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The Nature of Money and the Theory of International Trade: Thornton and Ricardo

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Abstract

A rich recent literature reinvestigates the nature of money, but little attention has been paid to the ramifications of the ways in which we theorize money for the theory of international trade. This paper examines the logical relationship between the neutrality of money and self-balancing trade based on Henry Thornton and David Ricardo as two foundational contributions to credit and commodity money theories respectively. I show that both authors theorize trade as self-balancing whenever money is conceptualized as neutral. I distinguish two notions of the neutrality of money: ex ante and ex post neutrality. In Thornton's *Paper Credit* money is not neutral ex ante: there can be temporary trade imbalances. But in the long-run money is neutral ex post and international trade boils down to self-balancing barter. In Ricardo money is neutral both ex ante and ex post and international trade is always balanced unless central bank policy undermines monetary neutrality.

Keywords: Neutrality of money, Thornton, Ricardo, international trade, monetary policy

1. Introduction

The old debate over the nature of money has recently been revived in the Cambridge Journal of Economics. To the extent that this debate has posed the question how the different ways of understanding the nature of money are consequential for our understanding of specific economic issues, it has been largely confined to the realm of monetary policy and banking. This paper analyzes how different conceptions of the nature of money lead to contrasting

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ways of conceptualizing international trade as either self-balancing or naturally imbalanced which in turn is consequential for the ways in which think about the implications of free trade.

I focus on Henry Thornton's (1939 [1802]) *An Enquiry into the Nature of the Paper Credit of Great Britain* and David Ricardo's (1810) *The High Price of Bullion, A Proof of the Depreciation of Bank Notes*. Both contributions have been recognized as foundational texts of two alternative strands of monetary theory: proto-Keynesian versus classical coinciding with an advocacy of discretion versus rules (e.g. Arnon, 2009, 2011; Hicks, 1967; Laidlert, 2002).[2] As such the two authors have received ample of scholarly treatment from a comparative perspective (e.g. De Boyer Des Roches, 2007; F.A. Hayek, 1991[1929]; Friedrich A. Hayek, 1939; Hollander, 1911; Lapavitsas, 1996; O'Brien, 2004; Skaggs, 1995; Viner, 1965[1937], 1975[1924], Rosselli, 2008).[3] While the determination of exchange rates has figured prominently in this literature, much less comparative analysis has been conducted that links Thornton's and Ricardo's theories of money to their theories of international trade. The goal of this paper is to fill this gap and thereby open a new question in the nature of money debate, that is how can this debate be linked to international trade.

I distinguish theories of trade as monetary or non-monetary based on recent ontological considerations (Lawson, 2016, 2018a, b), and I use the neutrality of money as a criterion to distinguish different monetary theories of international trade. As such this paper contributes to the project of bringing social ontology to the study of the history of economic thought (Lewis, Moura, Runde, 2020).

Lawson (2016, 927)[4] suggests:

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[2] However, it has to be noted that Thornton has not only influenced the Banking School and is considered to have prefigured key insights by Keynes but has also had a pronounced effect on Ricardo's thinking and 19th century classical monetary theory more broadly. Thornton also found great appreciation by Viner and Hayek. It will become apparent throughout this paper that this is due to the dual nature of Thornton's theory.

[3] In chronological order.

[4] Lawson has further developed his ontological study of money in the CJE (see Lawson 2018a, b) and others have followed up with contributions that further clarify and apply the ontological concepts articulated by Lawson (e.g. Peacock, 2017; Pratten, 2020; Weber, 2019). In my reading the initial definitions articulated by Lawson (2016) still prevail in the basic form in which I am using them here.

"Money is constituted where it is accepted throughout a specific community that a thing or stuff of value is positioned as a generalised form of value, to function as a general means of payment, in conditions of an equally accepted and appropriately positioned common or shared system of value measurement."

Note, that as Lawson (2016) develops, this definition of money can accommodate both commodity and credit theories of money. As such it is applicable to both Thornton as a credit theorist and to Ricardo as a commodity theorist of money. I use Lawson's definition and consider theories of international trade that do not contain a consideration of money in this sense as non-monetary.

Schumpeter defines monetary neutrality as meaning that so long as money '*functions* normally, it does not affect the economic process, which behaves in the same way as it would in a barter economy' (Schumpeter 1954, 278, emphasis added). According to Lawson's definition the main function of money is that it serves as a general means of payment which requires that it is a bearer of accepted value. Lawson (2016, 967) elaborates the etymological origin of to pay as stemming from "pacifying or appeasing one to whom an individual (the payer) has an obligation". He further elaborates that "the discharging of an obligation is also at the heart of market exchange" (ibid.). When two objects are exchanged there is always a "significant lapse of time between the first object being transferred and the second being moved in the opposite direction" (ibid.). In the interim an obligation is created that needs to be discharged through payment.

Building on this analysis of the payment process and money's basic function, I break Schumpeter's definition of monetary neutrality into two parts using Myrdal's (1939) terminology . First, money is considered neutral *ex ante* when the interim between the exchange of one good against another does not matter analytically. Whether an obligation is created and discharged on the spot or after a while is all the same. Secondly, money can be considered neutral *ex post*. This can be the case even in theories that do consider the frictions that can emerge in the interim and analyze the short-term consequences thereof for production and exchange. The key is that such an interim non-neutrality is inconsequential in the long-run. After some temporary disturbances that are expressed in monetary dynamics the system ultimately behaves as if all exchange was barter.

Based on these definitions of monetary theories, ex ante and ex post neutrality, this paper poses two questions: (i) In what ways do Thornton and Ricardo consider money and to what extent do they adhere to the neutrality of money – if at all? (ii) And how does their understanding of the nature of money affect their theories of international trade?

The remainder of the essay is structures as follows. The next and the third sections are dedicated to Thornton (1939) and Ricardo (1810) respectively and address the two questions just outlined for each theory after briefly situating the authors in the context of their time. The final section concludes and suggests that assuming monetary neutrality logically leads to expecting international trade to self-balance.

2. Henry Thornton's theory of money and trade

Thornton (1939) wrote *An Enquiry into the Nature of the Paper Credit of Great Britain* (henceforth *Enquiry*) during Britain's war with Napoleon when the convertibility of bank notes into gold was suspended. Inflation was high, gold was fleeing the country and Britain was running a trade deficit. Thornton's theory of money and international trade is developed through his analysis of this concrete economic crisis (e.g. Arnon, 2009; Hollander, 1911; O'Brien, 2004; Reisman, 1971; Skaggs, 1995). Thornton's *Enquiry* is a path-breaking contribution to monetary theory. Thornton was the primary theoretical reference in Ricardo's (1810) first pamphlet *The High Price of Bullion*[5] and has had lasting influence on the Banking School (e.g. Tooke), James Mill and other prominent classical economists (Arnon, 1991, p. 28, 48-9, 2009 p. 547; Skaggs, 1995).

Yet, while Thornton's work was a common reference in the early 19th century, his contributions were buried under the influence of all-encompassing treatises of political economy – first and foremost the work of Ricardo (e.g. Hicks, 1940; Hollander, 1911, p. 469; Itō & Lapavitsas, 1999, p. 23). Thornton only received renewed attention in the early 20th

[5] Hicks (1967b) refers to Ricardo's awareness of Thornton in a strangely indirect manner. He writes in his essay on "Thornton's Paper Credit" that "Ricardo must certainly have read the 'Enquiry into the Natue and Effects of the Paper Credit of Great Britain', by Henry Thornton (1802-six years earlier than any of Ricardo's writings)" (p. 164). In fact, Ricardo refers explicitly to Thornton (1802) and cites him at length (see for example Ricardo 1810, p. 9).

century by Hollander (1911), Viner (1975[1924], 1965[1937]) and Hayek (1991[1929], 1939).[6] After the rediscovery of Thornton, he has been seen as important historical predecessor among competing disciples.

Hicks' explanation of why Thornton has widely been forgotten provides an explanation why competing schools of thought have claimed Thornton as their forefather.[7] Hicks (1967) argues:

> *"Thornton emerges as a very consistent thinker. But his consistency depends upon his belief that it is possible to draw a firm line between what is appropriate in short-run temporary emergencies, and what is appropriate for long-run permanent policy. For the short-run, he is Keynesian; far more consistently Keynesian than the muddled Malthus. Yet Keynes could never have taken Thornton for a mascot, as he did Malthus; for when it comes to the long-run, Thornton is the hardest of hard-money men. He is every bit as hard as Ricardo. Like Ricardo he would have fought against devaluation, when the emergency (…) was finally over."* (p. 186)

Thornton's strict distinction between the short-run and the long-run treated respectively in Part I and II of his *Enquiry* have made him an intellectual hero of sorts for (post-)Keynesians (e.g. Hicks, 1967; Reisman, 1971; Smithin, 1996) as well as neoliberals like Hayek (1939, 1991). The earlier are amazed to find some of the key principles of Keynes' (1936) *General Theory* articulated in Part I, more than a century earlier (e.g. liquidity preference, marginal efficiency of capital, sticky wages, discretionary banking policy, rejection of Say's law). Hayek (1939) on the other hand argues that "the arrangement of the book follows the order in which the author's thoughts developed" (p. 46) implying the superiority of the second part. For Hayek (1939) Thornton's most important achievements are the exposition of the trade-balancing price adjustment, forced saving and the Wicksellian natural rate of interest (pp. 48-50). For the purpose of this paper Thornton's clear distinction of the short-run and long-run shall serve to

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[6] Even Marx, known for his encyclopedic treatment of classical economists, does not discuss Thornton at any length in his published work. Marx was aware of Thornton's writings. This is evidenced by his excerpts of "An Enquiry into the Nature of the Paper Credit of Great Britain" in the *London Notebooks (1850-53)* (Marx, 1986). But the excerpts contain hardly any discussion of the material. As regards Marx's own writings, I am only aware of one passing mention of Thornton in the complementary notes on the Chapter on Money in the *Grundrisse* (Marx, 1973, p. 816).

[7] Hicks' evaluation of Thornton as a "very consistent thinker" has recently been challenged by Murphy's (2003; 2005) diagnosis of Thornton as "schizophrenic", which was rejected by Skaggs's (2005) "treatment" of Thornton's "theoretical condition". Arnon (2009, 2011) has presented an alternative defense of Thornton's consistency.

analyze the congruence of ex ante non-neutrality and ex post neutrality of money and credit in Thornton.

2.1. Ex ante non-neutrality and ex post neutrality of money and credit

Corresponding to Thornton's strict division between the short and the long run, his analysis relies on long-run ex post neutrality of money and short-run ex ante non-neutrality. To derive this, we first have to unpack the role of credit and money in relation to commerce and the organization of social production in Thornton's theory. We establish that Thornton's theory is a monetary theory based on the definition provided in the Introduction.

Thornton starts his analysis with the thought experiment of a "rude and early state". Thornton conceptualizes this as both a barter and a credit economy and suggests that credit, the "confidence that subsists among commercial men" (p. 75), is a necessity for commerce:

> *"Even in that early and rude state of society, in which neither bills nor money are as yet known, … if there be commerce, a certain degree of commercial credit will also subsist."* (ibid.)

Note that when Thornton refers to money here what he really means is tokens of money.[8] As Lawson (2016) develops, the key to money is not that there is some specific object that is positioned as money. Rather money is ultimately a social relation that can also be represented by credit.[9] Thornton's credit of the rude and early state is a rudimentary form of such a money. The confidence Thornton is referring to is an embryonic form of what Lawson develops as the necessary community acceptance of money to have value. In the commerce of the "rude and early state" this credit functions as a means of payment. Simply put, for Thornton there is no commerce, not even barter, without credit. Hence, even in the most rudimentary state, Thornton's anlysis is monetary.[10]

The units of account are not part of Thornton's initial state and are as such analytically less foundational in his theory – which is in accordance with Lawson's ontological genealogy of

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[8] See Lawson (2016, 976-7) for a discussion of the difference between money and tokens of money.
[9] Lawson (2018b) demonstrates that debt can be money.
[10] In Thornton's discussion of the trade-balancing price adjustment mechanism he restates this necessity of credit for commerce: "Paper … is, to some persons [the traders], somewhat in the same manner as bread is to all, in article of necessity." (pp. 194-5)

money (Lawson 2016, 969). Thornton introduces gold units as units of account for more advanced states of society. He suggests that precious metals are "resorted to as a measure of value" whereby the state's minting confirms their quantity and quality (p. 81).

Thornton's treatment of credit introduces the critical element of time. The seller and the buyer might not coincide in the timing of the delivery of their part of the transaction, i.e. goods or money. Thus, if the seller gives the buyer credit, the buyer receives something without giving something in return on the spot or vice versa. One party delivers first relying on the confidence that the other party will deliver later. If money in Smith is necessary for a commercial society to prevent the problem of the double coincidence of wants (Weber, 2019), credit as a rudimentary form of money in Thornton is necessary to circumvent what we might call the *problem of the coincidence of delivery and payment*.

Thornton takes the problem of the interim between the exchange of two goods that creates obligations that need to be discharged as the starting point of his analysis. Hence, the recognition of the ex ante non-neutrality of money is central. For Thornton credit and other forms of money are anything but neutral as regards the day-to-day progress of commerce but essential in order to smoothen the consequential short-term friction that pure barter would bring about. Credit and money are key in the transient; in the *short-run money is not neutral*. For this interim, Thornton pioneers the study of the empirical relation between money, commerce and production.

But at the same time, Thornton insists on conceptualizing the rude and early state as well as more advanced stages of society as a barter economy. We can think of Thornton's theory as a monetary theory of barter that implies an ex post neutrality of money and credit: credit or other forms of money are necessary to facilitate transations and overcome the coincidence problem, but ultimately goods exchange against goods. As the commercial society develops, credit according to Thornton can extend beyond the parties directly involved in any specific transaction. Thornton argues that promissory notes and bills of exchange even if they were real bills in the first place, can circulate beyond the transaction from which they originated to settle transactions (Thornton 1939, pp. 83-89). Thus, credit can become a form of circulating medium and is as such endogenously created money. This is why Arnon (2011) sees

Thornton's work as "an early expression of what Schumpeter called 'credit theories of money'" (p. 104). Nevertheless, Thornton writes:

> *"Society in its rudest state, carries on its trade by the means only of barter. When most advanced, it still conducts its commerce on the same principle; for gold and silver coin, bankers' notes, and bills of exchange, may be considered merely as instruments employed for the purpose of facilitating the barter."* (Thornton 1939, p. 81)

Thornton is famous for his analysis of the evolution and short-term effect of money and credit, but ultimately he sees them as instruments of barter. Ex post the economy is *as if* it was a barter economy. For Thornton money and credit affect the ease of commerce and exchange but not the basic nature and structural capacity for social production. The evolution of the credit system and commerce is not conceptually linked to a fundamental, qualitative change in the organization of the economy.

The congruence of ex ante non-neutrality and ex post neutrality in Thornton can be illustrated by a consideration of Say's law. In 1803, a year after the publication of Thornton's *Enquiry,* Jean Batiste Say articulated this principle: "a product is no sooner created, than it, from that instant, affords a market for other products to the full extent of its own value" (Say 1803, p.138). Or in James Mill's (1808) classic formulation:

> "*The production of commodities creates, and is the one and universal cause which creates a market for the commodities produced. … Whatever be the additional quantity of goods therefore which is at any time created in any country, an additional power of purchasing, exactly equivalent, is at the <u>same instant</u> created*" (p. 81, emphasis added).

Keynes (1936) later rejected Say's law that "supply creates its own demand", one of the major contributions of the *General Theory*. Thornton provided key ingredients to the rejection of a law still in the making at the time of his writing (e.g. Hicks 1967).

Key to Thornton's emphasis on the importance of credit is that commerce depends on the ability to buy without *at the same instant* selling a commodity. In other words, supply does not immediately create its own demand. The supplier may produce and give his produce without receiving but a promise to pay (the creation of an obligation) in return. The credit thus created may circulate as payment and therefore effect demand by the supplier before the buyer of the initial transaction provides their payment. Consequently, Say's Law must not hold in the short-run: in the interim, there can be a mismatch of production and demand depending on the state of confidence, i.e. the initial credit and the acceptance of circulating promises to pay. Such a mismatch can cause a temporary disequilibrium.

Yet, as just argued, in the long-run, ex post post we are concerned with the exchange of one commodity against another. Mill (1808) explicitly articulated the neutrality of money as a condition for Say's law. Mill asked:

> *"When money is laid out of the question, is it not in reality the different commodities of the country, that is to say, the different articles of the annual produce, which are annually exchanged against one another?"* (p. 39)

In the long-run money is neutral in Thornton in the same way as in Mill and hence Say's law holds.

The ex ante non-neutrality and ex post neutrality of money and credit in Thornton becomes also apparent in his exposition of the effects of an increase in credit. Thornton describes a an expansionary effect on production resulting from an augmentation of Bank of England paper similar to what Keynes (1936) would see as an increase in effective demand but suggests that the impact is only transitory. The expansion according to Thornton is primarily due to a "more brisk demand for the existing goods, and a somewhat more prompt consumption of them" which results in a "diminution of the ordinary stock" and thereby encourages new industry to replenish those stocks (p. 237). The expansionary result is logically connected to the general role of credit. If credit enables commerce by overcoming the problem of the coincidence of delivery and payment and shortens the time lapse between the creation of an obligation and the discharging thereof, the expansion of credit speeds up commerce and increases the frequency of deliveries. Ultimately this enhances the utilization of the existing capital stock in response to a higher frequency of delivery. This is a transient, short-run expansion of production, which however does explicitly not alter the structures of the economy but just intensifies the level of activity.

But money stays neutral ex post. Those industries that have access to new credit augment their capital and employ in the first instance "antecedently idle persons" (p. 236). But as Hayek (1939, p. 49) emphasizes, Thornton warns that the numbers of unemployed are very limited and soon the expansion of the industries with new credit will "set to work labourers, of whom a part will be drawn from other, and perhaps, no less useful occupations" (p. 236).[11] Thornton argues further, that since the "extraordinary emission of paper causes no immediate difference in the total quantity of articles belonging to the kingdom" (p. 236), the expansion of the capital of the new holders of credit must ultimately be at the expense of other industries:

> *"For industry is excited, strictly speaking, not by paper but by that stock which the paper affords the means of purchasing. Money of every kind is an order for goods. … It is merely the instrument by which the purchasable stock of the country is distributed with convenience and advantage among the several members of the community."* (ibid.)

Assuming a lack of idle capital and limited idle laborers, the expansion of paper credit quickly reaches its limit when the economy is running at full steam and any further expansion becomes inflationary. Money is non-neutral in the transitory process of reducing stocks and increasing the rate of capital utilization. But ultimately all commerce is barter and the structure of a country is given and the increased ability to pay resulting from the expansion of credit simply drives up prices (p. 237). Or if we want to express this with a Keynes' inspired aphorism: Credit induced demand creates its own supply but only for a very short time and until the given capacities of production are exhausted.

Thornton finds himself broadly in agreement with Hume (1752) whom he quotes: "'*it is only in this interval or intermediate situation between the acquisition of money and rise of prices*' (Mr Hume must mean, no doubt, the completion of the rise, and not the commencement of it) '*that the increasing quantity of gold and silver is favourable to industry*'" (p. 238, emphasis in original). Thornton adds that Hume would have underestimated the speed at which prices rise. Thus Thornton's "interval or intermediate situation" is shorter than that of Hume.[12] Yet, Thornton has greatly illuminated this interval with his study of the concrete dynamics of credit expansion using proto-Keynesian categories. These include liquidy preference and the endogenous nature of money.

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[11] Hayek (1932) in his *Monetary Theory and the Trade Cycle* identifies such "unwarranted accumulation of capital" (p. 226) resulting from an expansionary monetary policy as key to his theory of crisis.

[12] On Thorntons treatment of Hume also see Arnon (2009, p. 562)

According to Thornton the supply of money available at any moment in time not only depends on the amount of paper money issued by the Bank of England, but also on the prevailing degree of confidence. In contrast with Hume and Ricardo who "posited an undifferentiated mass of commodities confronting an equally undifferentiated mass of money" (Itō & Lapavitsas, 1999, p. 11), Thornton distinguishes the circulation of different forms of money. "Paper credit", grows out of the rudimentary commercial credit and serves "to express that confidence which is in the mind, and to reduce to writing those engagements to pay, which might otherwise be merely verbal." (Thornton 1939, p. 76) Paper credit can take different forms such as promissory notes or bills of exchange that correspond to different uses reflecting what Keynes later came to call liquidity. The preference for more or less liquid forms of money depends on the "degree of confidence between man and man existing at the several seasons" (Thornton 1939, p. 155) across countries and within one country across time. Hence, the state of confidence can have an expansionary or contractionary effect in the same way as just described for Bank of England policy and with the same limits. Money is thus not only ex ante non-neutral but also endogenous.

The dual nature of ex ante non-neutrality and ex post neutrality of money in Thornton is reflected in Thornton's elaborations of the interest rate. Thornton in his analysis of liquidity suggests that keeping great amounts of "ready money" (ibid.) that immediately cancels payment obligations, comes at a cost, the loss of interest. This can be interpreted as a roundabout formulation of a liquidity preference determination of the rate of interest as it was formulated by Keynes (1936; 1937a, 1937b; Hayek, 1939 p. 47), i.e. the rate of interest is "the reward for not-hoarding", for parting with liquidity (Keynes 1936, p. 174). But Thornton also prefigures what Wicksell later came to call the "natural rate of interest" (Hayek 1939, p. 50).[13] Contrary to Keynes (1936, Chapter 23) – who argued that against the wisdom of classical economists the usury laws would have had a certain merit in keeping interest rates low and inducing investment – Thornton thought artificially low interest rates were doing great harm. He argued that with the profit rate above the rate of interest there was an insatiable demand for credit. But according to Thornton capital "cannot be suddenly and materially encreased by

[13] Hayek's (1935[1931]) *Prices and Production* contains a detailed discussion of Thornton's theory of the interest rate and the natural rate of interest (see pp. 12-24).

any emission of paper" (p. 255). Hence, beyond some brief short-run when money is ex ante not neutral, such a low interest rate would not increase investment and bring down the profit rate but only cause inflation.

2.2. Short-run trade imbalance and long-run self-balancing trade

We have seen that while for the short-run money is not neutral for Thornton; its' expansion or contraction has an impact on production, monetary policy has some limited effectiveness and Say's Law may temporarily not hold. But money does not affect the structure of the production capacity of a country and is as such neutral in the long-run when the economy functions as if commerce was pure barter. In this section, I argue that this view of monetary neutrality leads Thornton to acknowledge that not only domestically but also internationally there can be temporary mismatches of aggregate supply and demand and hence trade imbalances but in the long-run trade is self-balancing. Just like in barter, a commodity is always given for another commodity. This is an international version of Say's law.

Thornton describes it as "a general truth" that trade tends to balance, and that

> *"that the commercial exports and imports of a state (…) naturally proportion themselves in some degree to each other; and that the balance of trade, therefore (…), cannot continue for a very long time to be either highly favourable or highly unfavourable to a country."* (1939, p. 141)

The underlying logic being that just like in domestic commerce trade is ultimately some form of barter. Yet, this balance can be disturbed in the short-run either due to a real shock or due to a monetary policy shock: "though the value of the commercial exports and imports of a country will have this general tendency to proportion themselves to each other," he wrote, "there will not fail occasionally to arise a very great inequality between them." (Thornton 1939, p. 143)

As a matter of principle, everyone only buys when they sell, therefore sales and purchases are the same in the aggregate. But there can be unusual circumstances that lead to a temporary deviation from this rule. On the one hand there is what Perlman (1986) calls Thornton's "real theory of the balance of trade" (p. 748). As regards a real shock, Thornton refers to "a bad harvest" or increased demand abroad for war to be a cause that would produce a temporary trade deficit (ibid.). Demand for goods produced abroad (imports) may temporarily exeed supply of domestic goods internationally (exports) if there are emergency reasons for an increase in domestic demand over and above supply and hence a trade deficit. The trade deficit causes an outflow of gold. Thornton does not perceive this situation to be necessarily harmful to any of the economies involved since it will not last. But he adds important qualifications to his judgment:

> *"when the main sources of a country's wealth are unimpaired; when its population, its industry, its manufacturing and trading capital, its general commerce, its credit, its colonial possessions [sic!], its political strength and independence, its laws and constitution remain; …the absence of its gold…is an evil which is likely neither to be durable, nor in any respect very important."* (Thornton 1939, p. 159)

This temporary imbalance that follows a real shock, in Thornton's view, is not the result of choice but of necessity. The importation of corn is necessary to feed the population and guarantee subsistence. The provisioning of the army is essential to the security of the nation. Such a trade imbalance must be covered by a balance of payment deficit, that is either credit or bullion. But both credit and bullion are ultimately limited, a balance of payment deficit cannot be sustained over many years and thus the imbalance of trade is constrained and will eventually disappear:

> "*To suppose a very great balance to be paid, year after year, in bullion, is to assume such a diminution of bullion in one country, and such an accumulation of it in another, as are not easy to be imagined (…). To suppose large and successive balances to be formed into a debt, is to assume an accumulation of debt, which is almost equally incredible.*" (1939, p. 142)

Money and credit are ex ante not neutral and can serve to fix the problem of the double coincidence of delivery and payment. But eventually payment has to come forward in goods and the ex post outcome when the emergency has passed is as if international trade was barter.

Thornton presents the following reasoning for why ultimately there will be no sustained imbalance of payment and hence a return to balanced trade. Both the nation that enjoys highly favorable trade as well as the one that suffers from unfavorable trade would intend to limit the accumulation of debt or bullion. The accumulation of debt as well as of gold would constitute the accumulation of unproductive capital for the rich nation (Thornton 1939, pp. 79-80, p. 153). However, a "prospering nation" enjoying favorable trade would commonly aim to employ its growing wealth in the enlargement of its productive capital at home, in improvements that become the source of increasing income (Thornton 1939, p. 142).

Individual exporters, too, would attempt not to commit "too great a portion of his property into the hands of those who are not subject to the same laws with himself" (ibid.) and adhere to a customary length of credit to foreign trading partners.

At the same time, the "equalization of the commercial exports and imports" in Thornton's perspective, "is promoted not only by the unwillingness of the richer state to lend to an unlimited extent, but also by a disinclination to borrow in the poorer" (ibid.). Thornton observes a disposition of all people to adapt their expenditures to their incomes. Poorer countries who face unfavorable trade would generally tend to import for consumption. But the ability of the individuals to pay for consumption goods is limited by their income. Unless they manage to increase their income by exporting more of their produce, importation must cease eventually and the "equality between private expenditures and private incomes tends ultimately to produce equality between the commercial exports and imports." (Thornton 1939, p. 143)

For Thornton in international trade just like in domestic commerce in the last instance, this payment has to be made in bullion or other commodities not in credit or paper money. But gold can be considered as both an "article by which a balance of trade is discharged, and not as itself constituting a commodity" and "in the same light with all other commodities; for it is an article of intrinsic value" (1939, p. 145). Due to this dual nature, unlike credit that can only bridge the time between delivery of goods and payment, bullion can settle trade balances but it can also be exported in the same manner as any other commodity. In the latter case, gold "naturally seeks (…) that country in which it is the dearest; and it is, in point of fact, like them, exported by our merchants accordingly as the export or import is likely to yield a profit." (ibid.) Such a high price of bullion that sends gold abroad can be induced by a trade deficit that results from a real shock but it can also be caused by an overissuance of money, according to Thornton.

A high price of bullion means bullion buys more domestic coins than their gold content would suggest. In other words, it is profitable to melt coins into bullion and send them abroad. Thornton argues that one reason for such a high price of bullion is that due to a sudden trade deficit following a real shock say in England, there is an oversupply of London bills denominated in relation to Hamburg bills (both denominated in domestic currency) which in turn causes the price of London coins to fall and that of Hamburg coins to rise.[14] In other words, the value of the domestic circulating medium is falling in relation to its foreign counterpart. The domestic medium of circulation is composed of both paper and coins where paper can act to replace coin. Also note that the price of coins and paper is assumed to be the same since they are part of the same circulating medium within one country.[15] According to Thornton after some transitory period, the value of currency (coin or paper) is inversely related to its quantity. The Bank of England can either react to a high price of bullion by issuing additional paper money to compensate for the outflow of gold which will prop up that high bullion price and stabilize interest rates; or by restricting the amount of paper money it issues which will increase the value of coins and thus reduce the price of bullion (p. 152) while driving up the interest rate. The right choice of monetary policy depends on the origins of the trade imbalance.

If the trade deficit is caused by a real shock, Thornton argues, the Bank of England has to issue additional money to accommodate the temporary falling apart of purchase of goods from abroad and payment with domestic goods. Based on his assumption of short-run non-neutrality of money, Thornton sharply criticized proposals for a contractionary monetary policy attached to calls for a return to convertibility. Such a policy according to Thornton will turn what started as a temporary shock into a depression and deprive the country of its powers of recovery instead of restoring exports (pp. 151-3).[16] Just as credit is necessary for commerce to overcome the problem of the coincidence of delivery and payment, in international trade domestic credit is at times necessary to ease a temporary friction between imports and payment.

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[14] For a detailed discussion of this mechanism see Thornton (1939, pp. 145-151). For discussions of the monetary system in Thornton see for example Skaggs (1995, pp. 1213-4)

[15] "If, then this paper is by any means rendered cheap," writes Thornton "and if the paper (…) is currently interchanged for one sort of gold, namely, for gold which has been coined, then the coined gold will partake in the cheapness of the paper; that is, it will buy, when in the shape of coin, a smaller quantity of goods than it will purchase when in the form of bullion." (1939, p. 149)

[16] See Skaggs (pp. 1214-16), de Boyer des Roches (1995, pp. 31-4), Murphy (2003, pp. 438-41) for further discussion of such a liquidity crisis, its relation to the exchange rate and Thornton's critique of Smith in this matter.

But in normal times, in the absence of a real shock to the demand from abroad, monetary policy is meant to behave as if there was no money. Money and credit are tools to facilitate barter and be otherwise neutral. Thornton suggests that if there is no temporary crisis expansionary monetary policy beyond ensuring the full utilization of capital drives up the price level or in other words lowers the value of coins and paper notes which causes a high price of bullion. A high price level would induce imports and hamper exports, thus create a trade imbalance (pp. 198, 200; Hollander 1911, p. 452-3;). Thus Viner (1924) finds that for Thornton a "redundancy of currency could be the *effect*, as well as the *cause*, of an unfavorable balance of trade" (p. 193).

If the cause of the trade imbalance is a monetary policy shock, the adjustment ought to be monetary: Thornton anticipates the trade-balancing mechanism usually attributed to David Ricardo and James Mill (e.g. Hayek, 1939, p. 48; Hollander, 1911; Laidler 2002; Viner 1975, pp. 101, 202). Thornton explicitly poses his automatic price adjustment mechanism that balances trade against Smith. Had Smith argued that international trade just like trade between regions does not self-balance, Thornton argues that trade between regions must balance just as much as that between countries.[17]

The mechanism by which the notes of the country banks are always equalized in value with Bank of England money in Thornton is aptly summarized by Viner (1965) as:

> *"If country banks took the initiative in increasing their issues, country prices would rise; the provinces would buy in London commodities which formerly they had bought locally; there would result an adverse balance of payments on London, which would be met through shipment of Bank of England notes to London or by drafts on the balances of country banks with London bankers. The impairment of their reserves would force the country bankers to contract their note issues."* (p. 154)

The quantity of paper in circulation in the place where it had been increased, more or less instantly declines back to its previous level: "to suppose a great and merely local rise [of prices], is to suppose that which can never happen or which, at least, cannot long continue to exist" (Thornton 1939, pp. 208-9). In a similar fashion, if a country increased its paper notes and thus faced a rise in prices, this would only temporarily create a trade deficit. This trade deficit

[17] For a discussion of the country bank adjustment mechanism see for example Hayek (1939, p. 48), Hetzel (1987, p. 10) Reisman (1971, pp. 79-80).

must bring about a balance of payment deficit, which is to say that more bills are drawn on the deficit country than by the merchants in the deficit country on the rest of the world. This results in an excess supply of bills on the deficit country which implies, according to Thornton, that their price will fall. This fall in price of bills payable in the deficit country in turn will render its products cheaper to such an extent as to compensate for the initial price rise. This automatic exchange rate adjustment will, "in a great degree prevent the high price of goods in Great Britain from producing that unfavorable balance of trade" (p. 199).

In sum, a real shock in Thornton is best responded to with accommodating monetary policy in order to buy time until the real adjustment mechanism comes about: "a temporary pressure arises at the time of any very unfavourable balance. *To understand how to provide against this pressure, and how to encounter it, is a great part of the wisdom of a commercial state*." (1939, p. 143) In such an emergency money is anything but neutral, it is critical. Yet, an increase in the quantity of money in ordinary times neither has a more than very transitory effect on growth nor on the trade balance. Money is neutralized also internationally. Beyond temporary effects of a real shock and transitory price movements resulting from monetary policy, international trade boils down to barter in Thornton, just like domestic commerce. As such an internationalized version of Say's Law holds beyond short-run frictions induced by either monetary policy or real shocks. This can be summarized as: beyond some transitory disequilibrium *imports create their own exports and vice versa*.

3. David Ricardo's theory of money and trade

Thornton's *Enquiry* was his most important book. In contrast, Ricardo's (1810) *High Price of Bullion* was his first published pamphlet written in the context of another spurt in inflation during the continued suspension of convertibility. But as Marx (1961, p. 144) points out, unlike exchange value, profit, rent etc., Ricardo in his later work never develops the question of money systematically, but simply carries over his early "bullionist" insights. As we have seen, Thornton's analysis is dialectical and situational. In contrast, Ricardo takes what figures in Thornton as the ex post monetary neutrality and self-balancing trade and elevates it to the only truth, hence neglecting all of Thornton's short-run analysis.

3.1. Dual neutrality of money

In Ricardo's (1810) *High Price of Bullion* money is neutral in a dual sense. First of all, it is neutral ex ante in the sense that – unlike in Thornton – the short-run transition does not matter analytically. This is the reason why Keynes (1936) picked Ricardo as his strawman to develop his *General Theory*. There is no recognition of the special role of money as general means of payment and of its distinct nature that derives from being a bearer of generally accepted value. As such Ricardo's is a non-monetary theory. It appears as if barter exchange is the same as monetary exchange not only ex post but also ex ante. This will become apparent for example in Ricardo's rejection of a bad harvest being a cause of a trade deficit in this pamphlet.[18]

If in Thornton the quantity of money to some extent is the result of general confidence, in Ricardo the quantity of money is mechanically determined by its ratio to the value of commodities circulating in a country. Such a mechanical notion of value is only possible if one abstracts from different liquidities of different forms of money and states of confidence that are connected to ex ante non-neutrality. On the global scale, the value of money is determined by the global quantity of money and equalized internationally in relation to the national output and velocity of circulation. Ricardo follows Hume (Itō & Lapavitsas, 1999, p. 8) in drawing an image of money as flowing between nations such as to seek the same level in all economies (Ricardo 1810, pp. 3-4). Ricardo finds that gold is a "produce of which the value is principally derived from its scarcity" (1810, p. 2). If the quantity of money determines the value of money, there is no "necessary quantity of money". Ricardo states explicitly: "The circulation can never be overfull." (1810, p. 47) In Ricardo's view: "The smaller quantity of money would perform the functions of a circulating medium, as well as the larger." (ibid.)[19] Whether a lot or little money is circulating is a result of the international equalization of the value of gold.

The metaphor of the barter economy is used in a direct sense on the global level in Ricardo's pamphlet. Ricardo argues that gold would be a commodity without any particular monetary

[18] See also Marx (1961, p. 151) on this point as well as Lapavitsas' (1996) analysis of Marx critique of Ricardo's adjustment mechanism.

[19] The interpretation that the value of money is determined by scarcity only is in accordance with Ricardo's later reasoning in *On the Principles of Political Economy and Taxation* (2001 [1817]) where he suggests that the value of a commodity is *either* determined by scarcity *or* by the "comparative quantity of labour expended" (p. 12), but not by both at the same time.

characteristic, which implies that the exchange of any commodity against gold comes to the same effect as a barter exchange. Conversely, purchase and sale coincide – always. Buying a commodity by gold is selling gold for this commodity. Gold is not considered as a generalized means of payment but as just another commodity. This means that Say's Law must hold always, also for the short-run, and not only domestically but on a global scale.

In line with his quantity theory of money view, Ricardo is dismissive of any lasting effect of the quantity of money or liquidity on the interest rate: "To suppose that any increased issues of the Bank can have the effect of permanently lowering the rate of interest, (…), or that a productive gold or silver mine can have such an effect, is to attribute a power to the circulating medium which it can never possess. *Banks would, if this were possible, become powerful engines indeed.*" (Ricardo 1810, p. 47)[20] Ricardo assumes that interest and profits must be equal. Profits are determined "by a competition of capitals not consisting of circulating medium" (Ricardo 1810, p. 48), i.e. by the return on productive capital, and profits on the employment of such capital dictate the natural rate of interest (Ricardo 1810, p. 44). But as "the increase of Bank-notes does not add to this species of capital, as it neither increases our exportable commodities, our machinery, or our raw materials, it cannot add to our profits nor lower interest" (ibid.).

In *High Price of Bullion* the low value of the notes is the only advantage of paper money as long as its quantity is regulated by convertibility, that is to say as long as paper money is regulated *as if* it was coin. But the "capital actually employed in the country is necessarily limited to the amount of the 'materials, provisions, etc.' and might be made equally productive, though not with equal facility, if trade were carried on wholly by barter." (Ricardo 1810, p. 49) Expansionary monetary policy has no expansionary effect other than through the trade of money against productive capital from abroad. This, however, is conditioned on convertibility which in turn undermines the possibility of expansionary monetary policy beyond the limits set by replacing coin with paper. Beyond that limit, monetary expansion leads to inflation in

[20] Ricardo does not dispute that an increase of the domestic quantity of money offered as loan "would for a time affect the rate of interest" (1810, p. 46). But the borrowed money "would be sent into every market, and would everywhere raise the prices of commodities till they were absorbed in the general circulation." (Ricardo 1810, pp. 46-47) It would be "only during the interval of the issues of the Bank and their effect on prices, that we should be sensible of an abundance of money"; and only during that interval interest would be "under its natural level" (Ricardo 1810, p. 47). But unlike Thornton, this interval does not merit analysis for Ricardo.

the form of the depreciation of bank notes. Whereas a change in the price level that results from adjustments of the international level of money supply is inconsequential according to Ricardo, inflation that results from monetary expansion in Ricardo's conception is most harmful to a just distribution and prosperity (Ricardo 1810, p. 52), as well as to the trade balance – as elaborated in the next section.

Ricardo's pamphlet is targeted at the following policy conclusion: "all the evils of a depreciated, and perpetually varying currency" (Ricardo 1810, p. 51) are due to the bankers not having acted upon the one and crucial *rule*, the principle "to limit their notes to that amount which should prevent the excess of the market above the mint price of gold" (ibid.). Accordingly, the *remedy* that Ricardo proposes for all the evils is that "the Bank should gradually decrease the amount of their notes in circulation until they shall have rendered the remainder of equal value with the coins which they represent, or, in other words, till the prices of gold and silver bullions shall be brought down to their mint price." (1810, p. 50) The only way to ensure that the one and crucial rule will be implemented once the equality of the price of bullion and the mint price is re-established, the "only legitimate security which the public can possess against the *indiscretion* of the Bank is to oblige them to pay their notes on demand in specie" (Ricardo 1810, p. 56, emphasis added), i.e. to guarantee convertibility.

In sum, money is neutral ex post in the sense that the economy works as if it was a barter economy. At the same time, money is also neutral ex ante, it has no role to play in bridging the problem of the coincidence of purchase and sale thanks to it being a general means of payment. As a consequence, whenever there is expansionary monetary policy that goes beyond cheapening the cost of the means of circulation by replacing coin with paper, this only causes inflation. Activist monetary policy can thus only do harm and no good.

3.2. Balanced and self-balancing trade

Ricardo's theory of trade evolved from the *High Price of Bullion* to the *Principles*. *High Price of Bullion* is an attack against Thornton's argument that a trade imbalance can be the result of a real shock which warrants an accommodating monetary policy. As we have seen, in Thornton trade may be imbalanced due to a real shock like a bad harvest. A trade deficit causes a balance of payment deficit which is temporarily sustained by credit and ultimately cleared by a return to balanced trade. Ricardo holds against this, that the trade imbalance can never cause an imbalance of payment. A trade imbalance is manifested in an outflow of bullion but this is a result of the dearness of bullion abroad: "The exportation of coin is caused by its cheapness, and is not the effect, but the cause of an unfavourable balance" (1810, p. 12). Ricardo thus criticizes Thornton, "the unfavourable balance of trade, is stated [by Thornton] to be the *cause* of the excess of the market above the mint price of gold, but to me [Ricardo] it appears to be the *effect* of such excess." (1810, p. 16)

Based on his theory of international equalization of the value of money, the only reason for an outflow of gold is that its domestic value is lower than in another country. Assuming the same equalization of the value of coin and paper as Thornton, there are only two reasons for such an outflow of gold according to Ricardo: the discovery of a mine which adds to the gold stock or the expansion of paper notes beyond the limit set by the circulation of coints, i.e. under inconvertibility (Ricardo 1810, pp. 4-5, 7). Hence, these are also the only two reasons for a balance of payment deficit which again is the only possible cause of a trade deficit in Ricardo's reasoning.

A trade deficit thus caused does no harm in Ricardo's eyes. There is no such thing as unfavorable exchange (Ricardo 1810, p. 10). If gold is exported it is not because it has to be discharged as a means of payment to compensate for a net import. It is exported because it is profitable and "it is our choice and not our necessity, that sends it abroad; and that it is highly beneficial to us to exchange that commodity which is superfluous, for others which may be made productive." (Ricardo 1810, p. 5) Ricardo further adds: "specie will be sent abroad to discharge a debt only when it is superabundant; only when it is the cheapest exportable commodity" (Ricardo 1810, p. 14). Strictly speaking, if in this logic the balance of payment deficit is considered as an export, there is no trade deficit and trade is always balanced.[21] If in Thornton international trade ultimately boils down to barter in the long-run, for Ricardo of

[21] This holds at least when considering trade with the rest of the world as opposed to an individual country. Or as Ricardo puts it: "England might possibly import more goods from, than she would export to France, but she would in consequence export more to some other country, and France would import more from that country; so that the exports and imports of all countries would balance each other; bills of exchange could make the necessary payments, *but no money would pass, because it would have the same value in all countries*." (Ricardo 1810, p. 3, emphasis added)

the *High Price of Bullion* international trade is barter. Here, money is neutral in the sense that its position as a universal means of commerce is not recognized. Exports create their own imports and vice versa without any qualifications for the transition.

Ricardo frames what is commonly referred to as trade deficit as "consent to give coin in exchange for goods" and this "must be from choice, not necessity" (1810, p. 12). The export of money will only be chosen if it is favorable, "specie will be sent abroad to discharge a debt only when it is superabundant; only when it is the cheapest exportable commodity" (Ricardo 1810, p. 14). Therefore, in Ricardo's view, the causality always runs from the value of money to the balance of trade: "The exportation of coin is caused by its cheapness, and is not the effect, but the cause of an unfavourable balance" (1810, p. 12).

Such a view of trade being always balanced is clearly different from what is commonly known as the Ricardian self-balancing mechanism.[22] In his private correspondence with Malthus, Ricardo later admitted that Thornton's argument for the possibility of a trade-unbalancing real shock was correct (Skaggs, 1995, p. 1221). In the *Principles,* Ricardo's analysis starts just from such a trade imbalance caused by real factors: not Thornton's temporary shock but a difference in real cost competitiveness, i.e. unequal absolute advantages across countries (Weber and Shaikh, 2021). This trade imbalance like Thornton's bad harvest, causes an outflow of money from the deficit to the surplus country.

In other words, in the *Principles* Ricardo recognizes that gold is a means of payment and that a trade deficit can cause a balance of payment deficit. But Ricardo continues to see money as neutral not only ex post but also ex ante, i.e. the short-run transition does not matter, but he reverts from his denial of the nature of money as generalized means of payment. No deflationary crisis results from a money outflow in the deficit country and no accommodating foreign credit or monetary policy is required. Further, since the trade imbalance is the result of a structural difference between the trading countries rather than of a temporary shock, Thornton's real adjustment mechanism does not work for Ricardo. Instead, Ricardo reverts

[22] Also see Perlman (1986) for a comparative discussion of Ricardo's theory of international trade in *The High Price of Bullion* and the *Principles*.

to his famous price adjustment mechanism which some have argued to be inspired by Thornton's monetary adjustment mechanism.[23] By denying the short-run non-neutrality of money, Ricardo disregards the relevance of the quantity of money for the interest; unlike Thornton he does not analyze money from a liquidity perspective.

As Shaikh (1980) has shown, Ricardo arrives at the opposite result of free trade as Smith. The increased quantity of money in the surplus country and the reduced quantity in the deficit country have no bearing on the interest rate. There is no short-term money flow induced by an interest rate differential that sustains the trade imbalance. Instead the changes in the quantity of money that result from a trade imbalance only change the price levels and create comparative advantages for both trading partners. The rise of prices in the surplus country and the fall of prices in the deficit country adjusts the exchange rate such as to balance trade.[24]

In the reasoning employed by Ricardo in his derivation of the comparative advantage and self-balancing trade, he acknowledges that gold functions as means of payment. But in the end Ricardo still insists: "It is thus that the money of each country is apportioned to it in such quantities only as may be necessary to regulate a profitable barter." (p. 132) This is because the transient does not matter to Ricardo. It would result in the same outcome just with higher transaction costs, if trade was pure barter. As such, Ricardo not only lays the foundations for neoclassical theories of international trade that continue to dominate the discussion (Weber & Shaikh, 2021), but also the neoclassical transaction cost theory of money.

4. Conclusion

I have employed two distinct meanings of the neutrality of money: *ex ante and ex post neutrality*. We have seen that in Thornton's monetary theory, money is not neutral ex ante but ex post neutrality of money applies. Credit is necessary for commerce to overcome the problem of coincidence of delivery and payment. This means that monetary policy which affects the availability of credit and the level of the interest rate has a bearing on commerce. Expansionary monetary policy can enliven commerce and therefore increase the capital utilization rate. But

[23] It has long been argued that both Mill and Ricardo in fact follow Thornton in their theory of balancing trade (e.g. Hollander 1911).
[24] See Weber and Shaikh (2021) for the detailed working of this mechanism and its contemporary relevance.

it does not alternate the given structures of the economy either in terms of its division of labor or its capital allocation.

Since Thornton addresses the problem of the coincidence of delivery and payment, he also acknowledges the possibility of a real shock in international trade: There can be a delivery of imports with a promise to pay but without giving exports in return immediately. This results in a trade imbalance covered by foreign debt. But since foreign debt is constrained due to the limited confidence across nations such a sudden trade imbalance may at times have to be accommodated with an increased national provision of credit, i.e. expansionary monetary policy. Ultimately, however, payment has to come forth in commodities, international trade is barter, imports create their own exports and vice versa. Ex post and in the long-run money is neutral for Thornton. If there is a monetary shock in the form of an expansion of the quantity of money which drives up the domestic price level, this causes a short-run imbalance. But the market for the bills of exchange adjusts the exchange rate back such as to balance trade.

For both the Ricardo of the *High Price of Bullion* and the *Principles* money is neutral in the short-run and short-run adjustment processes are not of relevance to his analysis. In the *High Price of Bullion* Ricardo goes as far as to claim ex ante neutrality of money. He denies money's special position as means of payment leading him to a non-monetary theory. He declares that an outflow of gold is not different from a net-export of any other commodity. By ruling out that an outflow of gold constitutes a monetary payment, Ricardo also rejects the significance of trade imbalances. Giving gold for some foreign goods simply means that gold was the most advantages commodity to export. According to Ricardo, this has nothing to do with a need for imports or a lack of exports of other goods. It is just a barter where one commodity given in exchange for some others happened to be gold. As such, trade must always be balanced. The ex ante neutrality of money implies that it is also neutral ex post.

In the *Principles*, Ricardo sticks with ex post neutrality of money but now builts his theory on money's function as generalized means of payment. He now acknowledges the point on which he had fiercely attacked Thornton in the *Principles*: gold is a means of international payment and as such a trade imbalance caused by real factors can bring about a money flow. Ricardo employs Thornton's price adjustment mechanism for a monetary shock to argue that these money flows will not affect the interest rates but will balance trade. Ex post money is neutral and international trade boils down to barter, i.e. it must always balance.

Both Thornton and Ricardo adhere to the ex post neutrality of money and believe that in the long run there is no structural difference between a barter and a monetary economy, thus trade must balance. Since in international trade, too, no one gives a good without expecting another good in return, a global version of Say's Law must hold: exports create their own imports and vice versa.

To generalize the insights from the discussion of Thornton and Ricardo, we can summarize the relation between different conceptions of money and the nature of international trade as either self-balancing or naturally unbalanced is shown in the Table below. Future research could investigate whether this generalization holds across a range of contributions on money and trade in economic thinking and what follows from this link for the relationship between theories of domestic and foreign economic policy.

Table: A Preliminary Generalization

Conception of money	**Nature of international trade as (non) self-balancing**
Non-monetary theories (implies ex ante and ex post neutrality)	International trade = barter Always self-balanced
Ex ante non-neutrality Ex ante neutrality	Temporary disturbances to trade balance for non-monetary reasons Temporary trade balances only for monetary reasons
Ex post non-neutrality Ex post neutrality	Structural long-term trade imbalances Trade imbalances fade with shocks

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