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**ORTHODOX VERSUS UNORTHODOX VIEWS
ON RICARDO'S THEORY OF MONEY**

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1. Introduction¹

At its best the orthodox view on Ricardo's monetary theory is that it mixes a commodity-theory of money in the long run and a quantity-theory of money in the short run. In the long run, the value of money is exogenous since it is determined by the value of gold; the causality then goes from the value of money to its quantity. In the short run, the causality is reversed: the quantity of money is exogenous and the value of money follows. However, the alleged weakness of Ricardo's monetary theory is that it does not provide the link between these two determinations of the value of money – an illustration of Ricardo's inability to link short-term and long-term analysis (see Schumpeter 1954: 701-3; Laidler 1975: 217; Blaug 1995: 31 and 1996: 127).

The aim of the paper is at discarding this orthodox view of Ricardo's monetary theory and at suggesting another – unorthodox – view of it. I will contend that there is no ground for attributing to this theory an inability to link long term and short term. The reason is simple: in Ricardo there is neither a long-run commodity-theory of money nor a short-run quantity-theory of money. His monetary theory is specific and it consistently links through an explicit adjustment process a position in which money “conforms” to the standard – meaning that the value of money is determined by the value of the standard (in a way that has nothing to do with a commodity-theory of money) – and positions in which money depreciates or appreciates because its quantity is inadequate. Under certain conditions which need to be specified, disequilibrium positions adjust to the conformable position through changes in the quantity of money (in a way that has nothing to do with a quantity-theory of money). Ricardo's theory of money may thus be summarised by the following sentence:

The only use of a standard is to regulate the quantity, and by the quantity the value of a currency (Ricardo 1816: 59)

This understanding of Ricardo's monetary theory is substantiated in my book *Ricardo on Money. A Reappraisal* (Deleplace 2017). Nevertheless, I contend that some of its basic aspects are shared by other scholars, in the line opened by Marcuzzo and Rosselli (1991). Another aim of the paper is at showing that what these scholars have in common results from

1 I thank Carlo Benetti, Jean Cartelier, Maria Cristina Marcuzzo, Annalisa Rosselli, and Susumu Takenaga for their comments on a first version of the paper. The usual disclaimer applies.

their focus on the market price of the standard (gold bullion), so that it is possible to speak of an unorthodox view on Ricardo's theory of money.

The paper is organised as follows. Section 2 presents how Ricardo stands in Schumpeter's well-known opposition between "real analysis" and "monetary analysis". Section 3 summarises two lines of thought about the relationship between the quantity of money and its value and stresses Ricardo's singularity in respect to both of them, which follows from the central role of the market price of the standard in his theory of money. Section 4 analyses the peculiarities of gold as a commodity produced and concludes that it can only be used as standard of money in a given economy if it is produced in another one. Section 5 considers international adjustment, stressing the link between international arbitrage between the domestic and the foreign markets for bullion and domestic arbitrage between the market for gold bullion and the issuer of money. Section 6 deals with the role of the issuing bank and the endogeneity of the quantity of money. Section 7 concludes by asking the question of a standard-based monetary economy for today.

2. Ricardo and the opposition between "real analysis" and "monetary analysis"

As is well-known, Schumpeter made a distinction between "real analysis", in which "money enters the picture only in the modest role of a technical device," and "monetary analysis," which "introduces the element of money on the very ground floor of our analytic structure." (Schumpeter 1954: 277-8) According to Schumpeter, money in real analysis is neutral in respect to the system of relative prices of the goods, while in monetary analysis it is not. This identification between, on the one hand, real analysis and the neutrality of money, and, on the other hand, monetary analysis and the non-neutrality of money, raises at least two difficulties, one on each side.

On the side of monetary analysis, the difficulty is that the main author mentioned by Schumpeter as illustration of it – Keynes, whom he criticised for that – cannot be credited of a non-neutrality of money *in this sense*. Of course money in Keynes is non-neutral in respect to the level of aggregate output, but it is difficult to argue that it is non-neutral in respect to the system of relative prices of the goods, for the simple reason that there is no such explicit system in *General Theory*. An important issue is to determine whether in monetary analysis (or rather, as I prefer to call it, in the monetary approach to the economy), a system of relative prices – hence a given list of physical goods – is necessary or not. This question would call for a specific inquiry which is beyond the scope of the paper (see for example Cartelier 2018).

On the side of real analysis, the difficulty comes from another giant in the history of economic thought: Ricardo. This difficulty does not show up in Schumpeter, who considered that Ricardo "had pinned his colors to the mast of a rigid quantity theory" (Schumpeter 1954: 724) – these "once-for all conceived ideas" (*ibid*) explaining why Schumpeter disliked him as much as Keynes. The difficulty is about the relevance of the notion of neutrality when speaking of Ricardo. Neutrality is usually understood (after Schumpeter) as meaning that the system of relative prices may be determined under the supposition of the absence of money, as in a barter economy. This is not how Ricardo approached the relationship between money and prices. He emphatically warned that in his theory of value and distribution he supposed that the value of money was *constant* – which is not the same thing as supposing that money is *absent*:

The reader is desired to bear in mind, that for the purpose of making the subject more clear, I consider money to be invariable in value, and therefore every variation of price to be referable to an alteration in the value of the commodity (Ricardo 1817-1821: 110; see also *ibid*: 46-47, 87).

The specific object of monetary theory in Ricardo is thus to determine under which conditions the assumption of a constant value of money is or is not valid. It is *not* to determine under which conditions the theory of the value of commodities applies to money, as in the so-called problem of the integration of money in the (real) theory of value. This difference in the object of the theory of money is a consequence of a difference in the object of the theory of value, that is, the determination of the system of relative prices. Although in Ricardo also, this system is determined independently of the quantity of money – so that it cannot be included in monetary analysis in Schumpeter’s sense – I contend that it does not apply as it does in real analysis (and in the orthodox view on Ricardo, which includes him in real analysis). In the latter, the same system of relative prices applies to any economy, monetary or not, and if monetary to any monetary system. In Ricardo, the system of relative prices determined by the theory of value only applies to a monetary economy, more precisely a monetary economy endowed with a standard of money. This peculiarity of Ricardo’s approach to the relationship between money and prices shows up in the relationship between the quantity of money and its value.

3. The relationship between the quantity of money and its value

On this issue there are two contrasting lines in the history of monetary thought. I contend that Ricardo belongs to none of them and that acknowledging this (negative) peculiarity may give birth to an unorthodox understanding of his theory of money.

The dominant line of thought on the relationship between the quantity of money and its value is the Quantity Theory of Money. In the literature, the orthodox view on Ricardo’s theory of money is that it belongs to this line of thought. It is even usually considered as “a hard-line version” of the Quantity Theory of Money (Blaug 1995: 31). In a standard-based monetary system, such an interpretation amounts to complementing Ricardo’s sentence quoted above as follows: “The only use of a standard is to regulate the quantity, and by the quantity *the market prices (in a homothetic way) of all commodities, hence* the value of a currency.” (words in italics added by me) The direct causality between an increase in the quantity of money and a rise in the general price level is obtained thanks to a real-balance effect, which “was already a commonplace of the classical quantity-theory tradition of Cantillon, Thornton, Ricardo, and Mill.” (Patinkin 1956: 98)² Under the (unjustified) assumption of a homothetic change in the money prices of all commodities, the equilibrium relative prices are left undisturbed when the quantity of money varies: money is neutral.

A minority line of thought descending from Thornton (1802) and Tooke (1838-1857) to Hayek (1931) would read, when applied to Ricardo’s sentence: “The only use of a standard is to regulate the quantity, and by the quantity *the market prices (in a non homothetic way) of all commodities, hence* the value of a currency.” (words in italics added by me) The exact

2 A variant substitutes a change in the market rate of interest for the real-balance effect. In the line of Panico (1988), an increase in the quantity of notes sinks the market rate of interest which stimulates the aggregate demand for commodities and consequently raises the general price level. For example, see Davis (2005), King (2013).

content of this line is made difficult by the fact that the purpose of these authors was not to build a systematic theory of the prices of goods. The definition of the value of money may also be somewhat unclear (this very notion was even rejected by Hayek). There is a recent attempt by C. Benetti and J. Cartelier to formalise a model of what could be a Classical theory of standard-based money mixing a system of natural prices derived from Sraffa (1960) and a determination of market prices by the Cantillon rule (Benetti and Cartelier 2019).

In both lines of thought, the channel through which the quantity of money affects its value is a change in the money prices of all commodities, although in one case the change is homothetic and in the other case it is not. The price of gold has no peculiarity; in the quantity-theory tradition it is at best a proxy of the General Price Level.

Following Marcuzzo and Rosselli (1991, 1994a, 1994b, 2015; see also Rosselli 2008, Marcuzzo 2014), what I will call the unorthodox view on Ricardo's theory of money has been advocated by several scholars from France (Deleplace 1994, 1996, 2008, 2013, 2015, 2017; Diatkine 1994, 2008, 2013; Deleplace, Depoortère and Rieucan 2013; Depoortère 2015, 2018, 2019) and Japan (Sato 1999, 2008, 2013; Takenaga 2000, 2013, 2018; Sato and Takenaga 2013, Otomo 2013). They all have in common to put the monetary standard (gold) centre-stage in Ricardo's theory of money and as a consequence to focus on the determination of its market price. I suggest that in this unorthodox interpretation Ricardo's above sentence might read: "The only use of a standard is to regulate the quantity, and by the quantity *the market price of the standard and through it* the value of a currency." (words in italics added by me) According to me, an appropriate way of interpreting this sentence is as follows. When, as it should, the value of the currency "conforms" to the value of the standard,³ the causality goes from this value of money to its quantity. It is only out of this (so to speak) conformable situation that an increase (respectively a decline) in the quantity of money causes a fall (rise) in its value, that is, a homothetic rise (fall) in the prices of all commodities except the standard. It does so indirectly, through a rise (fall) in the market price of the standard above (under) its legal price, what Ricardo called a depreciation (appreciation) of the currency. The quantity of money is then adjusted downwards (upwards) endogenously, and the conformable position (in which the market price of gold is equal to the legal price) is restored.

In a nutshell, the relationship between the quantity of money and its value may be summarised as follows (for demonstrations see Deleplace 2017). Let me consider a situation at time 0 in which the currency conforms to the standard, which for Ricardo means indifferently that the value of money $V_{M(0)}$ is equal to the value of gold $V_{G(0)}$, the actual quantity of money $M_{(0)}$ is equal to the quantity $M_{(0)}^*$ required by "the wants of commerce", and the market price of gold $P_{G(0)}$ is equal to its legal (mint) price $\overline{P_{GC}}$. If in time t a quantity of money $M_{(t)}$ is issued, the market price of gold and the value of money change according to the following equations:

$$(1) \quad \frac{P_{G(t)} - P_{G(0)}}{P_{G(0)}} = \frac{M_{(t)} - M_{(0)}}{M_{(0)}} = \frac{M_{(t)} - M_{(0)}}{M_{(0)}}$$

3 "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." (Ricardo 1816: 62-63)

$$(2) \quad \frac{V_{M(t)} - V_{M(0)}}{V_{M(0)}} = \frac{V_{G(t)} - V_{G(0)}}{V_{G(0)}} - \frac{P_{G(t)} - P_{G(0)}}{P_{G(0)}}$$

Equation (1) expresses that, if the rate of change in the actual quantity of money between 0 and t deviates from the rate of change required in t by the wants of commerce, the market price of gold bullion rises or falls in accordance with the sign and the amount of this deviation. As a consequence, the value of money changes by a rate that reflects positively the change in the value of gold (if any) and negatively the change in its market price (equation (2)).

After a lag of duration n , the actual quantity of money adjusts inversely with the sign of the spread between the market price of gold in time t and its legal price:

$$(3) \quad \frac{M_{(t+n)} - M_{(t)}}{M_{(t)}} = f^{-1} \left(\frac{P_{G(t)} - P'_{GC}}{P'_{GC}} \right)$$

The process goes on until the conformable situation is restored, meaning that the actual quantity of money is again equal to the level required by the wants of commerce (whether it had changed or not between 0 and t) and consequently the market price of gold is again equal to the mint price.⁴

Equation (2) embodies Ricardo's theory of the value of a standard-based currency. This Money-Standard Equation, as I call it (MSE in short),⁵ derives from Ricardo's crucial distinction between "a fall in the value of money" and "a depreciation of money":

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. [...] 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. (Evidence of 4 March 1819, in *Works*, V: 393-394; speech of 11 June 1823, in *ibid*: 311)

4 The theory of money in Ricardo is concerned with the determination of the value of money V_M , its actual quantity M , and the market price of the standard P_G . In this theory, the value of the standard V_G , the quantity of money M^* required by the wants of commerce, and the legal price of the standard $\overline{P_{GC}}$ are independent variables, which call for a separate analysis implying to take into account various technical and institutional factors. However, these aspects are outside Ricardo's theory of money, for which they should be considered as given.

5 This equation appears for the first time in Deleplace (2008: 26). An equation linking the purchasing power of money over commodities, its purchasing power over gold, and the relative price of gold in terms of commodities may be found in Marcuzzo and Rosselli (1994b: 1254) and Sato (2013: 56). However, the interpretation of this equation is different from that of the Money-Standard Equation (see Deleplace 2017: 126 n 5).

The MSE illustrates this distinction: it means that the value of money varies positively with the value of the standard and negatively with its market price which, the legal price of the standard being fixed, indicates by how much money depreciates or appreciates, that is, varies in value less or more (respectively) than the standard. The two causes of change in the value of money can thus be clearly distinguished. The real cause – a change in the difficulty of production of the standard – manifests itself in the first element of the right-hand side of the MSE (a change in the value of the standard). The monetary cause – a quantity of money departing from its conformable level, as illustrated by equation (1)) – manifests itself in the second element. In accordance with what Ricardo said, money might “rise in value” (the left-hand side of equation (2) is positive) although it “might be depreciated” (the second element of the right-hand side is positive), whenever “it did not rise in value in a degree equal to the standard” (the first element of the right-hand side is greater than the second). The MSE is the key to the consistency between Ricardo’s theory of money and his theory of value.

I suspect that all unorthodox advocates of Ricardo’s theory of money do not totally subscribe to this analysis, as exemplified by their comments on it (see Marcuzzo 2018, Rosselli 2018, Takenaga 2018, Depoortère 2018). Nevertheless, to the best of my knowledge, their focus on the market price of gold leads them to agree on two propositions which read as follows:

- a) In a monetary system where the currency is convertible both ways into the (gold) standard, the market price of gold bullion does not change much (*a contrario*, in an inconvertible system, it is liable to vary a lot). In Ricardo’s words, this proposition is “incontrovertible”; in other words, it is a fact.
- b) There exists a mechanism which ensures that it is so. In Ricardo’s words, the market price of gold bullion is “regulated”; in modern words, one would say that it is stable. This is not a fact but a piece of theory.

The difficulties – and the potential disagreements among the advocates of the unorthodox view – start with the description of this adjustment mechanism. Following Ricardo, three aspects have been considered by this literature: 1) the peculiarities of gold as a commodity produced; 2) international adjustment; and 3) the role of an active issuing bank and the endogeneity of the quantity of money.

4. The peculiarities of gold as a commodity produced

As is well-known, the question of the invariable standard is an integral part of Ricardo’s theory of value and distribution. It was also an integral part of his theory of money, as suggested by Ricardo himself when he stated the first condition that should be fulfilled by “a perfect currency”:

It was the comparative steadiness in the value of the precious metals, for periods of some duration, which probably was the cause of the preference given to them in all countries, as a standard by which to measure the value of other things. 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. (Ricardo 1816: 55)

That precious metals had been selected for long as monetary standard because their value was less prone to vary than the value of any other commodity was repeated by Ricardo elsewhere (see for example Ricardo 1817-1821: 86-87, 149). One may then be tempted to

ascribe the small variability in the market price of gold to the combined effect of two causes: like any commodity produced in competitive conditions, gold bullion has a market price that gravitates around its natural price, and in contrast with any other commodity this natural price can be considered as varying little. The adjustment of the market price of gold bullion would thus result from the operation of the gravitation mechanism, and its small variability would simply reflect that of its centre of gravity. One could then strictly speak of a commodity-theory of money since the determination of the value of money would entirely depend on the characteristics of the monetary standard as commodity, independently of the conditions of issuance and circulation of the currency.

The advocates of the unorthodox view on Ricardo's theory of money have in common to *reject* this interpretation and to *discard* gravitation as the relevant adjustment process to explain the stability of the market price of the standard. When adopted, this negative standpoint has an important consequence: Ricardo's theory of money does *not* require any particular assumption about the behaviour of the market prices of all other commodities. Considering the difficulties faced by the Classical theory of market prices, this advantage should not be neglected.

What now might justify such a standpoint? Two types of arguments are involved, the origin of which may be found in Ricardo himself. The first one results from the distinction between the standard of value and the standard of money. Both Marcuzzo and Rosselli (1991, 1994a) and Deleplace (1994, 2017 Chapter 3) contend that they are different and independent concepts.⁶ The reason is that, after Sraffa had developed the standard commodity from Ricardo's suggestion that an invariable standard of value should be "a mean between the extremes" as to the durability of the capital used in its production,⁷ it became clear that the first two above-quoted requirements for a "perfect currency" could not be met together: the conditions such that "the standard is invariable" in value prevent whatever commodity from being selected by law as monetary standard, a condition to make the currency "conform" to it. An important consequence is that it is impossible to make the value of money constant, whatever the monetary standard chosen. All that can be done is eliminating the monetary cause of variation in the value of money (overissue or underissue), so that the value of money only varies with the value of the standard. This is what Ricardo meant when he said that the currency should conform to the standard.

Opposite conclusions, however, are derived from this consequence of the distinction between the concepts of standard of value and of standard of money. For Marcuzzo and Rosselli, since it is impossible to design a standard of money that would also be an invariable standard of value, avoiding price instability implies ruling out a commodity-standard regime in favour of an active monetary policy.⁸ On the contrary, for Deleplace, the unavoidable

6 "As the standard of currency and the standard of value, gold serves two distinct purposes. As standard of currency it measures only depreciation. If the standard of the currency has an invariant value, it is also a measure of value. [But such an assumption] should not be allowed to obscure the fact that the function of gold as a monetary standard is independent of its function as a measure of value." (Marcuzzo and Rosselli 1991: 49-50) "The concept of standard of value is completely different from the concept of standard of money, and it is useless in Ricardo's monetary theory; no standard [of value] can provide the link between his theory of value and his theory of money." (Deleplace 1994: 104)

7 "The conception of a standard measure of value as a medium between two extremes (§ 17 ff.) also belongs to Ricardo and [...] the Standard commodity [...] has been evolved from it." (Sraffa 1960: 94)

8 "In the absence of the assumption that the standard is an invariable measure of value or of a theory which tells us which commodity to choose as standard, the virtues of having a monetary standard vanish and the

variability in value of the commodity selected as standard of money only condemns a commodity-standard regime, *not* the usefulness of a monetary standard *per se* to enhance the stability of money prices. Although Ricardo was only concerned with gold, the understanding of his theory of money may help formulating the conditions which should be fulfilled by an appropriate monetary standard (see below).

The second type of argument to discard gravitation as the relevant adjustment process to explain the regulation of the market price of the monetary standard is based on the physical characteristics of gold stressed by Ricardo when he observed that “the agreement of the market and natural prices [...] in the case of gold, houses, and labour, as well as many other things, [...] cannot, under some circumstances, be speedily produced.” (Ricardo 1817-1821: 196) Takenaga (2013, 2018) emphasises that the durability of gold, hence the existence of a large available stock as compared with its yearly output, and the time-lag necessary to increase this output, explain that the market price of gold bullion is actually determined by supply and demand at the world level and may remain detached from its value during quite a long time. He goes as far as suggesting that when in particular circumstances Ricardo spoke of a rise in the value of gold he meant in fact a rise in its market price.⁹ Not only such a statement raises ambiguities¹⁰ but, if followed strictly, it would lead to consider that, for the study of the monetary standard, the peculiarities of gold make it belong to the class of monopolised commodities – the price of which “has no necessary connexion with their natural value” – and not to that of commodities “which are subject to competition, and whose quantity may be increased in any moderate degree.” (Ricardo 1817-1821: 385)

This second way of discarding gravitation as the relevant adjustment process to explain the regulation of the market price of the monetary standard reveals a difficulty also faced by the first: can it still be maintained, as Ricardo did, that the general law of value applies to the commodity selected as standard of money? If gold was produced in competitive conditions, its market price was regulated by its (variable) value. If gold was the standard of money, its market price was regulated by its (fixed) legal price. Is it possible to reconcile these two requirements, that is, in Ricardo’s words, to contend that “in a sound state of the currency the value of gold may vary, but its price cannot” (Evidence of 4 March 1819, in *Works*, V: 392)? My answer in Deleplace (2017 Chapter 5) is positive: the double regulation of the market price of gold (by the natural price of bullion and the legal price of moneyed metal) implies that gold be produced outside of the area in which it is used as standard of money. The example of England (on a gold standard) importing bullion from Spanish

price to pay in order to constrain the behavior of the monetary authorities become indeed high.” (Marcuzzo and Rosselli 1994: 30)

9 “If the monetary situation around the year 1820 can be interpreted like this, the general fall in price observed at that time was due to the rise in the market price of gold rather than to its rise in value, though Ricardo talks always about rise in the value of gold. [...] We can now conclude that, in the light of his theory of value elaborated in *Principles*, the variations in the value of gold discussed in his mature economic writings after 1815 were actually variations in its market price and besides unilaterally upward variations.” (Takenaga 2018: 182)

10 Takenaga’s suggestion that when Ricardo analysed the situation in England in 1819-1821 he unduly spoke of a rise in the value of gold in lieu of a rise in its market price is contradictory with Ricardo’s emphasis on the fact that while the value of gold rose (as a consequence of production at higher cost to answer the demand by the Bank of England for coining) its market price actually *fell* (as a consequence of the contraction of the note issue by the Bank of England). According to Ricardo’s estimation, the combined effect of a 5 per cent rise in the value of gold and a 5 per cent fall in its price was a rise of 10 per cent in the value of the pound sterling, as may be predicted by equation (2) above (the Money-Standard Equation).

America (on a silver standard) was not just a historical fact: the logical condition for a commodity to be the standard of money in a given economy is that it is not produced in this economy but in another one, where it is *not* the standard of money.¹¹ In this example, the exchange rate of the pound in peso depended on the market prices of gold in the two economies and it was regulated by the ratio of the natural price of gold in Spanish America to its legal price in England.

In conclusion on this point, the peculiarities of gold do not rest in how its conditions of production determine its natural price (a determination that obeys the general theory of value) but in the separation between its production as commodity and its use as standard of money. For a given monetary economy, this separation between an outside of it (where gold bullion is produced in competitive conditions) and an inside of it (where gold bullion is used as monetary standard) implies that the regulation of the market price of gold acquires an international character. This is a second aspect considered by the advocates of the unorthodox view on Ricardo's theory of money.

5. International adjustment

According to the Money-Standard Equation, there are two causes of change in the value of money, one real and the other monetary. One must thus distinguish two international adjustment processes, one for each cause. The first is the adjustment between the gold-producing country and any country using gold as monetary standard, when the *value* of gold bullion changes as a consequence of a change in its difficulty of production. This case has been dealt with in the preceding section (for more details see Deleplace 2017 Chapter 5). The second adjustment is between any two countries on a gold standard, when the *price* of gold bullion changes in one of the two countries (or both) as a consequence of a discrepancy between the actual quantity of money and its conformable level.¹²

This second adjustment has been analysed by Marcuzzo and Rosselli in their pioneering book, *Ricardo and the Gold Standard*, which was subtitled *The Foundations of the International Monetary Order*. According to them, “for Ricardo the first and immediate effect of an overissue was a fall in the exchange rate” (Marcuzzo and Rosselli 1991: 124), and this fall triggered an export of gold until the equalisation of the price of gold across countries stopped the bullion flows, restoring the quantity of money at its “natural” level and stabilising the market price of gold at its legal level. Different types of stable monetary regimes may be

11 It is interesting to note that, in the 19th century prior to the 1870s, international bimetallism was the ruling monetary order, with three zones respectively on a gold standard, a silver standard, and a bimetallic standard. It is even recognised today that this international monetary system provided greater price stability than the generalised gold standard by which it was succeeded. See for example Boyer-Xambeu, Deleplace, Gillard (1997), (2013).

12 It should be observed that in the Bullion Essays of 1810-1811 Ricardo did not distinguish between these two adjustment processes, as testified by the famous image of a gold mine being discovered on the premises of the Bank of England to suggest that issuing an additional quantity of notes had the same effect as increasing the quantity of gold produced. At the time of the Bullion Essays, Ricardo had still a conception of the value of commodities (hence of gold bullion) based on cost of production *and* scarcity, so that increasing the quantity of gold had the same effect on the value of gold-money as increasing the quantity of notes had on the value of paper money. This confusion disappeared in *Principles*, where the analogy does not show up any longer.

distinguished as to the speed with which the “stopping rules” operate, but in all cases arbitrage in the international market for gold is the driving force of the self-adjusting mechanism which explains why in a standard-based monetary system the market price of the standard remains fairly constant.

Marcuzzo and Rosselli emphasise that the self-adjusting property of the system only rests on the equalisation of the purchasing power of money in terms of gold across countries, *not* the purchasing power of money in terms of commodities, as in the price-specie flow mechanism or in the monetary approach to the balance of payments (Marcuzzo and Rosselli 1991: 132-134; 2015: 372). This may explain why the focus on the gold market (rather than on the commodity markets and the hydraulics of the quantity of money) is a component of the unorthodox view on Ricardo’s theory of money which has been adopted by the advocates of this view concerned with international adjustment. This is for example the case in Depoortère (2015: 354-7; 2019) on Ricardo’s study of the markets for gold and silver and the market for bills of exchange in London, Amsterdam and Hamburg.

In Deleplace (2017 Chapter 8) I also consider the market for gold bullion as central in international adjustment and I also discard the usual interpretation of Ricardo in terms of the price-specie flow mechanism. I introduce, however, two qualifications to Marcuzzo and Rosselli’s analysis, one at the beginning and the other at the end of the adjustment process. First, contrary to the statement that, in case of overissue, “it should be noted that the price of gold increased only *after* the exchange rate fell and the demand for exportable gold increased” (Marcuzzo and Rosselli 1991: 124, MR’s emphasis; see also Rosselli 2008: 75-6), I contend that for Ricardo the immediate effect of overissue was a rise in the market price of gold that triggered a domestic arbitrage between the market for gold and the Bank of England. This arbitrage generated an increase in the supply of bullion in the domestic market, so that the rise in its price was lower than the fall in the exchange rate resulting from the initial rise, thus making the export of bullion profitable. Second, I emphasise an important effect of the export of gold on the behaviour of the Bank of England: the drying-up of its gold reserve compelled it sooner or later to purchase bullion in the London market, and this occurred at a loss since it had to pay a higher price than the mint price at which it gave gold coins against the notes returned to it. The export of bullion then stopped since the absence of transport cost made it more profitable to sell gold to the Bank than abroad. There was only one way for the Bank to put an end to the loss generated by this “Penelope effect” (as I call it): contracting the note issue, until the market price of bullion fell to the mint price of coined gold.

These two qualifications show that: a) domestic arbitrage between the market for gold bullion and the issuer of money (here the Bank of England) was as important in the adjustment of the market price of gold as international arbitrage between the domestic and the foreign markets for bullion; and b) a change in the behaviour of the note-issuing bank was in the end responsible for the adjustment in case of overissue, the export of bullion playing its role only at the beginning of the process until the Bank of England was trapped in the “Penelope effect”. This raises the question of the role of the note-issuing bank.

6. The role of the note-issuing bank and the endogeneity of the quantity of money

In contrast with the orthodox view on Ricardo’s monetary ideas which stresses the mechanical operation of convertibility and the passive role of the issuing bank, the advocates of the unorthodox view emphasise the architecture of the monetary system embodied in his two plans of reform (the Ingot Plan and the Plan for a National Bank). In accordance with their focus on the market price of gold bullion in Ricardo’s theory of money, they also contend that this price was for him both the signal that should trigger changes in the note issue and the target of the stabilising action of the issuing bank. This specificity of Ricardo’s rule of

monetary policy raises the question of the exogenous or endogenous character of the quantity of money.

It is a distinctive aspect of the unorthodox view on Ricardo's theory of money that it puts an emphasis on the Ingot Plan, which aimed at substituting a circulation exclusively composed of notes convertible into gold bullion – that is, the non-circulating standard – for a mixed system of coins and notes convertible into coins.¹³ When it is not simply ignored, the Ingot Plan is usually downplayed by the orthodox view as being only a technical device to economise on gold by substituting paper money for metallic coins, particularly during the transition to resumption of convertibility at pre-war parity. On the contrary, most advocates of the unorthodox view insist that it was conceived by Ricardo as a permanent monetary system, which increased the speed at which the quantity of money adjusted (Marcuzzo and Rosselli 1991: 126) and the mint and market prices of gold equalised (Diatkine 2013: 141), reduced the central bank's reserve requirements to the minimum (Sato 2013: 64-5), overcame the instability in the value of a metallic currency due to the slow adjustment in the production of gold (Takenaga 2013: 97), replaced the mechanical operation of convertibility by a monetary policy that managed the price of gold (Otomo 2013: 149-153), and enhanced the security of the monetary system by separating (as in the gold-exchange standard later) domestic circulation and foreign payments (Deleplace 2017: 366-74).

The other important aspect of the Ingot Plan – maintained in the Plan for a National Bank – was a rule of monetary policy repeatedly advocated by Ricardo in all his monetary writings: the issuing bank should vary the quantity of notes inversely with the sign of the spread between the observed market price of gold bullion and the legal price at which convertibility occurred, so as to equalise the former with the latter. This raises the question of the exact nature of monetary policy in Ricardo.

All advocates of the unorthodox view have in common to deny that Ricardo endorsed a rule targeting a definite quantity of money. For Marcuzzo and Rosselli (2015: 374), “the natural quantity of money does not serve the purpose of providing the target to the monetary authority, which should react only to the signal coming from the price of the standard.” Hence, contrary to what is too often found in the literature, there is no continuity between Ricardo's plans and the Currency principle embodied in the 1844 Bank Charter Act, which imposed to the Bank of England a rule that specified the aggregate quantity of notes it could issue and provided the foundation of monetary orthodoxy (Marcuzzo and Rosselli 1991: 148-149, 2015: 374; Diatkine 2008: 42-3, 2013: 142; Deleplace 2008: 31, 2017: 69-70; Sato 2013: 65).

In spite of disagreements on the existence or not of a central bank, on the implementation or not of a discretionary monetary policy, on the presence or not of the lending-of-last resort function, the advocates of the unorthodox view agree that for Ricardo the note issue should be managed in a way which prevented the issuing bank from varying the

13 The Ingot Plan was outlined in the Appendix to the fourth edition (1811) of *The High Price of Bullion, A Proof of the Depreciation of Bank Notes*, developed in *Proposals for an Economical and Secure Currency* (1816), reiterated in *On the Principles of Political Economy, and Taxation* (1817-1821) which even quoted in its 2nd and 3rd editions four full pages of *Proposals*, and defended with temporary success by Ricardo during the parliamentary debates on the return to cash payments (convertibility into bullion was adopted between 1819 and 1821). In his *Plan for the Establishment of a National Bank*, published posthumously in 1824, Ricardo advocated a note issued by a public bank and stepped back for it to convertibility into coin, but he introduced an “expedient” provision according to which the bank was compelled to sell gold bullion 1½ penny below the mint price at which it gave the coin for its note. This was a weaker version of the ingot principle, since, contrary to the Ingot Plan, holders of notes had now the choice between convertibility into coin and into bullion.

value of money at will.¹⁴ They recognise that the specificity of Ricardo's rule of monetary policy (based on the observation of the market price of the standard) was that it allowed a flexibility of the note issue¹⁵ which combined the stabilisation of the value of the currency with the satisfaction of the wants of commerce. Rather than through the lens of the traditional opposition between rules and discretion, in which both terms assume the exogeneity of the quantity of money, this specificity invites to challenging this assumption ascribed to Ricardo by the orthodox view of his theory.

As shown in equation (3) above, the rule of monetary policy implied that the change in the quantity of notes was not determined from outside but resulted endogenously from the fulfilment of the condition of conformity of money to the standard, that is, the equalisation of the market price of gold with its legal price. Of course changes in the *conformable* quantity of money M^* (in equation (1)) are not explained and should be considered as given. But this is not the case of the path followed by the *actual* quantity of money M , which is determinate. Borrowing a modern expression, one could say that Ricardo was not a "verticalist" but a "horizontalist": changes in the quantity of money are governed by the given level of an independent variable. Contrary to modern "horizontalists", this independent variable was not in Ricardo the rate of interest fixed by the monetary authority but the legal price of the standard, but it gave to the quantity of money an endogenous character which was not restricted to the ideal monetary system imagined by Ricardo in the Ingot Plan. As mentioned in Section 5 above, in the absence of Ricardo's rule, the Bank of England had eventually to contract its issues under the pressure of the "Penelope effect". The superiority of the Ingot Plan was not to introduce an endogenous adjustment of the quantity of money but to dispense with the disturbing effects of the transition. To adjust the quantity of money, Ricardo's rule of monetary policy aimed at substituting the domestic management of the note issue for the international mechanics of bullion flows, but the endogeneity of the quantity of money was a general feature of any monetary system in which the quantity of money was regulated by the standard.

7. From Ricardo to a standard-based monetary economy for today

It is my contention in this paper that there exists an unorthodox view on Ricardo's theory of money, whose specificity lies in its focus on the market price of the standard (gold bullion). As a consequence, this view refuses to attribute to this author a commodity-theory of money or a quantity-theory of money. Stating that in the conformable state the value of money is equal to the value of the standard does not mean adhering to a commodity-theory of money: in Ricardo, the stability of this conformable state is not ensured by the gravitation of the market price of the standard but by a monetary process, in which the architecture of the monetary system and the behaviour of the note-issuing bank play a central role. Stating that a change in the quantity of money affects its value does not mean adhering to a quantity-theory of money: in a standard-based monetary system, the quantity of money adjusts endogenously to the value of the standard and to the wants of commerce through the regulation of the market price of the standard.

14 This explains Ricardo's opposition not only to inconvertibility but also to the double standard of money (gold and silver), as shown in Deleplace, Depoortère, and Rieucou (2013).

15 See for example: "A special place must be attributed to Ricardo as regards monetary policy, because he did not advocate either a money-base control, or a monetary policy on interest rates. His recommendation was a certain degree of flexibility, with new instruments and no discretionary policy." (Diatkine 2013: 142) "All in all, in sharp contradistinction to the old interpretations, the author [Sato] shows that Ricardo was neither a simple quantity theorist nor an adherent of the rule-based policy, but in fact advocated the flexible combination of rules and discretion in monetary policy and central banking." (Sato and Takenaga 2013: 8)

Now one can ask whether this unorthodox view on Ricardo's theory of money may contribute to the understanding, not only of Ricardo's economics and of the history of monetary thought, but also of money in modern times. I have suggested in Deleplace (1996) that Ricardo's approach might be transposed today thanks to the substitution of a debt-standard for a commodity-standard (gold bullion). In Deleplace (2017) I have emphasised the condition of exteriority of the standard to the system of production of commodities, which at the time of Ricardo was fulfilled by its production in a foreign country where it was not the standard of money. Applied to a debt-standard, this condition would require the debt selected as standard to be public (independent of the privately-operated system of production of commodities). The fact that other distinguished scholars share a common unorthodox view on Ricardo's theory of money raises the hope that such suggestions might prove fruitful.

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