint price. In other words, it could be a "nominal" and not a "real" deviation from par (Marcuzzo and Rosselli 1997). As Ricardo wrote to Francis Horner on the 5 February 1810 after the publication of the first edition of his *High Price of Bullion*, commenting on a speech delivered in Parliament:

> *Mr. Marryat, I believe, contended that the unfavorable exchange was the cause of the high price of gold bullion. He mistook, I apprehend, the cause for the effect, as I have elsewhere attempted to shew. He observed too that a guinea was worth in Hamburgh 26 or 28/ shillings; but if we should therefore suppose that a guinea would sell there for as much silver as is contained in 26 or 28 shillings we should be very much deceived. The silver for which the guinea will now sell at Hamburgh would, if sent to our mint, coin into 21/6 […] It is nevertheless true that that same quantity of silver will at Hamburgh purchase a bill payable in London in Bank notes for 26 or 28 shillings. Can there be a more satisfactory proof of the depreciation of our circulating medium?* (VI, 7)

The point Ricardo is making here is clear: large deviations in the rate of exchange from the mint parity could be explained only by the fact that the English currency was "at a discount" (III,20), i.e. it could no longer acquire the amount of bullion that corresponded to the mint price. The rate of exchange was low because the price of bullion was high, and not the other way round. Large deviations from par were a "satisfactory proof of the depreciation" of the currency because if the currency were not depreciated and gold could be purchased at the mint price, the

4 The rate of exchange was usually quoted in London as amount of foreign currency for one unit of domestic currency; therefore a depreciation of the pound was expressed as a fall of the rate of exchange.

5. The parity was determined by the ratio of the mint prices of gold in the two countries and the market rate of exchange moved around it. For the sake of simplicity, the several complications deriving from the use of different standards in the two countries will be disregarded here.

rate of exchange could not deviate from par more than the cost of freight and insurance to be borne to ship bullion abroad. In fact, whenever a profit could be made in the London market by selling a bill of exchange and shipping gold abroad to cover their position, the bullion merchants would be there, ready to seize the opportunity. Their search for profit would keep the market rate of exchange within the boundaries determined by the "gold points", which Ricardo called "natural limits"(VII, 43). However, if these boundaries were measured in the customary way as deviations from the mint parity, they shifted when the market price of gold deviated from the mint price. [6]

> *[The exchange] cannot on the one hand rise more above par than the expence of freight, &c. on the importation of gold nor on the other fall more than the expences of freight, &c. on its exportation,* ***added to the discount of bank notes*****.** (bold added) (III, 20)

It was a well-known mechanism, familiar to Ricardo as indeed to anybody else who operated in the City of London. And in fact Ricardo invokes it to show that the low rate of exchange is the consequence as well as the sign (III, 72) of the depreciation of the currency.

2. As is well known, Ricardo had no doubts about the cause of the depreciation of the English currency. It was the discount policy of the Bank of England which, no longer constrained by the convertibility of its notes, had been overgenerous with its loans. The quantity of money had been increased beyond the "necessities of trade" and, consequently, its value, measured by the standard, decreased. There is a famous observation by Ricardo in the Principles, which was added to the second edition:

> "*There is no point more important in issuing paper money, than to be fully impressed with the effects which follow from the principle of limitation of quantity. It will scarcely be believed fifty years hence, that Bank directors and ministers gravely contended in our times, both in parliament, and before committees of parliament, that the issues of notes by the Bank of England, unchecked by any power in the holders of such notes, to demand in exchange either specie, or bullion, had not, nor could have* ***any effect on***

6. This result was not affected by the cause for the difference between the market and the Mint price of gold. Debasement of the coin and inconvertibility of bank notes had the same effect on the price charged by the seller of a bill of exchange. De Boyer (2007, p. 44) considers the analogy "unfounded", and his argument is based on his peculiar definition for the par of exchange. This would be the ratio between the gold content of the coins, when the coins are debased, and the ratio between their legal gold contents, in all other cases. De Boyer can then argue that Ricardo does not see that in case of debasement of the coins the par changes, while it does not in all the other cases. In my view De Boyer fails to see that the "gold content" – so to speak - of the (inconvertible) paper pound changes, when the market price of bullion rises. Either the par is the ratio between the Mint prices of gold – and it does not change unless the Mint price changes. Or it is the ratio between the market prices if gold, and the par does change both in case of debasement and inconvertibility.

> ***the prices of commodities, bullion, or foreign exchanges***" (bold added) (I, 353-54)

All Bullionists could have endorsed these remarks by Ricardo, all equally convinced as they were that an excessive increase of money – what was called an "overissue" - had an impact on the prices of commodities, bullion and foreign exchanges and was a sufficient condition for an increase in the price of gold and a fall in the exchange. What differences there were among them arose over two points: a) whether it is also a necessary condition, i.e. whether any increase in the price of gold and fall in the rate of exchange to the point where the export of gold becomes profitable can be solely explained by the excessive issues of the Bank of England; b) whether there is a direct impact of the increase in the quantity of money on the rate of exchange, or an indirect impact, the fall in the rate of exchange being the consequence of the increase in the prices of tradable commodities and the worsening of the balance of trade. The former point is the much-debated issue of the monetary vs. real causes for a deficit of the balance of trade; the latter deals with the transmission mechanism of an increase in the money supply, and has received less attention.

In the next section I will show that the two questions can actually be reduced to one: can gold be exported if its relative price in terms of commodities does not change at home? Or, as Ricardo would have phrased it, can gold be exported if its "value" in the domestic country is not lower than in the foreign country? Ricardo's answer is negative, and in this lies the difference marking him out from other contenders in the Bullionist camp.

3. There is no lack of textual evidence that Ricardo was convinced that there was only one cause for the exportation of gold or what, "in the language of merchants" (III, 245), was called an "unfavourable" balance of trade. This cause was a "redundant" currency:

> "*...it appears, that the temptation to export money in exchange for goods, or what is termed an unfavourable balance of trade, never arises but from a redundant currency*" (III, 59)

> "*an unfavourable balance of trade, and a consequently low exchange, may in all cases be traced to a relatively **redundant and cheap** currency*" (bold added) (III, 116)

Ricardo was well aware that his position clashed with that of Henry Thornton, the leading authority on monetary matters, who had argued, in his *Paper Credit* published in 1802, that a fall in the rate of exchange to the "gold point" of exporting bullion could be the consequence of a bad harvest or the remittance of a subsidy or of any other cause which had temporarily determined an excess demand for foreign currencies. In such cases the Bank of England was right in increasing the issue of banknotes in order to replace the lost currency and prevent a dangerous deflation.

Thornton's opinion was shared by Malthus and repeated by him in his review of Ricardo's *High Price of Bullion* and *Reply to Bosanquet* which was published in the *Edinburgh Review* in 1811. In Malthus's words:

> "*[the exportation of the] precious metals is* ***the effect of a balance of trade****, originating in causes which may exist without any relation whatever to redundancy or deficiency of currency*" (quoted by Ricardo in the Appendix to the *High Price of Bullion*, III, 101)

Ricardo's criticism of Thornton and his reply to Malthus follow the same lines with few changes. The main points are:

i) the exportation of gold bullion and coins is no different from trade in any other commodity and is equally driven by self-interest;[7]
ii) if gold is exported, this means that the currency is "cheap", i.e. the value of the gold coins must be lower in the exporting country.

Thus, Ricardo is concerned both with the way in which the exportation of gold was carried out (point i, what profit can be made by the exportation of gold) and with the causes of the exportation of gold (point ii, why gold has decreased its value). Ricardo's argument can be reconstructed by addressing the two points separately.

Let us begin with point i) and assume that the fall in the exchange has reached the gold export point. Ricardo maintained that the relation between the price of gold at home and abroad and the price of commodities had necessarily to be the following:

$$(1)\ p^*_i / p^*_g \leq p_i / p_g$$

$$(2)\ p_g / p^*_g \leq p_i / p^*_i \text{ for any } i = 1, ...,N$$

where
p_g = market price of gold in England
p^*_g = market price of gold abroad
p_i = price of tradable commodity *i* in England
p^*_i = price of tradable commodity *i* abroad
N = number of tradable commodities.

7. See " If we consent to give coin in exchange for goods, it must be from choice, not necessity" (III, 61)
"It is self-interest which regulates all the speculations of trade, and where that can be clearly and satisfactorily ascertained, we should not know where to stop if we admitted any other rule of action" (III, 102). On this point there is agreement between Ricardo and Thornton (1802: 79).

The two equalities are obviously equivalent and one implies the other. Inequality (1) says that the quantity of gold necessary to buy a given quantity of commodity *i* is greater in England than abroad. Gold is "cheap" (a smaller amount of any commodity is needed to buy an ounce of gold at home than abroad), its "value" is low. Inequality (2) explains why gold exportation is the most profitable way to pay for a debt abroad. Indeed, the price of gold in England relative to the price of gold abroad, p_g / p^*_g, tells us the price in sterling of one unit of foreign currency obtained by shipping and selling gold abroad. The price of commodity *i* in England relative to the price of commodity *i* in the foreign country, p_i / p^*_i, tells us the price in sterling of one unit of foreign currency obtained by shipping and selling commodity *i* abroad (for the sake of simplicity, transport and transaction costs are neglected) . Given that the former is lower than the latter for all tradable commodities, the merchant who sells a bill of exchange denominated in foreign currency in London makes a larger profit if he covers his position by shipping gold instead of shipping commodity *i*. Gold is the "cheapest exportable commodity" (III,63) or the cheapest "exchangeable" commodity (III,57).

It must be noted that inequality (1) points to a low value of gold which is compatible with a high price. If the increase in the prices of commodities is higher than the increase in the price of gold, the value of gold decreases while its price rises. Ricardo is always careful in distinguishing between the price of gold and its value. The *price* of gold cannot vary "whilst measured in gold coin or in bank notes accurately representing such coin" (III, 393) , since "an ounce of gold bullion could not, whatever the demand might be, whilst its price was rated in gold coin, be of more value than an ounce of coined gold, or 3*l*. 17*s*. 10 ½ *d*." (III,60). It is only when gold coins have disappeared from circulation and can no longer be obtained at the Bank, that the *price* of gold can vary. The value of gold, instead, is subject to the usual fluctuations which affect all commodities in response to changes in supply and demand. [8]

That gold should be exported if, and only if, it is cheaper (in terms of any commodity) at home than abroad seems obvious to Ricardo. As long as this incentive persists, gold will be extracted from the currency whenever possible (melting down coins, purchasing gold at the Bank in return for banknotes, if they are convertible) and the money supply will be reduced. It is important to note that Ricardo stresses the variations in the relative value of gold in terms of commodities in England as a cause for gold outflows. He deliberately chooses to ignore other possible causes, such as the variations in the prices of British commodities abroad and the uncertainties of the international trade that could result in gold being preferred to any other commodity for the payment of a debt abroad, as Thornton and Malthus argued.

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8. The difference between price and value of gold is not clear in De Boyer (2007). He refers to a low price of bullion, where he should discuss the low "value" of bullion (2007, p. 43). Similarly, an increase in the value of gold is misunderstood for an increase in its price (2007, p. 45).

However, even if the mechanics of the gold outflows is clear, we are left with the question: how does a change in the value of gold come about? The answer given by Ricardo is better understood if we examine the transmission mechanism of an increase in the issues of the Bank. In this case, too, comparison with Thornton's theory proves particularly useful.

4. Thornton saw the effects of variations in the quantity of money on the price of gold as working through two stages (Rosselli 1999). The first stage is the effect of the variation in the quantity of money on the exchange rate, the second the effect of the variations in the exchange rate on the demand for gold and its price. The latter link – from the rate of exchange to the demand for gold – is the result of the operations of a specialised class of merchants who sell foreign currency on the exchange market and cover their positions with the shipment of gold whenever the possibility of gain arises.

> *The export trade to foreign countries is, generally speaking, one trade; the trade of importing from foreign countries is a second; the trade of sending out and bringing home bullion, in order to pay or receive the difference between the exports and imports, may be considered as a third. This third trade is carried on upon the same principles with any other branch of commerce, that is, it is entered into just so far it is lucrative to the speculator in bullion, and no farther.* [Thornton 1802: 79].

When the rate of exchange reaches the gold export point, *for whatever reason*, the demand for gold increases and this puts pressure on its price. In normal times, the market price of gold bullion is lower than the mint price, since there is a slight difference between coined gold and gold bullion which accounts for coinage expenses. When the demand for gold increases, the price of bullion reaches the mint price but, if the paper money is convertible, the price can rise no further, since gold can be obtained at the Bank at the mint price. However, the Bank loses reserves, and will be induced to contract its credit, while the banknotes in circulation diminish. If banknotes are no longer convertible, gold to be exported must be purchased on the market and its price rises. The increase in the price of gold will be greater or lesser according to the type of monetary system in force and according to how much gold the Bank of England is prepared to purchase at a loss to make up its reserves, but it will always depend upon one single cause, i.e. a fall in the exchange rate. Therefore, in Thornton's formulation, the fall in the rate of exchange precedes the rise in the price of gold.[9]

The link between quantity of money and exchange rate is more complex. The effects of variations in the money supply depend upon the way in which the money enters into circulation. The major source for the creation of money was the discount

9. If the fall in the rate of exchange has been caused by an increase in the quantity of money, the increase in the demand for gold for international purposes will be added to the increase in the domestic demand for all commodities which follows an expansion of credit.

activity of the Bank of England. A large proportion of the discounted bills had to do with foreign trade, and changes in the discount activity therefore had direct repercussions on the exchange rate. The effect was virtually immediate, above all when restrictive policies were being applied:

> *The limitation of credit at home will* ***chiefly be of use*** *by urging the exporting merchant to press the sale of the goods which he has abroad, as to direct them to be sold, if he can, at short credit; and also by its urging, in like manner, the importing merchant to delay buying abroad, as long as he can, and to buy at long credit. In other words, it may be of use in leading English merchants, in their dealings with foreigners, to anticipate their receipts, and to delay their payments.* (Paper Credit 1802, pp. 86-87)

With a monetary restriction, the appreciation of the rate of exchange – although temporary – does not seem to require a fall in the price of commodities. It is possible to improve the exchange without plunging the country into deflation with a simple credit contraction.

In the case of increases in the discount activity the fall in the rate of exchange is increased by the rise in the home prices of commodities:

> "*...the traders in the metropolis discover that there is a more than usual facility of obtaining notes at the bank by giving bills for them..... The opinion of an increased facility of effecting payments causes other traders to become greater buyers for the same reasons, and at the same time. Thus an inclination to buy is created at all quarters, and an indisposition to sell [...] The increase in the eagerness of each buyer may be trifling. The zeal to buy, being generally diffused, may, nevertheless, have a sensible operation on prices.*" [Thornton 1802, pp. 195-196].

However, the effect of changes in the prices of domestic commodities can only be considered additional to the - more relevant - effect obtained with variations in the discount policy.

In conclusion, according to Thornton the transmission mechanism of an "overissue" is the following, keeping the case of convertible distinct from that of inconvertible paper money[10]:

a) *convertible paper money*: increase in the money supply, fall in the rate of exchange to the point where the exportation of gold becomes profitable, increase in the demand for gold at the Bank, decrease in the money supply;
b) *inconvertible paper money*: increase in the money supply, fall in the rate of exchange to the point where the exportation of gold becomes profitable, in-

10. For the sake of brevity, here I adopt the traditional distinction between convertible and inconvertible paper money. However, a more interesting and precise distinction is the one used in Marcuzzo and Rosselli 1991, pp. 123-8, between "stable" and "unstable" monetary regimes.

crease in the demand for gold, rise in the price of gold that offsets the fall in the rate of exchange.

5. Ricardo does not provide a detailed description of the transmission mechanism. He does not explicitly endorse Thornton's position, but neither does he criticize it. In the first three editions of the *High Price of Bullion*, he seems to object to Thornton's assertion that the fall in exchange determines a rise in the price of bullion, remarking, "Here the cause is mistaken for the effect" (III, 75), but in the fourth edition this observation is dropped. Ricardo may have realized that he was at cross-purposes with Thornton, the latter being concerned with reconstructing a sequence in time, while Ricardo meant to impress on the mind of the reader that the depreciation of the currency, signalled and measured by the increase in the price of gold, was reflected in the fall of the exchange. Thornton draws a broad picture, following a macroeconomic approach to the problem. Ricardo resorts to the microeconomics of the gold transactions to show the depreciation of the currency. And, indeed, a few months before the publication of the fourth edition, Ricardo seems to agree with Thornton when he says in the *Notes on Trotter on the Bullion report*:

> "*The exchange is affected by the Bank issues, and becomes in its turn the cause of the high price of bullion*" (III, 397).

We find only one passage in which Ricardo explains at length how a depreciation of the currency, caused by its "redundancy", leads to the exportation of gold. This amounts to showing that a depreciation of the currency, measured in terms of the standard (gold), must determine a fall in the value of the standard itself which is therefore exported to a better market (see inequalities (1) and (2) above). In a long footnote in the *High Price of Bullion*, Ricardo explains how this can happen, but he seems to refer to the specific conditions of the currency in the years immediately before 1810, when coins still made part of the circulation:

> "*the effect of an increased issue of paper would be to throw out of circulation an equal amount of specie; but this could not be done without adding to the quantity of bullion in the market, and thereby lowering its value, or, in other words, **increasing the bullion price of commodities**. It is only in consequence in this fall in the value of the metallic currency, and of bullion, that the temptation to export them arises; and the penalties on melting the coin is the sole cause of a small difference between the value of the coin and bullion, or a small excess of the market above the mint price.*" (III, 64)

It seems clear that gold is exported as a consequence of a fall in its value or, which is the same thing, of an increase in the relative prices of commodities in terms of bullion.[11] There is no reason to export gold if it is not convenient to do so.

11. If banknotes had been convertible, the increase in the supply of gold could have been offset by the increased demand for gold of the Bank, anxious to replenish its reserves.

The profitability of the exportation of bullion makes its price rise *à la Thornton*. The fall in the rate of exchange is the cause of the rise in the price of gold. But what about the nominal prices of commodities? Does the fall in the rate of exchange precede or follow their increase? Do we have, as in Thornton, an autonomous fall in the rate of exchange aggravated by the worsening of the terms of trade, or is it the consequence of the rise in the prices of commodities that the depreciated currency has brought about? We have no clear answer in Ricardo.

That being as it may, Ricardo is always confident that money in excess would "overflow" and be exported, if the currency were not reduced entirely to inconvertible paper money. He has equal confidence that money would not leave the country if it were not redundant[12], given its importance in facilitating trade and commerce. He had nothing less than the authority of Dr. Adam Smith to rely upon, (III, 148) and he may be justified in assuming that his views in this respect were shared by the majority of the participants in the controversy.

6. To conclude, it must be noted that the distinction between the price of the standard (gold), i.e. its value in terms of money, and the value of the standard in terms of commodities, is crucial for Ricardo. He considers the confusion between the two concepts as the source of many mistakes and misunderstandings (see, for example, IV, 330; V, 166). The price of the standard depends entirely and exclusively on the amount of the currency. It proves and measures the depreciation, it is the signal that must be followed by the monetary authority for a correct management of the currency, and it provides a tool to distinguish between rises in prices of monetary origin - which can be corrected - and rises in prices due to real causes, which cannot be prevented:

> "*The effect produced on prices by the depreciation has been most accurately defined, and amounts to the difference between the market and mint price of gold. An ounce of gold coin cannot be of less value [...] than an ounce of gold bullion of the same standard; a purchaser of corn therefore is entitled to as much of that commodity for an ounce of gold coin, or 3l. 17s. 10 1/2d., as can be obtained for an ounce of gold bullion. Now, as 4l. 12s. of paper currency is of no more value than an ounce of gold bullion, prices are actually raised to the purchaser 18 per cent., in consequence of his purchase being made with paper instead of coin of its bullion value. Eighteen per cent is, therefore, equal to the rise in the price of commodities, occasioned by the depreciation of paper. All above such rise may be either traced to the effects of taxation, to the increased scarcity of the commodity, or to any other cause*

12. "Money is in such general demand, and in the present state of civilization is so essential to commercial transactions, that it can never be exported to excess; even in a war such as the present, when our enemy endeavours to interdict all commerce with us, the value which the currency would bear, from its increasing scarcity, would prevent the exportation of it from being carried so far as to occasion a void in the circulation" (III, 61).

> *which may appear satisfactory to those who take pleasure in such enquiries.*" (III, 239)

The value of the standard and its variations belong to a different field of inquiry. It is a vague concept in most of Ricardo's early writings, when his theory of labour value had yet to be developed. Ricardo repeatedly states that it is a fall in the value of gold that determines its exportation, because he wants to stress that there is nothing that makes gold a special commodity, to be preferred to others to settle international debts. Yet, he does not feel the need to specify the sequence of steps by which an increase in the money supply determines the exportation of gold. Even in his later works, he will develop his theory of the value of gold, but will not feel the need for deepening this aspect of his analysis. A practical man, not particularly fond of putting in writing his thoughts, he stresses only the points where his opinions are at variance with those of the others. Thornton had "considered this subject very much at large" and there was no need to repeat what was now common ground. Perhaps, instead of seeing Ricardo and Thornton as belonging to two completely different approaches, it is time to focus on the complementarity of their works.

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