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## **RICARDO ON MONEY: NOT A QUANTITY THEORY**

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### **1. INTRODUCTION**

There is a paradox in the way Ricardo's theory of money is usually evaluated in the literature: it is ascertained on the basis of the Bullion Essays of 1809-1811 which were mostly concerned with a monetary regime deprived of any standard – a kind of money that Ricardo always decidedly opposed – and not on the basis of *Principles*, which integrate in Ricardo's theory of value and distribution a money anchored to a standard – the only way for him to guarantee “a sound state of the currency.” This paradox explains the widespread opinion that *Principles* at best brought nothing new to Ricardo's monetary theory – his subsequent positions being mostly practical –, at worst made his quantity theory of money inconsistent with his determination of the value of money by the cost of production of gold.

The first task to rehabilitate Ricardo's attempt at integrating money in his theory of value and distribution is thus to show how *Principles* transformed Ricardo's theory of money and, in conjunction with *Proposals for an Economical and Secure Currency* (published one year before), provided a theoretical foundation to the plans of monetary reform advocated by Ricardo in Parliament (the Ingot Plan) or in draft (the Plan for a National Bank). An unexpected result then emerges: Ricardo did *not* hold a quantity theory of money, because: a) there was no equilibrium value of money depending on its quantity, which only affected the value of money in disequilibrium; b) this influence was not direct, as in the quantity theory of money, but indirect, through its effect on the market price of the standard (gold bullion). A practical consequence was that the policy rule advocated by Ricardo in his plans – varying the note issue inversely with the spread between the market and legal prices of gold – does not fit the modern reading key “rules *versus* discretion”.

Assessing in Ricardo a theory of money that focuses on the standard could as well be for him the kiss of death. Against the old disqualification of his views on money as being inspired by a hard-line (hence irrelevant) quantity theory, but also against the more recent emphasis on his empirical or practical orientation, any attempt at putting the monetary standard centre stage seems to be a sure recipe to bury his theory of money in the gone-away times of the gold standard. However, Ricardo's conditions for “a perfect currency” in no way

require the standard to be metallic: any marketable asset that is legally convertible into money and into which money is legally convertible at a fixed price may play the same role. Such asset might as well be a public bond purchased and sold for money by a central bank at a fixed price – a situation not far from that of our modern economies in times of crisis and non-conventional central bank policy.

The paper is organised as follows. Section 2 exposes how *Principles* are usually not considered for the evaluation of Ricardo's monetary theory, except to show that it is flawed by an internal contradiction. Section 3 shows that the theory of value and distribution contained in *Principles* (1817) complemented the monetary analysis contained in *Proposals for an Economical and Secure Currency* (1816) to build Ricardo's mature theory of money, which, as contended in Section 4, was *not* a quantity theory of money. Section 5 studies how this theory provided a foundation to the plans of monetary reform advocated by Ricardo. Section 6 concludes on its relevance in modern monetary conditions.<sup>1</sup>

## 2. FROM A PARADOX TO AN ACCUSATION OF CONTRADICTION

### A paradox

For the past two centuries, money played a singular part in the evaluation of Ricardo as an economist. This singularity lies in a paradox: Ricardo's monetary theory is usually exposed on the basis of his contributions to the debates around the *Bullion Report* of 1810, as if his subsequent theory of value and distribution contained in *On the Principles of Political Economy, and Taxation* (1817-1821) had not affected in any way his monetary views. A mere chronological gap makes the starting point become *ipso facto* the ending point of the story: Ricardo's theory of money pre-exists his theory of value and distribution, *hence* the former is independent of the latter. To use a modern phrase: the "dichotomy" between his "real" theory of value and his "monetary" analysis is complete. A variant of this approach to Ricardo on money is to acknowledge that *Principles* might have affected Ricardo's theory of money, but just to lock it into inconsistency or contradiction: advocating a paper money anchored to a metallic standard, Ricardo would be trapped in the impossible task of reconciling a commodity-theory of money – in which the value of money determines its quantity – and a quantity theory of money – in which the causality runs the other way round.

The present paper aims at challenging this view by arguing that Ricardo's theory of money is neither independent from nor contradictory with his theory of value and distribution. But this requires looking *also* at his monetary writings *after* he started inquiring into the determination of the rate of profit – that is, after *An Essay on the Influence of a low Price of Corn on the Profits of Stock* (1815) –, not only *before*. I will contend that the most elaborate expression of Ricardo's theory of money – again using a modern phrase, one that integrates his monetary analysis in his theory of value and distribution – is to be found in his late monetary writings (of 1819-1823), *not* in his early ones. The publication of *Proposals for an Economical and Secure Currency* in 1816 and of the three successive editions of *Principles* in 1817-1821 gave a theoretical foundation to Ricardo's views on money in the 1819-1823 papers, by putting the notion of monetary standard centre stage. The bicentenary of these two books thus offers the opportunity of revaluing Ricardo on money by shifting the cursor from the early to the mature monetary writings.

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<sup>1</sup> The paper draws on my recently-published book *Ricardo on Money. A Reappraisal* (Deleplace 2017). All quotations from Ricardo refer to the Sraffa edition of *The Works and Correspondence of David Ricardo* (Ricardo 1951-1973). When the extract is from a book, a pamphlet, or a manuscript written for publication, its title is indicated in abbreviation, with the volume (in Roman numeral) and pagination (in Arabic numeral) in *Works*. When it is from a speech, evidence, or correspondence, only the volume and pagination are indicated.

## **An alleged inconsistency or contradiction**

Modern literature often points to an inconsistency or a contradiction in Ricardo between the defence of a commodity-theory of money – which implies that the causality runs from the value to the quantity of money – and the adherence to the Quantity Theory of Money – which implies that the causality runs the other way round.

As recalled by De Vivo (1987), this accusation is already to be found in Marx:

The contradiction between a quantity and a labour (or a cost of production) theory of the value of money is obvious, and has often been discussed, as for instance by Marx, who deals with it in his critique of Ricardo's monetary theory in *A Contribution to the Critique of Political Economy* (Marx however overlooks the presence in the Ricardo of the early 1810s of a scarcity conception of value). As Marx writes, 'if the value of gold is given [by the labour embodied in it], the amount of money in circulation is determined by the prices of commodities' (1859, p. 171), and not the other way round. [...] There is no explicit attempt at reconciling the two conflicting views in Ricardo. (De Vivo 1987: 195)

Schumpeter, however, did not see the coexistence of cost-of-production and quantity elements in the value of money as a contradiction and criticised Marx for having failed to see that the latter adjusted to the former:

It seems that he [Marx] took this position under the impression that the quantity theory of the value of money and the cost of production theory of money are alternatives between which the analyst has to choose. This is not so: the value of money as 'determined' by quantity and the value of money as determined by cost of production must, in the long run, necessarily coincide. (Schumpeter 1954: 703n)

Schumpeter thus considered this coexistence as a mere extension of the "Classical" theory of value:

The leading 'Classics' solved the problem of this rather dubious value of money simply by extending to it their general theory of value. Accordingly, they distinguished a natural or long-run normal value of money and a short-run equilibrium value. The former or, as they also said – misleadingly – the 'permanent' value was determined by the cost of producing (or obtaining) the precious metals, the latter by supply and demand. [...] Even Ricardo, in spite of his bent for long-run analysis, reasoned about money chiefly in terms of the [short-run equilibrium], that is, in terms of supply and demand. [...] [He] tried to *deduce* the quantity theorem from the 'law' of supply and demand. (ibid: 701-3; Schumpeter's emphasis)

Further authors accordingly questioned Ricardo's incapacity for linking short term and long term in a consistent way – a recurrent complaint about him. Some of them considered that the two levels were simply juxtaposed and applied to different cases; see for example Laidler (1975: 217):

Ricardo's work contains two different but not incompatible theories of the price level. In his policy writings during the period of the bank restriction he relied on the quantity theory of money as a short-run theory of prices, but in the *Principles* the price level was viewed as being determined in the long run by the cost of production of gold relative to the cost of production of other goods.

Others were more critical, such as Blaug (1995: 31):

Ricardo continued to expound a labour theory of value of the monetary metal while at the same time espousing a hard-line version of the quantity theory. He might have reconciled the two by reserving the quantity theory for short-run problems and for inconvertible paper, while maintaining the cost-of production theory for the long run and for specie money and convertible paper only. In fact, however, he left the two doctrines standing in an unresolved relationship to each other. (see also Blaug 1996: 127)

This was the old suspicion of contradiction in new dresses. In modern literature, the contention that Ricardo had two theories of money is also to be found in Arnon (2011), Green (1992), King (2013). Other authors try to avoid the contradiction by focusing either on the

specificity of commodity money (Takenaga, 2013), on a central bank's discretionary policy (Sato, 2013), or on the role of government in monetary stabilisation (Otomo, 2013).

Those who emphasise a contradiction or inconsistency in Ricardo's theory of money consider that the culprit of it is the labour (or cost-of-production) theory of value, as stressed by De Vivo (1987: 195):

It is also to be remembered that the contradiction is only to be found in the *Principles*, and not in Ricardo's earlier works on monetary theory, where he does not yet have a labour theory of value (this is the case also for *Economical and Secure Currency*).

According to De Vivo, these "earlier works" would more easily bend to the Quantity Theory of Money because of a scarcity approach to value:

Ricardo's early idea that scarcity is a regulator of prices alongside cost of production, is (partly also thanks to its vagueness) much more in accordance with a quantity theory of money than his later labour theory of value, whose consistency with his monetary theory is problematic. These problems of consistency Ricardo failed to solve, and to a large extent even to consider. (ibid: 186)

In the contrary, I will argue that there is in Ricardo a mature theory of money which is neither contradictory nor inconsistent with the theory of value and distribution developed in *Principles*. The alleged contradiction between a commodity-theory of money and a quantity theory simply vanishes when one understands that in Ricardo there is neither one nor the other but a monetary theory *sui generis*.

### 3. RICARDO'S MATURE THEORY OF MONEY

#### The condition of conformity of money to the standard

In *Proposals for an Economical and Secure Currency*, Ricardo defined "a perfect currency" as follows:

A currency may be considered as perfect, of which the standard is invariable, which always conforms to that standard, and in the use of which the utmost economy is practised. (*Proposals*; IV: 55)

It is widely recognised that the question of the invariable standard is an integral part of Ricardo's theory of value and distribution. As shown in the above quotation, it was also an integral part of his theory of money. However, the proper object of this theory was the analysis of the conditions under which money might conform to its standard, even if the latter was not invariable in value. Gold being the standard, the conformity of money to the standard meant for Ricardo that a given weight of the metal in the form of money (whether coin or convertible note) was of equal value in terms of commodities with the same weight of gold in bullion.

To formalise this condition of conformity of money to the standard, one must start from the definition of the value of money, which, according to Ricardo, was the purchasing power of one unit of currency in terms of all commodities taken together, except the standard of money (see Deleplace 2017, Chapter 3). Calling  $V_M$  the value of money so defined,  $V_G$  the value of the standard (gold bullion) in terms of all other commodities, and  $P_G$  the money price of gold bullion, the condition of transitivity reads:

$$(1) \quad V_M = V_G / P_G$$

Let me call  $V_M^*$  the value of money when it conforms to the standard. With  $\overline{P_{GC}}$  the legal price of an ounce of standard gold in coin (£3. 17s. 10½d.), the quantity of gold

(measured in ounces) defining the pound is  $1 / \overline{P_{GC}}$ . The condition of conformity – that is, this quantity being of equal value with the same weight of gold in bullion – reads:

$$(2) \quad V_M^* = V_G / \overline{P_{GC}}$$

One derives from (1) and (2) that the condition that money actually conformed to the standard – that is,  $V_M = V_M^*$  – reads:

$$(3) \quad P_G = \overline{P_{GC}}$$

The condition of conformity was fulfilled when the market price of gold bullion was equal to the legal price of gold in coin (the mint price). This was Ricardo's first tour de force in his monetary theory: the condition of conformity of money to the standard was to be expressed as an equality between two observable magnitudes. Ricardo's concern with the stabilisation of the market price of gold bullion had thus nothing to do with the stabilisation of a proxy of the general price level: the market price of gold was to be stabilised at its legal level because this meant that money was actually conforming to its legal standard. This did not preclude the value of money from varying with the value of the standard: a "perfect currency" was *not* a currency invariable in value, but a currency whose value varied with that of the standard.

Thanks to convertibility of bullion into money and of money into bullion (money being whether coin or note), arbitrage ensured the fulfilment of (3), taking into account the costs incurred by convertibility both ways. In such "sound state of the currency" money conformed to the standard. According to Ricardo, money was depreciated if  $P_G > \overline{P_{GC}}$  and appreciated if  $P_G < \overline{P_{GC}}$ :

While these metals [gold and silver] are the standard, the currency should conform in value to them, and, whenever it does not, and the market price of bullion is above the mint price, the currency is depreciated. – This proposition is unanswered, and is unanswerable. (*Proposals*; IV: 62-3)

And symmetrically:

To say that money is more valuable than bullion or the standard, is to say that bullion is selling in the market under the mint price. (ibid: 57)

The condition of conformity of money to the standard, stated in *Proposals*, explains that the knotty point in Ricardo's mature theory of money was the distinction between "a fall in the value of money" and "a depreciation of money." In a speech in Parliament on 12 June 1822 he declared:

The great mistake committed on this subject was in confounding the words "depreciation" and "diminution in value." With reference to the currency, he [Ricardo] had said, and he now repeated it, that the price of gold was the index of the depreciation of the currency, not the index of the value of the currency, and it was in this that he had been misunderstood. (V: 203-4)

A depreciation (or appreciation) of money should be understood in respect to the standard, while a fall (or a rise) in the value of money should be understood in respect to all commodities taken together, except the standard. One did not necessarily go with the other, as Ricardo contended in his evidence before a committee of Parliament on 4 March 1819:

The term 'depreciation,' I conceive, does not mean a mere diminution in value, but it means a diminished relative value, on a comparison with something which is a standard; and therefore I think it quite possible that a bank note may be depreciated, although it should rise in value, if it did not rise in value in a degree equal to the standard, by which only its depreciation is measured. (ibid: 393-4)

In a speech in Parliament on 7 May 1822, Ricardo repeated that there could be depreciation while the value of money was actually *rising*:

It might so happen that a currency might be depreciated, when it had actually risen, as compared with commodities, because the standard might have risen in value in a still greater proportion. (ibid: 166)

One may show (see Deleplace 2017, Chapter 4) that the following equation can be derived from the condition of conformity and gives a consistent meaning to the above quotation:

$$(4) \quad \Delta V_M / V_M = \Delta V_G / V_G - \Delta P_G / P_G$$

in which  $\Delta V_M / V_M$  is the rate of change in the value of money,  $\Delta V_G / V_G$  is the rate of change in the value of an ounce of gold bullion (both values in terms of all commodities except gold bullion), and  $\Delta P_G / P_G$  is the rate of change in the market price of an ounce of gold bullion.

I will call (4) the **Money-Standard Equation**. It states that the rate of change in the value of money during a period is determined by the rate of change in the *value* of the standard minus the rate of change in the *price* of the standard. This equation thus expresses the conjunction of two additive channels through which the value of money may vary: a change in the value of the standard and a change in its price. In particular, money could rise in value while being depreciated – as testified by a rise in the price of bullion –, because the value of bullion had risen more than its price. The Money-Standard Equation thus accounts for any combination of change in the value of gold bullion and of change in its price, the resultant being a rise, a fall, or constancy in the value of money. As Ricardo declared in Parliament on 11 June 1823:

A currency might be depreciated, without falling in value; it might fall in value, without being depreciated, because depreciation is estimated only by reference to a standard. (ibid: 311)

The first cause of change in the value of money – a change in the *value* of the standard – was “real”: it reflected a change in the conditions of production of the standard, such as the discovery of a new highly-productive gold mine. The second cause of change in the value of money – a change in the *price* of the standard – was monetary: it reflected the excess (or deficiency) of the actual quantity of money  $M$  in respect to the quantity consistent with condition (2) of conformity, which I will thus call the conformable quantity of money  $M^*$ .

### The actual and the conformable quantity of money

Ricardo emphasised that, whatever the quantity of money, it was absorbed by circulation: “a circulation can never be so abundant as to overflow” (*Principles*; I: 352). This means that the actual quantity of money  $M$  circulates the same aggregate value of commodities as the conformable quantity  $M^*$ , so that the following equality applies:

$$(5) \quad M^* V_M^* = M V_M$$

Replacing  $V_M^*$  and  $V_M$  in (5) by their respective values in (2) and (1) gives:

$$(6) \quad M / M^* = P_G / \overline{P_{GC}}$$

When the actual quantity of money is in excess (deficient) relatively to the quantity that fulfils the condition of conformity of money to the standard, money is depreciated (appreciated) in proportion to the excess (deficiency), as testified by the market price of gold bullion being above (below) the legal price of gold in coin. With  $\overline{P_{GC}}$  remaining unchanged, one derives from (6) the following relation:

$$(7) \quad \Delta P_G / P_G = \Delta M / M - \Delta M^* / M^*$$

with  $\Delta P_G / P_G$  the rate of change of the market price of gold bullion,  $\Delta M / M$  and  $\Delta M^* / M^*$  the rates of change of respectively the actual and the conformable quantities of money. From (4) and (7) one obtains:

$$(8) \quad \Delta V_M / V_M = \Delta V_G / V_G - [\Delta M / M - \Delta M^* / M^*]$$

Equation (8) reformulates the Money-Standard Equation (4) to take into account how a change in the aggregate quantity of money affects the market price of gold bullion. The two causes of change in the value of money (a change in the value of the standard and a change in its market price) now become a change in the value of the standard (with a positive sign) and the difference between the rates of change in the actual and the conformable quantities of money (with a negative sign). An exogenous change in the value of gold bullion  $V_G$  – such as the discovery of a new mine – caused a change in the value of money in the same direction. As for the second cause of change in the value of money, namely the difference between the rates of change in the actual and the conformable quantities of money, Ricardo exposed it in *Proposals*:

The value of money then does not wholly depend upon its absolute quantity, but on its quantity relatively to the payments which it has to accomplish; and the same effects would follow from either of two causes—from increasing the uses for money one tenth—or from diminishing its quantity one tenth; for, in either case, its value would rise one tenth. (*Proposals*; IV: 56)

In this example,  $\Delta V_M / V_M = + 0.1$  because either  $\Delta M^* / M^* = + 0.1$  or  $\Delta M / M = - 0.1$ .

According to equation (8), the value of money adjusts to an exogenous variation in the value of gold bullion and to a change either in the conformable quantity of money  $M^*$ , following a change in the “wants of commerce”, or in its actual quantity  $M$ , consequent upon a discretionary change in the note issue. On the basis of Ricardo’s indications in *Proposals*, in *Principles*, and in the 1819-1823 papers, one may analyse the adjustment of the value of money to these different kinds of change (see Deleplace 2017, Chapters 5 to 7). I will here focus on the relation between  $\Delta V_M / V_M$  and  $\Delta M / M$ , since it is central in the Quantity Theory of Money generally ascribed to Ricardo.

#### 4. NOT A QUANTITY THEORY

The introduction by Ricardo in *Proposals* of the condition of conformity of money to the standard gave a theoretical foundation to the proposition that, not only the high price of bullion was “a proof” of the depreciation of banknotes (as stated in 1810 in the title of *High Price*), but it also indicated that the actual aggregate quantity of money  $M$  was in excess of its conformable level  $M^*$ . Ricardo’s tour de force was thus to provide a simple test – the comparison of the two observable magnitudes  $P_G$  and  $\overline{P_{GC}}$  – of whether the actual aggregate quantity of money was or was not in excess (or deficient), without having to know what this level and the required (conformable) level were.

A conclusion may be derived from (8), which reformulates the Money-Standard Equation: Ricardo’s mature theory of money, consistent with *Principles* and contained in the 1819-1823 papers, is *not* a quantity theory of money. Of course, the quantity of money mattered, as emphasised in *Principles*:

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. (*Principles*; I: 353)



The way the value of money adjusted to an increase in the wants of commerce or in the discretionary issuing of convertible notes shows that the understanding of the link between the quantity and the value of money requires putting the standard of money centre-stage, as emphasised by the following sentence in *Proposals*:

The only use of a standard is to regulate the quantity, and by the quantity the value of a currency. (*Proposals*; IV: 59)

One should refrain from jumping on the second part of the sentence to conclude that Ricardo advocated a quantity theory of money. As appears in the first part of the sentence, the quantity of a currency only “regulates” its value since it is itself regulated by the standard. The difference between Ricardo’s theory of money and the so-called Quantity Theory of Money should now be clarified.

The Quantity Theory of Money is traditionally presented in the form of the Cambridge equation  $M = KPT$  (with  $M$  the supply of money,  $K$  the proportion of the real volume of their planned transactions  $T$  which individuals wish to hold as real balances, and  $P$  the price level of the commodities transacted, so that  $KPT$  is the demand for money) or in the form of the equation of exchange  $Mv = PT$ , in which the velocity of circulation  $v$  replaces its reciprocal  $K$  (see Patinkin 1956: 97). The value of money  $V_M$  being defined as the reciprocal of the general price level  $P$ , both expressions lead to the following relation, when  $K$  (respectively  $v$ ) is supposed to be a given parameter reflecting the organisation of monetary transactions:

$$(i) \quad \Delta V_M / V_M = \Delta T / T - \Delta M / M$$

Equation (i) leads to the well-known conclusion that the value of money  $V_M$  falls (the general price level  $P$  rises) if the exogenous supply of money  $M$  increases faster than the volume of transactions  $T$  determined independently (money being neutral in respect to aggregate output).

Going back to equation (8) that formalises Ricardo’s mature theory of money, it is necessary to distinguish between the conformable state of the monetary system – in which “money conforms to the standard”, that is  $V_M = V_M^*$  and  $M = M^*$  – and situations in which these equalities are not fulfilled. These situations may thus be conveniently called monetary disequilibrium (this term being only used here because it speaks for itself in the literature, without implying that the conformable state is an equilibrium state).

In the conformable state the value of money  $V_M^*$  is independent of its quantity and only depends on the value of the standard  $V_G$  and on its legal price  $\overline{P_{GC}}$  when coined into money (equation (2)). If this state is maintained through time, (8) simplifies in:

$$(9) \quad \Delta V_M^* / V_M^* = \Delta V_G / V_G$$

The conformable value of money varies with the value of the standard and only with it: in the conformable state, there is no equilibrium value of money determined by the equality between an exogenously-given supply of money and a demand for real balances, in contrast with the Quantity Theory of Money. Disequilibrium occurs when the monetary system departs from its conformable state because  $\Delta M / M \neq \Delta M^* / M^*$ . The rate of change in the value of money  $\Delta V_M / V_M$ , as given by (8), is now affected by the rate of change in the actual quantity of money  $\Delta M / M$ . However, again in contrast with the Quantity theory of Money,  $\Delta M / M$  endogenously adjusts to its conformable level, thanks to “the principle of limitation of quantity” (*Principles*; I: 353). If  $\Delta M / M < \Delta M^* / M^*$  (the actual quantity of money is deficient), this adjustment operates through new coining and / or discounting of bills for notes. If  $\Delta M / M > \Delta M^* / M^*$  (the actual quantity of money is in excess), it operates through

melting or a reduction in the note issue forced by the conversion of notes into coin at the Bank.

Finally, Ricardo's theory of money is specific because of the channel of transmission of a change in the quantity to the value of money. This is concealed in equation (8) where, thanks to (7),  $[\Delta M / M - \Delta M^* / M^*]$  substitutes for  $\Delta P_G / P_G$  in the Money-Standard Equation (4). In disequilibrium, a change in the quantity of money affects its value indirectly, through a change in the market price of the standard. This contrasts with the Quantity Theory of Money in which a change in the quantity of money affects its value directly thanks to real-balance effects on the demand for money.

To sum up, Ricardo's integration of money in his theory of value and the Quantity Theory of Money have in common to assume the neutrality of money in respect to the relative prices of commodities. A monetary disequilibrium (that is, an inequality between the actual quantity of money and its conformable level) has no real effects on the markets for commodities, which are supposed to remain in their natural state. However, Ricardo's theory of money is *not* a quantity theory of money for four reasons:

- a) In the conformable state, the causal relation between the quantity and the value of money is turned upside down;
- b) "the principle of limitation of quantity" only operates in disequilibrium, provided there is convertibility;
- c) it operates on the value of money through a change in the market price of the standard;
- d) the actual quantity of money endogenously adjusts to its conformable level.

A practical consequence ensues: the bank of issue should not target the rate of change in the absolute quantity of money but the rate of change that preserves the equalisation of the value of money with its conformable level, that is, the equalisation of the market price of the standard with the legal price at which the note is convertible into it:

The issuers of paper money should regulate their issues solely by the price of bullion, and never by the quantity of their paper in circulation. The quantity can never be too great nor too little, while it preserves the same value as the standard. (*Proposals*; IV: 64)

In contrast with the Quantity Theory of Money, an exogenously-given supply of money does *not* confront an independently-given demand for real balances, but the actual quantity of money  $M$  endogenously adjusts to the quantity  $M^*$  required by the wants of commerce. When the Bank discretionarily increases its note issue, commodity prices do *not* rise because there is a stable demand function for money, but thanks to a sequence of effects in which an excess of the actual quantity of money over its conformable level raises the market price of the standard, hence lowers the value of money, hence raises all prices (except the market price of the standard which is brought back to its legal convertibility level). There is indeed a self-adjusting process which eliminates the excess issue of notes and restores the conformity of money to the standard, but it is *not* the adjustment to an equilibrium value of money determined by a supply-and-demand mechanism. Finally, one does *not* need to measure the variation in the money supply (with the related problems of choosing the appropriate monetary aggregate) to explain the variation in its value; it is enough to observe the variation in the market price of gold bullion to conclude whether money conforms to the standard or not.

To conclude on this point, although changes in the aggregate quantity of money affect its value in disequilibrium, Ricardo's mature theory of money, as it is embodied in the Money-Standard Equation, is *not* a quantity theory of money. Modern attempts at introducing real-balance effects, at linking the quantity of money and prices through the rate of interest, or

at connecting Ricardo's alleged quantity theory of money with Say's Law are therefore irrelevant.

## 5. RICARDO'S TWO PLANS: AN APPLICATION OF HIS MONETARY THEORY

On the question of central banking, the literature on Ricardo usually emphasises quantity rationing of the note issue and independence of the central bank. This is consistent with the attribution to Ricardo of a quantity theory of money. In contrast, his position on central banking is better understood as an application of his non-quantitative monetary theory (the Money-Standard Equation), in which the quantity of money is regulated by the standard.

According to Ricardo, two conditions were necessary and sufficient to achieve a "sound" (that is, "secure") state of the currency: convertibility of banknotes into bullion (ingot principle) and regulation of their issue so as to maintain the market price of bullion equal to its legal price (management principle). The first principle prevented an internal drain of the gold reserves of the issuing bank (except in the case of a panic, which no monetary system could guard from), and the second principle prevented an external drain for monetary reasons. These two principles ensured that the currency conformed to the standard (to prevent monetary causes of instability in its value), although it was not issued through the monetisation of the standard but of capital (through discounting of commercial bills, in order to ensure the fulfilment of the needs of trade). They testified to the fact that money was not subject to physical constraints: in Ricardo's system, the monetary standard is a specific commodity (because its market price adjusts to its legal price), but money is no commodity at all. Contrary to what is claimed in Marcuzzo and Rosselli (2015), there is no natural quantity of money and no natural law explains changes in the value of money: such laws apply to one of their determinants (changes in the *value* of the standard), but not to the other (changes in the *price* of the standard, which entirely depends on the institutions ruling the monetary system). The quantity of money is not restricted by the available quantity of gold (whether at the level of the world as a whole or in the reserve of the issuing bank) but is adjusted to "the wants of commerce". The soundness of money only depends on the soundness of the plan designed for it.

The standard and the paper currency were thus two complementary but distinct features of Ricardo's ideal monetary system, and this complementarity is in no way trivial in the history of monetary thought and in the history of money as well. On the one hand, the Ingot Plan led to a demonetisation of gold in domestic circulation: gold was the standard of money but no longer money. On the other hand, Ricardo was the first to theorise the gold-exchange standard, by separating domestic circulation (of convertible notes) and foreign payments (in bullion), though preserving a link through gold (which acted as domestic monetary standard and international means of settlement).

As seen above, *Proposals* was a turning point in Ricardo's theory of money, by stating the three conditions for "a perfect currency":

A currency may be considered as perfect, of which the standard is invariable, which always conforms to that standard, and in the use of which the utmost economy is practised. (*Proposals*; IV: 55)

The Ingot Plan and the Plan for a National Bank were the outcome of these conditions. Although the literature on Ricardo mostly emphasised the third one – the "economical" character mentioned in the title of the 1816 pamphlet – Ricardo was mainly interested by the first two, which gave the currency a "secure" character. The design of the monetary system could not do much for the invariability of the *value* of the standard, apart from avoiding any unnecessary demand for gold bullion by the bank of issue. But it was crucial to ensure the

conformity of the currency to the standard, that is, the stabilisation of the market price of gold bullion at the level of its legal price.

The theoretical foundation of the Ingot Plan was not yet complete at the time of *Proposals*: it would require the theory of value and distribution contained in *Principles*. But it was ready when the plan was discussed in Parliament in 1819 with a view at restoring the convertibility of the Bank of England note. The basis of the Ingot Plan was what I called the Money-Standard Equation, that is, the distinction between the two channels of variation in the value of money: variations in the value of the standard and variations in its market price. By eliminating gold from domestic monetary circulation and restricting its role to the function of standard of paper money, the ingot principle – convertibility both ways between the note and the standard – avoided the interference in the relation between the value and the price of the standard produced by the circulation of coins. The demonstration that the quantity of money did not affect its value directly but indirectly, through the market price of the standard, gave a theoretical basis to the policy rule which Ricardo had advocated for long, namely varying the note issue inversely with the spread between the market price and the legal price of the standard. This management principle of the quantity of money allowed stabilising the value of money thanks to the domestic stabilisation of the market price of gold bullion, without having to rely on international flows of gold: a central bank substituted for private arbitrage as the regulator of the bullion market, hence of the value of money. This second pillar of the Ingot Plan was also an application of Ricardo's monetary theory.

Ricardo's conception of a monetary system based on a central bank was present as early as his Bullion Essays, but it only acquired a theoretical foundation with *Proposals* and *Principles*. When in 1819 time came for a discussion and experimentation of "Ricardo's system" (as it was then called), he was fully-equipped both with a monetary theory and the applied institutions and rules deriving from it. Unfortunately this was not enough at that time to overcome obtuse prejudices and vested interests.

## **6. A CONTRIBUTION TO A MODERN APPROACH TO MONEY**

It cannot be doubted that Ricardo's theory of prices and distribution reflected his general conception of society. And here one might be surprised of the gap between the market-oriented approach generally ascribed to him and his defence of a monetary system in which a central bank manages the currency in a way which practically deprives private arbitrage in the market for the standard of any role. There is, however, no contradiction.

Ricardo defined the value of money as its purchasing power over all commodities except the standard and isolated the source of variability in this value that had a monetary origin (an inappropriate quantity of money issued) without having to consider the market prices of the commodities circulated with money. The clue was an explanation of the variations in the value of money which relied exclusively on the combination of the variations in the value and in the price of the standard (the Money-Standard Equation). The variability in the value of money that had a monetary origin was exclusively located in the divergence between the market price of the standard as commodity (bullion) and its legal price when converted into money (coin or, in Ricardo's Ingot Plan, note convertible into bullion). The market price of the standard being regulated by the legal price through arbitrage permitted by convertibility (in the pre-1797 system) or thanks to Ricardo's policy rule (in his two plans), it was independent of the determination of the market prices of all other commodities (the so-called mechanism of gravitation).

This was not only important from a theoretical point of view but also from a political and practical one: an appropriate design of the monetary system allowed the monetary

authorities to eliminate the variability in the value of money that had a monetary origin, by making the market price of the standard conform to its legal price. The intervention of a central authority – a central bank – to regulate the market price of the standard *and only this price* ensured the existence of “a perfect currency” which made any central intervention in all other markets unnecessary. Ricardo’s centralised monetary system was thus the condition of the absence of central intervention in the markets for commodities. This conclusion that, even endowed with a commodity standard, a monetary system had to be centralised, is already a lesson for today. There is another one.

Assessing a theory of money that focuses on the standard could as well be for Ricardo the kiss of death. One might ask the question: what is the use of inquiring about the theory of a money anchored to gold, something only few people still advocate today? And this enquiry may not even be useful to them: modern advocates of such system usually develop a *laissez-faire* approach to money, which is at odds with Ricardo’s contention that stabilising the value of money requires a legal price of the standard – instead of the value of money being market-determined – and a central bank managing the quantity of money on the basis of the spread between the market and the legal prices of the standard – instead of the note issue being left to free banking. It may thus seem that any attempt at linking Ricardo’s theory of money with modern inquiries into monetary questions is doomed to failure.

One may, however, ask the question the other way round. The main lesson of Ricardo’s mature theory of money is that a monetary system cannot be stable if it is deprived of a standard. Of course, the variability of the value of the standard generates variability in the value of money, but this is the price to pay for avoiding a greater instability in the value of money, due to a poorly-designed monetary system. Ricardo showed with the Ingot Plan that the value of notes issued through monetisation of capital (discounting of commercial bills) could be stabilised under the condition of being anchored to a standard and managed properly. If this analysis is considered as valid, the next step is to inquire into the standard that should be designed to obtain the same result in a modern economy. In the historical conditions of the time, Ricardo considered a metallic standard. While it had been recognised for long that the legal price of the standard in coin should not be arbitrarily changed by the State, the Bullionist Controversy showed that debates were still raging about the conditions under which the market price of the standard could be stabilised so as to eliminate the causes of variability in the value of money that had a monetary origin. The merit of Ricardo was to clarify this issue by showing that convertibility between one circulating medium (the note) and the other (the coin) was not appropriate: “a sound state of the currency” required the euthanasia of metal currency and the implementation of the ingot principle – convertibility both ways between the sole currency (the note) and the standard itself (bullion) – coupled with the management principle – expansion or contraction of the note issue according to the market price of the standard being below or above its legal price.

These conditions for “a perfect currency” in no way require the standard to be metallic: any marketable asset that is legally convertible into money and into which money is legally convertible at a fixed price may play the same role, provided that it does not belong to the system of production of commodities (see Deleplace 2017, Chapter 7). Instead of a physical commodity, the standard might be a financial asset, the value of which is determined by the anticipation of future returns. Both conditions – being outside the system of production of commodities and being a financial asset – could be fulfilled by a public bond purchased and sold for money by a central bank at a fixed price and traded on a secondary market – a situation not far from that observed after the crisis of 2008, when the risk of a deflationary crisis led to the adoption of non-conventional central bank policy. When, for example, the European Central Bank announced that it was prepared to purchase any amount of the sovereign debt issued by a given State (Spain, Italy, Portugal, or Greece) as long as the market

interest rate on that debt stayed above a predetermined (although undisclosed) level – in other words as long as the market price of that debt stayed below a predetermined level – it did the same as Ricardo’s central bank which was to enlarge its note issue as long as the market price of gold bullion fell below its legal price. There were of course important differences – the benchmark interest rate remained secret and this non-conventional policy was supposed to be abandoned sooner or later – but it was a step in Ricardo’s direction.

The substitution of a public-debt standard for the gold-bullion standard would adapt to modern conditions the ingot principle of the currency advocated in *Proposals*, and the management principle would now imply a policy rule varying the note issue according to the spread between the rate of interest on the secondary market for public debt and the legal rate of interest on this debt. The analytical condition for such an approach to central banking is of course to formalise the link between the quantity of central bank money issued and the price of public securities, a question at the heart of modern monetary theory.

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