Bank liquidity risk: From John Law (1705) to Walter Bagehot (1873)

Jérôme de Boyer des Roches

1. Introduction

This article deals with the wide range of analyses among classical economists regarding the bank liquidity risk. This is the risk that the bank will not be able to reimburse its notes and demand deposits in coins, or, in other words, pay its debt. This can occur although the bank is solvent, which means that its total assets exceed its total liabilities. The bank liquidity risk is due to the fact that the maturity of the bank’s liabilities is lower than the maturity of the bank’s assets. If banks are issuing notes by granting credits, the credits have to be reimbursed at term (for example a 3-month term) although bank notes are payable on demand. The classical economists were in agreement in identifying this risk, but disagreed about its significance and about the opportunity and the possibility to take it. Do banks that take this risk diminish or increase “the security of publick” (Smith [1776: 329] 1976)? The answer to this question divided the classical economists.

Whereas Richard Cantillon (1728–1730) and David Hume ([1752] 1972) exposed the quantity theory of money and argued against the usefulness of banks that take this risk, Adam Smith (1776) developed the real bills doctrine in order to advocate in favour of such banks. In the meantime, James Steuart ([1767] [1998]), discussing John Law’s system (1716–1720),

Address for correspondence
Université Paris Dauphine – LEDa, 7 ter, rue du General de Larminat, Paris 75015, France; tel.: (33) 1 42 73 25 01, e-mail: jdbdr@free.fr
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1 French ed., Taïeb, vol. 1, p. 377.
advocated for such banks, but pointed out the importance of the stability of the definition of money of account and of coins for avoiding bank panics. The link between bank liquidity and the currency market was set out later, during the Napoleonic Wars, by Henry Thornton ([1802] 1939, 1991) who advocated that banks should take liquidity risks. Furthermore, Thornton deepened the analysis of panics, contested Smith’s monetary theory, and introduced the money market, the central bank and its lender of last resort function, in order to understand the management of bank liquidity risk. His analysis was criticised by David Ricardo (1809–1823) who emphasised the value of gold, revived Hume’s quantitativism and prefigured the Currency School (1836–1844), which wished to prohibit the Bank of England from taking liquidity risks. In arguing to such ends, the Currency School distinguished bank notes from bank demand deposits and introduced the 1844 reform which divided the Bank into two separate departments – an Issuing Department on one side and a Banking Department on the other side – preventing the Bank from discounting bills by issuing bank notes. According to the Banking School (1844–1848), this reform would destabilise the money market. This School contested the analytical dichotomy between money and credit, the distinction between notes and demand deposits, and tried to synthesise Smith’s and Thornton’s ideas. Finally Walter Bagehot (1848–1873) approved both Ricardian analysis and the 1844 reform, but, in order to stabilise the money market, he argued for a lender of last resort function for the Banking Department of the Bank: a lender of last resort that would not take liquidity risks.

By focusing on the bank liquidity risk, this article aims to shed new light on classical monetary controversies. Although it deals with key notions of classical monetary economics – value of money, monetary prices, coinage, bank note issues, credit, money and currency markets, gold flows, interest rate, etc. – it does not focus on these notions per se. The guideline here is neither the definitions of money and credit as in Macleod (1892), Rist ([1938] 1994) and Schumpeter (1954); nor the accuracy/fallacy of the Price Specie Flow Mechanism in order to argue in favour of the quantity theory of money, nor, symmetrically, the fallacy/accuracy of the real bill doctrine to contest it, as in Gregory (1928), Mints (1945), Fetter (1965), O’Brien (1975, 1994) and de Boyer des Roches (1987, 1992). The aim is not to bring Smith, Tooke or Fullarton back into favour by using the modern portfolio approach, as Laidler does (1972), or the monetary approach to the balance of payment, like Laidler (1981), or the competitive money supply-monetary approach, as in Glasner (1985) or Arnon (1991)²; nor is it to bring Thornton back into favour by recognising him as the

² On these points, cf. Skaggs (1999) and Matthew Smith (2003).
father of the development of Lender in Last Resort theory and the influence he exerted on the Banking School, as in de Boyer des Roches (1987, 1992), Skaggs (2010) and Arnon (2011), nor to clarify the opposing views of Thornton and Ricardo regarding the mechanisms that cause the formation of a gold premium in an inconvertible paper money regime, as in Tooke (1848), Viner ([1924] 1978), Angell (1926) and de Boyer des Roches (2007, 2008). This article will analyse these major notions and authors of classical monetary economics, insofar as it refers to scholarly works in the history of economic thought, but its main purpose is to suggest approaching the analysis from a different angle. The focus will be bank liquidity risks, and the tools for managing and avoiding bank liquidity crises. This study focuses on bank liquidity risk: not on all bank risks, nor on all bank crises. Therefore, while credit risk or exchange risks are occasionally discussed, such discussion only arises insofar as a bank liquidity risk is caused by these additional kinds of bank risks.\(^3\)

Our inquiry starts with a notion widely absent in the history of monetary thought up until now: the bank shareholders’ funds.\(^4\) Steuart introduced their role in 1767,\(^5\) and thereafter Smith, Thornton, the Banking School and Bagehot also adopted the notion, but in different ways. This article shows how, before Bagehot, the Ricardian tradition neglected them. Hence, section 2 shows the link established by Steuart and Smith between money issuing and shareholders’ funds. Section 3 presents Law’s writings and experience, and Steuart’s comments concerning the stability of both coined money and money of account. Section 4 underlines the connection between currency markets, bank exchange risks and liquidity risks. In this section, Thorntonian tradition, including the Banking School, is distinguished from the Ricardian tradition, including the Currency School, which led to the 1844 Bank of England reform. Section 5 concerns the Smithian tradition, including the Banking School, which examines fictitious bills discounting and overbanking – that is, credit risk – to explain bank illiquidity. Finally, section 6 deals with the classical economics of bank runs and the money market; Thornton on one hand, Bagehot on the other. By distinguishing between several analyses of bank liquidity risk among the classical economists, the aim of this article is not to provide an exhaustive account of classical monetary economics,\(^6\) but to present it in a new light.

\(^3\) A referee rightly noted that I do not study all bank crises.
\(^4\) See de Boyer des Roches (1998), Skaggs (2003).
\(^5\) See Bentemessek (2009).
\(^6\) For example, Thornton’s, Fullarton’s and Bagehot’s theory of bank rate is not developed. On this topic, cf. de Boyer des Roches and Solis Rosales ([2002] 2003) and de Boyer des Roches (2003).
What results is the view of a somewhat fragmented classical monetary thought.

2. Bank liquidity risk and shareholders’ funds

At the time that James Steuart (1713–1780) published his Inquiry into the Principles of Political Economy (1767), the 1720 crash of the Law System and of the South Sea bubble was already a long time ago. People had not forgotten the traumatism, but the financial instability was over. In England, the short and long term interest rates on the public debt were stabilised at a low level.

The Bank of England steered the market interest rate. According to Steuart ([1767] [1998]), the Bank plays an active role in circulating the public short debt, making it liquid. Smith explains this as follows:

The bank of England, either by voluntarily discounting those bills at their current value, or by agreeing with government for certain considerations to circulate Exchequer bills, that is, to receive them at par, paying the interest which happens to be due upon them, keeps up their value and facilitates their circulation, and thereby frequently enables government to contract a very large debt of this kind. In France, where there is no bank, the state bills (billets d’état) have sometimes sold at sixty and seventy per cent discount.

(Smith 1776 [1981]: 911–2).

In 1767, the Bank of England, the Bank of Scotland and the Royal Bank of Scotland were well-established, strong institutions. Furthermore, although the experience of competitive banking that emerged in Scotland in 17519 alarmed David Hume ([1752] 1972), it evolved smoothly. In this financial and historical context, James Steuart gives a very impressive account of the establishment and functioning of a bank:

A number of men of property join together in a contract of banking, either ratified or not by public authority, according to circumstances. For this purpose, they form a stock which may consist indifferently of any species of property. This fund is engaged to all the creditors of the company, as a security for the notes they propose to issue. So soon as confidence is established with the public, they grant credits, or cash accompts, upon good security; concerning which they make the proper regulations. In proportion to the notes issued in consequence of these credits, they provide a sum of coin, such as they judge to be sufficient to answer such notes as shall return upon them for payment. Nothing but experience can enable them to determine the proportion between the coin to be kept in their coffers, and the paper in circulation. This proportion varies even according to circumstances, (…).

(Steuart 1767 [1966]: 479).

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7 See de Boyer des Roches (2006) and Bentemessek and de Boyer (2010).
8 Birth date of the first bank notes issue by the Ship Bank. See below, section IV.
Stuart established the link between shareholders’ funds and the capacity for a bank to create liquidity by granting credit and issuing bank notes.\(^9\) The shareholders provide the coins necessary for the convertibility of the notes and for taking credit and liquidity risks. Adam Smith would also adopt this vision of banking, in contrast to Cantillon’s and Hume’s approaches. Both Steuart and Smith praised the creation of liquidity by banks. However, their analyses of bank liquidity risk are not synonymous.

3. Mismanagement of money of account and coined money

The guineas (four gold coins – five, two, one and half a guinea) were first issued under the reign of Charles II (1660–1685) on the basis of one guinea for one pound, that is, 20 shillings. These coins circulated together with old and debased gold and silver coins, resulting in monetary disorder. In the 1690s, the price of the guinea fluctuated between 20 and 30 sh., that is, above its official price. The Recoinage Act of 1696 began to resolve the problem.\(^10\) Although John Locke argued for raising the guinea up to 21 1/2sh., its official price was not changed until 1717, when it was fixed at 21 sh. by Newton’s reform. In this context, John Law ([1705] 1966) describes a liquidity crisis that occurred in the Bank of Scotland. According to Law, a rumour of “raising the Money… occasioned a Demand (for coins) from the people in Edinburgh. In a short time Notes would have come in so fast from the Country, that what Money could have been got, would not have answer the Demand” (Law [1705: 52] 1966).

The expectation of a rise in the price (expressed in the money of account: sterling) of coined monies (the gold coin “guinea”, the silver coin “crown”, etc.) induced a run to the bank, for coins. A bank note is a debt labelled in the money of account for the bank, but it is an asset for the holder. Holding coined money instead of bank notes protects the bearer in the event of a devaluation of the money of account, i.e. a rise (in the price) of coined monies. Conversely, in the case of a re-evaluation of the money of account, i.e. a lowering (of the price) of coined monies, holding notes is preferable. Therefore, according to Law, in order to stop the Bank of Scotland liquidity crisis, it would have sufficed to induce a run for bank notes by announcing a forthcoming lowering of coined money:

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\(^9\) I was unaware of the role of the shareholders’ funds in Steuart’s banking analysis before Nesrine Bentemessek’s PhD research (2008). See also Piteau (2002: 265) and Heinsohn and Steiger (2007: 65–70).

\(^10\) Andrédès ([1904: 124–42] 1909).
If the Privy Council had lowered the Money, the English Crown to 5 sh. And the other Money in proportion, to take place 2 pence per Crown in 3 days, and the other 3 pence in a Month; the occasion of the Demand being remov’d, in all appearance Money would have been return’d to the Bank.

(Law [1705: 52] 1966)

Thereafter, once the “Credit of the Bank” would have been restored:

(... the Money might have been cry’d up, if that had been necessary, the Crown to 5 sh. And 5 pence, and the other money in proportion as it was before.

(Law [1705: 54] 1966)

Law’s cynicism addressed by Rist ([1938: 31] 1994) was to be put in practice 14 years later. As soon as the notes are debts labelled in the money of account, as would be the case with the Banque Royale (1719–1720), Law’s management of bank liquidity risk unavoidably entails the demonetisation of precious metals.

Steuart emphasises Law’s mismanagement of money. The fluctuating price of coined money is the major source of bank liquidity risk, according to Steuart. Book III of Steuart’s Principles is mainly devoted to demonstrating that it is in the interest of the Princes “to preserve their credit, and to allow the coin, by which credit is reckoned, to remain in stable condition”. Here, Steuart concords with Locke (1691), as well as Jean Bodin ([1593] 1986).

Steuart understood, as did his contemporaries, that the fixity of the price of account of the specie, in both the short and long term, is a sine qua non condition for the viability of banks that take liquidity risks. British monetary history of the 18th Century following Newton’s reform contrasts with the French experience. From David Hume to John Stuart Mill (1848), classical economists agreed that the fixed price of precious metal is one unavoidable aspect of good money management.

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11 The English translation (p. 53) of this paragraph is at once incomplete and truncated. Rist ([1938: 31] 1994) writes: “Law était d’avis au contraire que l’on se hâtât d’annoncer une diminution de la monnaie en déclarant que la couronne ne vaudrait plus que 5 shillings au lieu de 5 ½ ‘en diminuant deux deniers par couronne au bout de trois jours et les autres trois deniers au bout de trois mois’. Chacun dans ces conditions se serait précipité pour apporter à la banque ses couronnes tant que celles-ci étaient encore payées en billets au taux de 5 shillings et 5 deniers. ‘Le crédit de la banque une fois rétabli on aurait pu, si cela eût été nécessaire, rehausser la couronne à 5 shillings et 5 deniers et les autres espèces en proportion, comme elles l’étaient auparavant’, ajoute-t-il cyniquement.”

12 The Banque Générale’s notes were labelled in “écu”, a coined money.

13 Steuart (1767, vol. 2: 240–2) [1998]).

14 See Blanc (2007).
4. The value of gold, the currency market and bank exchange risk

Whereas the sterling price of gold is fixed, its value is not. Does fluctuation of the value of gold involve bank liquidity risk? In this respect, classical economists agreed, all responding in the affirmative. Richard Cantillon (1728–1730) and David Hume ([1752] 1972) were the precursors, Henry Thornton ([1802] 1939, 1991) and David Ricardo (1810) followed. However, Ricardo criticised Thornton with respect to this issue. It was at the time of the Napoleonic wars, which obliged England to suspend the payment of bank notes in gold coins. In this context of inconvertibility – in which the Bank of England was no longer exposed to liquidity risk – even though the mint price of gold was fixed, its market price fluctuated. Since convertibility meant that the Bank sold/bought gold at a fixed price, thus eliminating any excess demand/supply on the gold market, symmetrically, the suspension of payments meant that the Bank ceased to stabilise the market price of gold. Thornton ([1802: 148–9] 1939, 1991) understood this. Therefore, contrary to certain opinions *prima facie*, the bullionist controversy appears central to our subject because the disagreement about the fluctuating market price of gold in the context of inconvertibility was connected to opposing visions of bank liquidity risk in the context of convertibility.

In the context of convertibility, bank liquidity risk was linked to the exportation of gold. The process ran as follows: any excess demand on the gold market for exportation induced an increase in the price of gold, which brought about an arbitrage with the fixed convertibility price at the bank’s desks: arbitragists sell in the market the gold they “buy” from the bank. Hence, international gold outflows induce bank liquidity risk. But why is the gold exported? The lowering value of gold provides an initial explanation. A second explanation lies in the lowering exchange rate of bank debts on the currency market, which can occur without any previous drop in the value of gold.

4.1. Value of gold and bank liquidity risk

Let’s first consider the case of the lowering value of gold. It was first envisioned through the well-known Price Specie Flow Mechanism (PSFM)
described by Hume ([1752] 1972). Here, there is no currency market, only goods and gold, and the value of gold refers to its purchasing power for buying goods. If this purchasing power decreases in England while remaining unchanged in foreign countries, as soon as the decrease covers the cost of exporting gold, England exports gold instead of commodities to finance its imports (of commodities). Gold flows as a consequence of the difference between money prices of goods among different countries. Hence, gold flows are a response to a unique signal, that is, the value of gold expressed in goods. When gold leaves England, this obviously means that gold is cheaper in Great Britain than it is beyond its borders: by selling gold, a merchant buys more goods abroad than in England. The flow of gold provides a two-fold process of adjustment: a price adjustment and a quantitative adjustment occur simultaneously, contributing to an international equilibrium, whose definition was inherited from Locke (1691). This adjustment can also be found in Cantillon, and it is based on the quantity theory of money. Gold flows outside of England because the quantity of money is excessive. From this perspective, how should banks that create liquidity be seen?

In order to answer this question, it is useful to briefly recall the historical context. It is well known that Cantillon’s *Éssai sur la nature du commerce en général* is written in the wake of the speculation of the year 1720 and explicitly seeks, among other aims,\(^\text{16}\) to denounce the dangers of issuing bank notes. It is not so well known that the 1752 edition of Hume’s *Political Discourses* is published at the time of a specific episode in Scottish banking history. The competition at the end of 1740 between the two joint stock banks established in Edinburgh, the Bank of Scotland in 1695 on the one hand and the Royal Bank of Scotland in 1727 on the other, led them to foster the emergence of private country banks. In Glasgow, the Bank of Scotland favoured the Ship Bank in 1749, and the Royal Bank of Scotland favoured the Arms Bank in 1750. Initially, the two private banks worked with the bank notes issued by the two joint stock banks that were available through “cash accounts”. But from 1751, they freed themselves from the influence of the banks of Edinburgh and issued their own bank notes. They were imitated by other private banks that were established in several cities, such that this became the point of departure of a dynamic and uncontrolled competitive development of banks in Scotland.\(^\text{17}\) These banks did not have the cash necessary to pay all the notes they issued.

\(^\text{16}\) See Murphy (1986, 1997).
\(^\text{17}\) See Checkland (1975, chap. 5), Munn (1981) and de Boyer des Roches (1986). Note that competitive banking does not mean “free banking”. Indeed, the Bank of England was at work.
Since there is no description of bank credit or issuing operations in Hume’s *Essays*, it is unclear how Hume understood them. Cantillon is explicit on this subject, with his description of the multiplier of deposits.\(^{18}\) The deposits provide the cash necessary for granting credit and thus creating liquidity. There are no shareholders’ funds, thus the risks are taken by the holders of bank notes and deposits. The bank model is not that of the Bank of England, whose issues were limited to an amount equal to its capital.\(^{19}\) Thus, the bank model that Cantillon and Hume had in mind has two main characteristics: first, cash deposits make credits, which means lending cash; second, the bank’s extreme vulnerability, which is in fact dangerous.

Another question that arises is whether such a bank is useful. Is it useful to take such dangerous risks? In the first edition of *Political Discourses* (1752), and again in the four following editions, until 1764, although he recognises in the essay “Of Public Debt” that the development of short-term public debt may be beneficial to trade,\(^{20,21}\) Hume argues against banks issuing bank notes. In the essay “Of Money”, he emits doubts “concerning the benefit of banks and paper-credit” and claims that “no bank could be more advantageous, than such a one as locked up all the money it received”,\(^{22}\) adding a footnote, since the 1753–1754 edition, in which he writes that it “is the case with the bank of Amsterdam”.\(^{23}\) Moreover, in the essay “Of the Balance of Trade”, he disputes “… our darling projects of paper-credit [which] are pernicious, being almost the only expedient, by which we can sink money below its level”.\(^{24}\) While he does later moderate his statements, starting with the 1764 edition, by adding two new paragraphs\(^{25}\) in the essay “Of the Balance of Trade”, the fact that he credits the “cash account” as being of great use to merchants and, in doing so, sees a favourable factor for growth, and the fact that he abolishes the terms “darling” and “pernicious” from the aforementioned phrase, Hume nevertheless reiterates that the issue of notes “besides

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18 See Cantillon (1728–1730: 162), Mints (1945, chap. 1) and de Boyer des Roches (2003, chap. 2).
19 de Boyer des Roches (2006).
20 Cf. Hume (1777), Ed. Liberty Fund, pp. 206 (line 26) to 207 (line 12).
21 Hume also writes “… that the multiplicity of our public debts serves rather to sink the interest, and that the more the government borrows, the cheaper may they expect to borrow …”; cf. Ed. Liberty Fund, note e p. 406. However, this sentence is removed from the 1764 edition. Cf. Bentemessek and de Boyer (2010).
22 Cf. Hume (1777), Ed. Liberty Fund, p. 171.
23 Cf. Hume (1777), Ed. Liberty Fund, p. 453, [b]. Hume mistakenly thought that the Bank of Amsterdam held a 100% cash reserve. Cf. Gillard (2004).
24 See Ed. Liberty Fund, p. 454, [f].
25 See Ed. Liberty Fund, paragraphs 3 on page 189 and 1 on page 190.
giving too great facility to credit, which is dangerous, [...] banish[es] the precious metals''.

The PSFM described above advances the idea that banks are useless: without banks, the quantity of money necessary to make the transactions would flow from the outside. Hence, he writes:

But there still prevails, even in nations well acquainted with commerce, a strong jealousy with regard to the balance of trade, and a fear, that all their gold and silver may be leaving them. This seems to me, almost in every case, a groundless apprehension; and I should as soon dread, that all our springs and rivers should be exhausted, as that money should abandon a kingdom where there are people and industry.

Hume ([1752: 184] 1972)

A question arises as to whether Cantillon and Hume are against banks that create liquidity because they are quantity theorists, or if they develop the quantity theory because they are afraid of such banks. In any event, their theory leads to a distinction of money from credit. According to Rist ([1938: 36] 1994), whose History of Monetary and Credit Theory is imbued with this idea, money is the means of circulation of goods, while credit is the means of circulation of money.

Actually, the bank-note too is only a means of making real money circulate, real money alone finally discharging indebtness and being an object of desire for its own sake.

For the note is never more than a certificate of deposit; issued originally against coin brought in by the client, it is still a certificate when the coin given by the banker in exchange for a bill is at the same moment re-deposited by the borrower. In the credit operation, the banker receives a bill of exchange and pays its price in coin, thus making money circulate

Rist ([1938: 14] 1994)

Schumpeter (1954: 717) called this approach whereby credit is derived from money the "monetary theory of credit". It advocates that banks should not take liquidity risks. Ricardo adhered to this tradition in the context of the suspension of payment and improved on it by arguing that inconvertibility removed any limit to the issue of bank notes and consequently any limit to their depreciation. As a consequence of the

26 See Ed. Liberty Fund, p. 190.
27 See p. 37 of the English edition (1940). Two pages later, Rist adds “But in all this there is no increase in money, there is merely a more rapid circulation of existing money” (Ed. Fr., p. 16; Ed. Engl., p. 39).
28 See also Mints (1945: 80), de Boyer des Roches and Diatkine (2008) and Arnon (2011).
diminishing value of money, bank notes and gold, merchants choose to export it. However, though bank notes cannot be exported, gold can be. Then, according to Ricardo, who does neither describe any market mechanism nor arbitrage process, the price of bullion increases, which is a proof of the depreciation of the bank notes. Through his criticism (1810) of Thornton’s alternative explanation of international gold flows and the high price of gold bullion, his “Proposals for an economical and secure currency” (1816) and his “Plan for the establishment of a National Bank” (1824), Ricardo had a major influence with the Currency Principle.

4.2. Exchange rate and bank liquidity risk

In order to explain gold outflows, Thornton points to the value of bank sterling debt on the currency market, not on the market for goods, which refers to its exchange rate, not to its purchasing power. Indeed, bank debt is payable by a fixed quantity of gold, but its exchange rate fluctuates as a consequence of supply and demand on the currency market. Does this necessarily mean that the value of gold is fluctuating? Thornton denies that this is so. Ricardo criticised him, but Malthus (1811) disagreed, following Thornton. Furthermore, gold coined money – the guinea – has a fixed price and is the legal means of payment. Bank liquidity refers to the convertibility of its notes and demand deposits into coined money; this means that banks have to pay their debt on demand. Does the demand for the reimbursement of bank debt in guineas necessarily mean that the quantity of bank debt is in excess? Again Thornton, followed by Malthus, rejects this idea, and both are criticised by Ricardo.

Thornton emphasises the currency market and develops the Gold Points Mechanism (GPM) previously envisioned by Steuart. According to this analysis, banks face an exchange rate risk that takes the form of a liquidity risk. If, on the currency market, the supply of English bank debt exceeds the demand, the exchange rate falls. If the fall of the exchange rate reaches the point at which it is profitable for the gold dealers to demand the English bank debts in order to request their reimbursement in gold, then, in order to export gold, so banks can become illiquid. Therefore, when the exchange rates fall below this point, the fixed price of gold presents an arbitrage opportunity, which induces the draining of the bank’s gold reserve. This level of exchange rate that causes an external drain of gold is called the “gold export point”. Through this mechanism, by seeking “like

29 Steuart ([1767, vol. 3: 189–98, 345] [1998]).
[other commodities] that country in which it is the dearest\textsuperscript{30}, gold fulfils the function of international means of payment.

Now, the Gold Points Mechanism has two essential features. Firstly, the outflow of gold is a consequence of the lowering of the exchange rate, whereas there is no reference to the exchange rate in the Humean Price Specie Flow Mechanism. The second feature (of this mechanism) is that the fall of the exchange rate below the gold export point may be the consequence of real and financial events that have nothing to do with a falling value of gold and excess issue of bank money, as a decrease in exports and an increase in financial transfers abroad may be due to a state of war. Thornton agreed that excess issue of bank notes may lower the value of money, i.e. bank notes and gold coins, stimulating importations and penalising exportations of goods, therefore causing a commercial deficit and, concomitantly, an excess supply of sterling bank debts on the currency market which lowers the exchange rate, combined with a tendency to gold outflow as soon as the gold export point is reached. However, he contested that every lowering of the exchange rate was the consequence of a decrease in the value of gold. In the context of the Napoleonic wars, as it happened, British Government offered sterling bank debts on the currency market in order to finance its continental allies.

According to Thornton, the suspension of payment in 1797 was a salutary measure to protect the Bank against the liquidity risk. Its effect was that the Bank no longer stabilised the price of gold on the London gold market at its mint price, and, as a consequence, it ceased to cause gold dealers to absorb any excess supply of sterling on the currency market at the gold export point. Therefore, owing to war, and not any over-issue of bank notes, the exchange rate fell under the gold export point and consequently the price of bullion reached a high level above its mint price\textsuperscript{31}. In response to William Boyd (1801)\textsuperscript{32}, the first bullionist, and in defence of government policy, Thornton developed the Gold Points Mechanism, according to which the high price of bullion is the consequence of a low exchange rate level. Ricardo criticised the government policy and rejected this mechanism:

Here, and in many other parts of the same article [by Thornton], the fall in the exchange . . . is stated to be the cause of the excess of the market above the mint price of gold, but to me it appears to be the effect of such excess.

\textit{Ricardo (1810, 3rd ed.; 1951–1962, III).}

\textsuperscript{30} Thornton ([1802: 145] 1939, 1991).
\textsuperscript{31} Thornton ([1802: 148–50, 199–200] 1939, 1991).
\textsuperscript{32} Angell (1926), Fetter (1965), O’Brien (1994, vol. II) and Arnon (2011).
According to Ricardo, following in Hume’s footsteps, the excess of the market price above the mint price of gold necessarily appears first; then, thanks to arbitrage, it is followed by the excess supply of bank sterling debt on the currency market and the consequent lowering of the exchange rate. Ricardo’s reasoning was challenged by Malthus (1811) and Tooke (1848), but has been seldom commented upon in the secondary literature of the past one and half centuries. Indeed, with the exception of Viner ([1924] 1978), Angell (1926), Chipman (1984) and de Boyer des Roches (1987, 1992, 2007), the secondary literature – Cannan ([1919] 1969), Rist ([1938] 1994), Mints (1945), Schumpeter (1954), Fetter (1965), Reisman (1971), Laidler (1986), Marcuzzo and Rosselli ([1986] 1991), Arnon (1991), O’Brien (1994), Deleplace (1999), Skaggs (1995, 2003, 2010b) – has ignored Ricardo’s refusal of the mechanism described by Thornton and has reasoned as though Ricardo and his followers subscribed to this mechanism. Accordingly, this literature has pointed out the differences between the protagonists of the classical monetary controversies, mainly concerning the money prices and the exchange rate elasticity of imports and exports, the adjustment lags, and the multiple causes – real (bad harvests that require new imports, or war, which freezes exports), financial (subsidies to allies) and monetary (excess issue) – of falls in the exchange rate, which involves gold outflows, and a high price of bullion in the case of inconvertibility. In my opinion, in spite of the depth of their studies, these authors failed to recognise the principal, but erroneous, argument of Ricardo’s intransigence.

A complete discussion of the bullionist controversy and its subsequent literature over the past two centuries would extend beyond the purposes of this article. The main focus here is to underline that the protagonists described and emphasised different mechanisms (PSFM on the one hand, 33 By developing Ricardo’s analogy between debased coins and the depreciation of bank notes Rosselli (2008) contests de Boyer des Roches (2007) and argues that Ricardo did subscribe to the gold point mechanism. According to Rosselli, the depreciation of bank notes, like the debasement of coins, induces an increase in the price of bullion, then a lowering of the par of exchange, then a lowering of the exchange rate. But the mechanism, also envisioned by de Boyer des Roches (p. 43–6), is as follows: as a consequence of the excess issue of bank notes, the price of bullion increases and the exchange rate rises above the gold import point. Next, arbitragists sell sterling bank debt (i.e. buy foreign bank debt) in order to import gold (not to export gold) causing a fall in the exchange rate. Here, we have the Ricardian causality where the fall in the exchange is the effect of the high price of bullion, but it is linked with a gold inflow tendency. Note that Thornton is interested in an exchange rate under the gold export point and a gold outflow tendency. Ricardo’s mechanism remains opposed to Thornton’s one.
GPM on the other) in order to analyse the bank liquidity risk allied with international gold outflows. As a consequence of this disagreement about the mechanism, they highlight different economic variables (the value of gold on the one hand, exchange rate on the other) and causes (note issues and balance of trade on the one hand, external constraints linked to war and balance of payment on the other). They also improved on two opposing conceptions relating to banks taking liquidity risk. While Ricardo concords with Hume, Thornton’s exchange rate analysis allows for an argument in favour of such banks and of the lender of last resort function of the bank of England (see below § V), even in the context of inconvertibility. Thornton follows Smith, as a seminal author of what Schumpeter (1954: 717) called the “possibly preferable” credit theory of money approach, where money derives from credit. He had a major influence on the Banking School.54

5. Credit risk and shareholders’ funds

Along with the mismanagement of money of account and coined money, the lowering value of money and falling exchange rate, credit risk is a fourth cause of bank liquidity risk that has been brought to light by classical economists, first mainly by Adam Smith and then by Thomas Tooke ([1844] 1959, 1996) and John Fullarton ([1845] 1969). However, the latter pair, leading authors of the Banking School, are not only followers of Adam Smith. In their criticism of the Currency School, they refer also to Thornton’s GPM which we have just discussed, and also lender of last resort theory which we will discuss in the next section, in which situations of panic are examined. Therefore, their analysis of bank liquidity risk is deeper than that of Smith. So we must therefore distinguish between the various components of Banking School theory. For the moment, we are concerned with the analysis by this school of bank illiquidity under circumstances that exclude panic situations. There are two complementary components, the law of reflux, combined with Smith’s real bill doctrine and the analysis of international capital flows, which improve Thornton’s GPM analysis.

First, the Banking School’s authors go back to Smith’s real bills doctrine, which states that if a bank issues money by discounting “real bills”, money flows back to the bank whenever the loan is reimbursed. But if it issues money by discounting “fictitious bills”, the loan is never

34 Skaggs (2003), de Boyer des Roches and Diatkine (2008) and Arnon (2011) observed this influence.
reimbursed and the only means for the money to flow back to the bank is in exchange for specie. While the cash reserve and the shareholders’ funds are consolidated in the first scenario, they are encroached upon in the second one\(^\text{35}\). According to Tooke ([1844] 1959, 1996) and Fullarton ([1845] 1969), money is advanced in the first scenario, whereas it is spent in the second one. In the second case, bank becomes illiquid as a result of credit loss. The Banking School uses the term “overbanking” to refer to the act of granting credit, which leads simultaneously to insolvability and illiquidity. Here bank illiquidity is linked to credit. Note however that, contrary to the Hume-Ricardo-Currency School scheme, it is not due to excess in quantity of credit but to a default in the quality of credit. It is not the excess issue of bank notes due to an excess of outstanding credit that is at stake, it is the loss on credit. This narrow link between bank liquidity, shareholders’ funds and quality of credit has been inherited not only from Smith, but Steuart as well\(^\text{36}\). According to Steuart, confidence in the solvability of banks is the *sine qua non* condition for avoiding bank runs\(^\text{37}\). In 1858, Torrens would also adhere to this aspect of Banking School Analysis\(^\text{38}\).

At this point, let us return to the “real bills” hypothesis. According to Fullarton, we have a “law of reflux” which disputes the Ricardian fear of bank illiquidity caused by excessive issue:

> “Bank-notes never, therefore, can clog the market by their redundancy, nor afford a motive to any one to pay them away at a reduced value in order to get rid of them. The banker has only to take care that they are lent on sufficient security, and the reflux and the issue will, in the long run, always balance each other.”

*Fullarton* ([1845: 64] 1969).

Mints (1945: 88–9) shows that Tooke and Stuart Mill developed this analysis also, which clearly associates “law of reflux” and “real bill” based bank notes, and rightly emphasises that the reflux takes place in three complementary ways, including the “demand for coins”. However, he thinks that “it is not entirely clear why [the Banking School authors] should have insisted upon the necessity of convertibility” (p. 90). I think that the

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\(^{35}\) The accounting rule is to constitute a provision that is charged to the net profit, hence to the shareholders’ funds. See de Boyer des Roches (1998).

\(^{36}\) Steuart ([1767, Book IV, Part II] [1998]).

\(^{37}\) Diatkine and Rosier (1998: 264). See also Steuart ([1767] [1998]), Book IV, Part II, chap. XVII. The 2007–2009 international bank crisis recalled the pertinence of this idea that dates back two and a half centuries.

\(^{38}\) See de Boyer des Roches and Diatkine (2008).
emphasis put above on shareholders’ funds sheds new light on this connection\textsuperscript{39,40}. However, even if the “law of reflux” holds, in the short term, there are gaps between flow and reflux which are not connected to changes in the price level but with the liquidity needs of traders. Also, there is a necessity for the level of the Bank cash reserve to fluctuate, between 5 and 15 million, says Tooke. His conclusion is that with the exception of overbanking or panics, the banking system should not only take on liquidity risks, but also accept that this risk is currently variable.

Tooke (1844, 1848) enriches the analysis by exploring Smith’s distinction between “capital” and “currency”\textsuperscript{41}. “Capital” refers to the circulation of bank money between dealers, while “currency” refers to the circulation of bank money between dealers and consumers. The same bank notes and demand deposits circulate as “credit” in the first case, and as “currency” in the second. The distinction between “credit” and “currency” is not a material one in the form of deposits or notes, but an analytical one.\textsuperscript{42} Thus, the refusal of the Bank Charter Act of 1844, which is based on the Currency School distinction between bank deposits – associated with credit – on the one hand, and bank notes – associated with currency (money) – on the other hand:

It appears, then, that there is neither authority nor reasoning in favour of the definition which invests Bank notes with the properties of money, or paper currency, \textit{to the exclusion of all other forms of paper credit}. So that the first link of the argument of Sir Robert Peel, or, rather, the groundwork of it; is utterly fails.

\textit{Tooke (1848: 163)}

The spirit of the 1844 reform was to prohibit banks from taking any liquidity risks. The Banking School saw this is favouring and amplifying bank-liquidity crises. For the Currency School, this reform allowed bank-liquidity crises to be eliminated, since it would adjust the quantity of currency in accordance with the PSFM analysis.

\textsuperscript{39} This comment is also valid for Skaggs (2010) and Arnon (2011) who emphasise the convertibility channel for the functioning of the “law of reflux” but contests the role of the “real bill” doctrine.

\textsuperscript{40} Discussing the fallacy of the “real bill” doctrine, as first raised by Wicksell ([1898] 1965), then improved by Mints (1945), would extend beyond the scope of this article.

\textsuperscript{41} Contrary to the tradition introduced by Gregory (1928), I think that Tooke’s distinction between “capital” and “currency” is significant.

\textsuperscript{42} de Boyer des Roches (1985: 564).
Adherence to the Thornton GPM and rejection of the Ricardian PSFM is a second essential feature of the Banking School.\textsuperscript{43} With respect to the bullionist controversy, Tooke criticises Ricardo for disputing the GPM.\textsuperscript{44} Moreover, Tooke’s distinction between capital and currency enriches the anti-Ricardian approach to the balance of payment. For Tooke, time lags between flow and reflux are characteristic of the capital circulation between dealers from different countries. Importations of corn, wine or cotton do not occur simultaneously with the exportations of woollen cloth. Hence, supplies and demands on the currency market in order to conduct this trade are not synchronised. An excess supply (or excess demand) of pound sterling on the currency market concerns the circulation of capital, not currency. Otherwise, the fall of the exchange rate of the pound sterling can be slowed in the case of a rising interest rate in Great Britain, which would result in capital inflows. Thus, the GPM may or may not be at work, as a consequence of supplies and demands on the currency market related to the financing of trade on one hand, and the financial flows related to the comparative levels of interest rates on the other. Tooke’s opinion is that, instead of raising its discount rate, the Bank of England must passively accept that the exchange rate fluctuates between the gold points, and eventually reaches the gold export point, so long as the cash reserve stands between 5 and 15 million. In the instance where the cash reserve falls to the lowest level, the Bank must raise the interest rate in order to protect its liquidity.\textsuperscript{45} This last element is taken up again by Goshen (1861).

In summary, according to the Banking School, no liquidity crisis will occur as long as the banking system is solvent and the Bank of England accepts that its cash reserve fluctuates between 5 and 15 million of Sterling without modifying its lending and issuing policy, while raising its interest rate as soon as the cash reserve falls to the lowest level. On the contrary, overbanking leads simultaneously to insolvency and illiquidity. Furthermore, mismanagement of the Bank of England in the spirit of the Currency Principle, together with the 1844 Charter Act, will lead to panic, which is a fifth cause of liquidity crisis. Finally, a third feature of the Banking School is its adherence to Thornton’s Lender of Last Resort theory.

\textsuperscript{43} I disagree with the interpretation of the Banking School analysis of the balance of payments introduced by Laidler (1988).

\textsuperscript{44} Tooke (1848), History of Prices, vol. 4, pp. 101–05

\textsuperscript{45} See footnote 8.
6. Bank runs and the money market

In this last section, I will evaluate the form of bank liquidity crisis that does not deal with the asset side of a bank’s balance sheet. It neither results from the anticipation of a “raising” of money coins, as in Law or Steuart, nor a loss on credit assets as in Smith or the Banking School, nor a rumour of bank’s insolvency as in Steuart, nor the shrinkage of the reserve as a consequence of over issues, as in Hume, Ricardo or the Currency School, and even Thornton, or a fall of exchange rate, as in Thornton, Malthus and the Banking School. Here, I am interested in a bank’s liquidity crisis that deals with the liability side of a bank’s balance sheet. I focus on runs, and the fear of a shortage of lending on the money market. Henry Thornton ([1802] 1939, 1991) and Walter Bagehot (1873) introduce two distinct analyses, despite certain similarities.46

For Thornton, who had learned from the 1793 banking crisis, a run is similar to a “flight to quality”, which occurs inside the “circulating medium”. It results from a public sentiment of business distrust. The solution lies in the capacity of the Bank of England to restore confidence by issuing its debt. One must not forget that the Bank of England’s note was not legal tender and that the bailout involved the Treasury. The crisis broke out in February 1793 with the Bank’s refusal to discount bills because its reserve was at a very low level; a refusal from the Bank to engage itself in increasing liquidity risk which seemed to be in conformity with Smith’s recommendations, according to which the diminution of the reserve is the sign that fictitious bills have been discounted, that means issuing bank money, which exceeds the needs of “capital circulation” so that the channels of circulation overflow (without a price mechanism)47. The 1793 crisis was stopped by issuing 5 million sterling Exchequer bills, which were lent to the merchants by the Treasury and that the bank had to circulate. This was a policy that ran counter to Smith’s recommendations. This was the channel by which the Lender of Last Resort bank notes were issued. Although the Bank of England was not the lender, because it had been obliged to circulate the Exchequer bills since 1707, it was obliged to support the Treasury’s lending in 1793. Note that the Treasury took the credit risk, and the Bank took the liquidity risk.

46 Thornton’s and Bagehot’s Lender of Last Resort theories were distinguished for the first time by Laidler (2003) and de Boyer des Roches and Solis Rosales (2003), in 2002, two centuries after the first edition of the “Paper Credit”.
47 See Smith ([1776] 1976), II, ii: 293; Ed. Taieb, vol. 1: 333. Also de Boyer des Roches (1986, 1998).
Explaining this crisis and its outcome required a discussion of Smith’s monetary analysis. Thornton wrote his book as a criticism of Adam Smith.  

Like Smith, Thornton links bank money, credit, cash reserve and shareholders’ funds. But he contests the real bills doctrine, rehabilitates the bills of exchange, introduces the velocity of circulation and interest rate to explain the evolution of paper credit. Concerning the real bills doctrine, Thornton does not dispute the fact that the reimbursement of credit must be guaranteed, but he explains that it is the solvency of the debtor that matters. Whatever the nature of the transaction financed, if bank money issued through credit is backed by a “large and known capital” on the part of the debtor, the bank will be safe ([Thornton 1802: 86–7] 1939, 1991). Bank debt may be rendered just as safe by discounting fictitious bills as by discounting real bills. Furthermore, Thornton points to the hierarchy existing between the different debtors, then between the different debts that are issued in the course of commercial and financial activities. According to him, merchants use a large and diversified set of means of exchange: bills of exchange of different qualities and maturities, commercial drafts, demand deposits and notes from different country banks and from the Bank of England, and specie. As a consequence of the level of the interest rate and the state of confidence, the different components of this “Circulating Medium” have velocities of circulation that differ from each other and vary over time. Above all, Thornton stresses that the Bank of England, and its note, stand at the top of the hierarchical financial structure:

The Bank has a capital of near twelve millions, to which it has added near four millions of undivided profits or savings; all this capital and savings must be lost before the creditors can sustain any loss.

Thornton, ([1802: 105] 1939, 1991).

In the case of a general sentiment of solvency, there is a broad substitutability between the different components – with low velocities of circulation at the bottom of the hierarchy and high at the top, the interest rates are low. In the case of a general sentiment of insolvency, it is the reverse, a flight to the Bank of England note occurs and all of the banks become involved in a liquidity crisis. If the Bank of England note is not available, the crisis deepens. Holders of bank notes and demand deposits run to obtain their payment, producing a shrinking of the banks’ gold and silver reserves, including those belonging to the Bank of England. The solution, or in other words a restoration of confidence, lies in the Bank of England issuing notes by granting credit on the money market – with the

48 See Murphy (2003).
following apparent paradox that “though the failures had originated in an extraordinary demand for guineas, it was not any supply of gold which effected the cure” (Thornton [1802: 98] 1939, 1991). Here, the Lender of Last Resort takes liquidity risks and lends his own debt. The Banking School inherited this conception of money.\footnote{Laidler (1972) points on the substitutability between different sorts of paper credit in Tooke’s analysis.}

Bagehot’s (1873) analysis is quite different. First of all, he is writing in another historical context. His book, \textit{Lombard Street, a description of the money market}, was published six years after the third suspension of the 1844 Act. According to the Currency School’s interpretation of Ricardian monetary economics, the 1844 act divided the Bank of England into two departments: an Issue Department which is a “currency board” that does not take liquidity risk when it issues bank notes above a minimum level (100\% reserve) on the one hand, and a Banking Department which cannot grant credit by issuing bank notes but can do so by creating demand deposits. Second, Bagehot does not place himself in the Thornton and Banking School tradition, but in the Ricardian one. He was a supporter of the 1844 reform. For Bagehot, this reform definitively solved the monetary problem by correctly regulating the quantity of money. But it failed in regulating credit.\footnote{Torrens (1858) also noted, but in a different way, that the 1844 reform did not solve the problems pertaining to credit. See de Boyer des Roches and Diatkine (2008).} The Currency School’s dichotomy between money and credit is at the core of Bagehot’s analysis. According to Bagehot, the failure of the reform – which induced compulsory suspensions in 1847, 1857 and 1866 – lies in the Bank of England’s directors’ misinterpretation of the role of the Banking Department of the Bank.\footnote{“… the Banking Department of the Bank of England […] has no great \textit{prestige}. It was only created in 1844, and it failed three times since.” Bagehot (1873: 186).} They inferred from the reform that the Banking Department must be managed like other banks – minimising the shareholders’ funds and maximising the rate of profit – forgetting that the Bank had acquired the historical responsibility of guaranteeing the liquidity of the money market.

In fact, according to Bagehot, thanks to the Bank of England lending policy before 1844, the banks grew accustomed to working with a very low level of capital\footnote{“But the main source of the profitableness of established banking is the smallness of the requisite capital.” Bagehot (1873: 232).} and “keep[ing] a main part of their reserve on deposit with bill brokers, or in good and convertible interest-bearing securities” (Bagehot 1873: 241). A bill broker is himself an intermediary who pays interest on demand deposit, so that he “cannot hold as much as an
ordinary banker, or nearly as much, of such sums in cash, because the loss of interest would ruin him” (Bagehot 1873: p. 275). In the event of liquidity difficulty, including panics, banks and bill brokers are accustomed to receiving credit from the Bank of England. The fear that the Banking Department would cease with this policy has the effect of deepening panic and liquidity crises:

[…] Mr. Hankey leaves us in doubt altogether as to what will be the policy of the Bank of England in the next panic, and as to what amount of aid the public may then expect from it. His words are too vague; […] Theory suggests, and experience proves, that in a panic the olders of the ultimate reserve (whether one bank or many) should lend to all that bring good securities quickly, freely, and readily. By that policy they alley a panic; by every other policy they intensify it.

Bagehot (1873: 165).

What counts for Bagehot is the fact that the Banking Department, by lending its reserve (gold and Issuing Department notes), furnishes credit to bill brokers, in place of the demand deposits that are withdrawn by bankers. It is important to recall that the Bank of England notes are issued by the Issuing Department and are on the asset side of the balance sheet of the Banking Department. Here, contrary to Thornton, the Lender of last Resort does not lend its debt, but instead lends assets – the guineas and bank notes that are legal tender. He responds to a demand for credit, not for money53. In the last chapter of his book, Bagehot advocates an increase in the capital of the Banking Department in order to increase its reserve, thereby furnishing it with the tools for lending of last resort. The Lender of Last Resort does not take a liquidity risk. This view is in accordance with the Currency Principle.

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References

Andréadès, A. ([1904] 1909). Histoire de la Banque d’Angleterre. In Arthur Rousseau (Éd.), Paris – English translation, History of the Bank of England, Westminster, London: P.S. King & Son, Orchard House.

53 As Thornton understands it, i.e. highest quality debt.
Angell, James W. (1926). *The Theory of International Prices – History, Criticism and Restatement*. Cambridge: Harvard University Press.

Arnon, A. (1991). *Thomas Tooke, Pioneer of Monetary Theory*. Aldershot: Edward Elgar.

Arnon, A. (2011). *Monetary theory and Policy from Hume and Smith to Wicksell – Money, Credit and the Economy*. New York: Cambridge University Press.

Bagehot, W. (1873). *Lombard Street, a Description of the Money Market*. London: Henry S. King.

Bentemessek, N. (2009). Public credit and liquidity in James Steuart’s principles, 2009 ESHET Conference, Thessaloniki, forthcoming in the *European Journal of the History of Economic Thought*, 2012.

Bentemessek, N. and de Boyer J. (2010). Financial institutions and liquidity of public debt in England [1694 – 1720]. *History of Economics Society 37th Annual Conference*, June 25–28, 2010, Syracuse University, USA.

Blanc, J. (2007). Beyond the quantity theory: a reappraisal of Jean Bodin’s monetary ideas. In Alberti Giacomin and Maria Cristina Marcuzzo (Ed.), *Money and Markets, a Doctrinal Approach*. Oxon: Routledge Studies in the History of Economics, pp. 135–49.

Bodin, J. ([1593] 1986). *Les six livres de La République*. 6 vols. Paris: Fayard.

Cantillon, R. ([1728–1730, 1755] 1997). *Essai sur la nature du commerce en général*, Editions de l’Institut National d’Etudes Demographiques.

Cannan, E. ([1919] 1969). *The Paper Pound of 1797–1821 – The Bullion Report, 8th June 1810*. New York: Augustus M. Kelley Publishers.

Checkland, S.C. (1975). *Scottish Banking: A History, 1695–1973*. Glasgow: Collins.

Clapham, J. (1944). *The Bank of England – A History*. London: Cambridge University Press.

Chipman, J.S. (1984). *Balance of Payment Theory*. In J. Creedy and D.P. O’Brien (Ed.), *Economic Analysis in Historical Perspective*. London: Butterworths.

de Boyer des Roches, J. (1985). Circulation du revenu et circulation du capital: la distinction monnaie-crédit chez Thomas Tooke, *Revue économique*, (May): 555–77.

de Boyer des Roches, J. (1986). Adam Smith et la théorie quantitative de la monnaie, *Cahiers d’économie politique*, n° 13: 47–71.

de Boyer des Roches, J. (1987). Théories de la monnaie et politique monétaire. Ph.D. dissertation, University of Paris I Panthéon-Sorbonne.

de Boyer des Roches, J. (1992). Les débats monétaires et le développement de la théorie monétaire en Grande Bretagne dans la première moitié du 19ème siècle. In A. Béraud et G. Faccarello (Ed.), *Nouvelle histoire de la pensée économique*, t. 1. Paris: La Découverte, pp. 554–77.

de Boyer des Roches, J. (1998). Endogenous money and shareholder’s funds in the classical theory of banking. *The European journal of the History of Economic Thought*, 5: 60–84.

de Boyer des Roches, J. (2003). *La pensée monétaire, histoire et analyse*, Paris: Les Solos. Available at: http://jdbrd.free.fr/

de Boyer des Roches, J. (2006). Dette publique, Banque d’Angleterre et taux d’intérêt: 1694–1800, *Économies et Sociétés : Histoire économique quantitative*, AF, n° 34, 2/2006: 215–32.

de Boyer des Roches, J. (2007). Cause and effect in the gold points mechanism: a criticism of Ricardo’s Criticism of Thornton. *The European journal of the History of Economic Thought*, 14: 25–55.

de Boyer des Roches, J. (2008). Le rejet par Ricardo du mécanisme des points d’or. *Cahiers d’économie politique*, n° 55: 49–63.

de Boyer des Roches, J. and Diatkine S. (2008). British monetary orthodoxy in the 1870s: A victory for the currency principle. *The European Journal of the History of Economic Thought*, 15: 181–209.
de Boyer des Roches, J. and Solis Rosales, R. ([2002] 2003). Les approches classiques du prêteur en dernier ressort: de Baring à Hawtrey. *Cahiers d’Économie Politique*, n° 45: 79–100. [English version: “Lender of last resort: classical approaches from Baring to Hawtrey”].

Deleplace, G. (1999). *Histoire de la pensée économique*, Paris: Dunod.

Diatkine, S. and Rosier, M. (1998). Systèmes bancaires et croissance chez Steuart et Smith. *Économies et Sociétés : Économia*, PE, n° 27: 247–68.

Fetter, F.W. (1965). *Development of British Monetary Orthodoxy*, 1797–1875. Cambridge, MA: Harvard University Press.

Fullarton, J. ([1845] 1969). *Regulation of Currencies of the Bank of England*. London: John Murray, 1845. Reprinted New York, A.M. Kelley, 1969. Ed. Kelley.

Gillard, L. (2004). *La Banque d’Amsterdam et le Florin européen au Temps de la République néerlandaise* (1610–1820). Paris: Éditions de l’Ehess.

Glasner David (1985). A Reinterpretation of Classical Monetary Theory, *Southern Economic Journal*, vol 52, n° 1: 46–68.

Goschen G. J. (1861). *The Theory of the Foreign Exchanges*. London; Effingham Wilson, Royal, 1861. French edition, *Théorie des changes étrangers*, Librairie Guillaumin et Cie Paris, 1892.

Gregory, T.E. (1928). *Introduction to Tooke and Newmarch, A history of prices and of the state of the circulation from 1792 to 1856*. London: P.S. King and Son, Orchard House.

Heinsohn, G. and Steiger, O. (2007). Money, markets and property. In Alberti Giacomin and Maria Cristina Marcuzzo (Ed.), *Money and Markets, A doctrinal approach*, London: Routledge, pp. 59–78.

Hume, D. ([1752] 1972). *Writings on Economics*. E. Rotwein (Ed.), *Books for Library Press*. New York: Freeport.

Hume, David 1777, *Essays Moral, Political, Literary*, edited and with a Foreword, Notes, and Glossary by Eugene F. Miller, with an appendix of variant readings from the 1889 edition by T.H. Green and T.H. Grose, revised edition (Indianapolis: Liberty Fund 1987).

Laidler, D. (1972). Thomas Tooke on Monetary Reform. In M. Peston and B. Corry (Eds.), *Essays in Honour of Lord Robbins*. London: Weidenfield & Nicolson, pp. 168–86.

Laidler, D. (1986). Bullionist controversy. In P. Newman, M. Milgate and J. Eatwell (Eds.), *The New Palgrave Dictionary*. London: Macmillan, vol I, pp. 255–62.

Laidler, D. (1988). British monetary orthodoxy in the 1870s. *Oxford Economic Papers*, 40: 74–109.

Laidler, D. (2003). Two views of the lender of last resort: Thornton and Bagehot. *Cahiers d’Économie Politique*, no. 45, Autumn, reprinted in Laidler D. (2004), *Macroeconomics in Retrospect, The Selected Essays of David Laidler*, Cheltenham: Edward Elgar.

Law, J. ([1705] 1966). Money and trade considered with a proposal for supplying the nation with money. In Paul Harsin, Libraire du Recueil Sirey (Éd.), Paris, 1934 – Ed. Reprints of Economic Classics. New York: Auguste M. Kelley Publishers.

Locke, J. (1691). *Some considerations of the consequences of the lowering of interest, and raisin the value of money*. Available at: http://www.taieb.net/auteurs/Locke/Consider.html

Macleod, H.D. (1892). *The Theory and Practice of Banking*. 5th ed. London: Longmans, Green and Co.

Malthus Robert (1811). Publications on the Depreciation of Paper Currency, *Edinburgh Review*, vol XVII, n°34, Art X.

Marcuzzo, M.C. and Rosselli, A. ([1986] 1991). *Ricardo and the Gold Standard, The Foundations of the International Monetary Order*. London: Macmillan.
Mill John Stuart (1848 first ed., 1871 7th ed.). *Principles of Political Economy: with some of their Applications to Social Philosophy.* London; Ed. J.M. Robson (introduction W. Bladen), Routledge, 1996.

Mints, L.W. (1945). *A History of Banking Theory in Great Britain and the United States.* Chicago & London: University Of Chicago Press.

Munn, C.W. (1981). *The Scottish Provincial Banking Companies: 1747–1864.* Edinburgh: John Donald Publishers Ltd.

Murphy, A. (1986). *Richard Cantillon: Entrepreneur and Economist.* New York: Oxford.

Murphy, A. (1997). *Richard Cantillon, le rival de Law.* Paris: Herman.

Murphy, A. (2003). Paper credit and the multi-personae Mr. Henry Thornton. *The European Journal of the History of Economic Thought*, 10: 429–53.

O’Brien, D.P. (1975). *The Classical Economists.* Oxford: Clarendon Press.

O’Brien, D.P. (1994). *Foundations of Monetary Economics.* London: Pickering & Chatto.

Piteau, M. (2002). *Monnaie de compte et système de paiements chez James Steuart.* Revue Économique, 53: 245–71.

Reisman, D.A. (1971). Henry Thornton and the classical monetary economics. *Oxford Economic Papers*, 33: 70–89.

Ricardo, D. (1810). *The High Price of Bullion, A Proof of the Depreciation of Bank Notes,* in Ricardo (1951–1962), vol. III.

Ricardo, D. (1816). *Proposals for an Economical and Secure Currency,* in Ricardo (1951–1962), vol. IV.

Ricardo, D. (1824). *Plan for the Establishment of a National Bank,* in Ricardo (1951–1962), vol. IV.

Ricardo, D. (1951–1962). *The Works and Correspondence of David Ricardo.* Piero Sraffa with the collaboration of M.H. Dobb (Eds.). Cambridge: Cambridge University Press.

Rist, C. ([1938] 1994). *Histoire des doctrines relatives au crédit et à la monnaie depuis John Law jusqu’à nos jours, Sirey’ - English Edition, History of Monetary and Credit Theory, from John Law to the Present Day [1940],* London: Thoemmes Press.

Rosselli, A. (2008). Ricardo and Thornton on the “unfavourable” rate of exchange. *Cahiers d’économie politique,* n° 55: pp. 65–79.

Schumpeter, J. (1954). *_history of economic Analysis.* London: George Allen & Unwin, 1954 – Éd. Fr., *Histoire de l'analyse économique,* Gallimard, 1993.

Skaggs, N.T. (1991). John Fullarton’s Law of Reflux and Central Bank Policy. *History of Political Economy*, 23(3): 457–80.

Skaggs, N.T. (1995). Henry Thornton and the development of classical monetary economics. *Canadian Journal of Economics*, XXVIII: 1212–25.

Skaggs, N.T. (1999). Changing views: twentieth-century opinion on the banking school-currency school controversy. *History of Political Economy*, 31: 361–91.

Skaggs, N.T. (2003). Thomas Tooke, Henry Thornton, and the development of British monetary orthodoxy. *Journal of the History of Economic Thought*, 25: 177–97.

Skaggs, N.T. (2010). Less than an Ideal Type: Varieties of Real Bills Doctrines. In David Laidler’s Contributions to Macroeconomics, Edited by Robert Leeson, Palgrave Macmillan, 2010.

Skaggs, N.T. (2010a). Credit where credit is due: Henry Thornton and the evolution of the theory of fiduciary money. Forthcoming in History of Political Economy, 2012.

Skaggs, N.T. (2010b). For the love of truth: Henry Thornton’s stance in the bullion committee debates. 2010 meeting of the History of Economics Society, Syracuse.

Smith, A. ([1776] 1976). *An inquiry into the nature and causes of the wealth of nations.* R.H. Campbell and A.S. Skinner (Ed.), Oxford: Oxford University Press, – Éd. Fr., P. Taieb, *Enquête sur la nature et les causes de la richesse des nations,* PUF, 1995.
By granting credit and issuing money, banks take a liquidity risk – that is, the risk of being unable to reimburse its notes in coins. Five different explanations of a bank liquidity crisis have been provided by different authors, since John Law and up to Walter Bagehot. First, according to Law (1703) and Steuart ([1767] [1998]), the distinction between money of account (the pound sterling) and money of payment (the guinea) may induce a bank run. Second, according to Cantillon (1730), Hume ([1752] 1972), Ricardo (1810–1823) and the Currency School (1837–1858), the bank reserve becomes insufficient as a consequence of a diminishing value of money allied with over issues. Third, according to Thornton ([1802] 1939, 1991) and the Banking School (1840–1857), it can occur as a consequence of a falling exchange rate that is not linked with over issues. Fourth, according to Smith (1776) and the Banking School, discounting of fictitious bills, by decreasing the shareholders’ funds, leads to bank illiquidity. Lastly, according to Thornton ([1802] 1939, 1991) and Bagehot (1873), the liquidity crisis is a consequence of bank panics: a “flight” to money for Thornton, a “flight” to credit for Bagehot. The analysis of these five different explanations sheds new light on classical monetary controversies.

Keywords
Bank liquidity risk, bank exchange risk, bank credit risk, shareholders’ funds, Money of account, coined money, real bills doctrine, currency market, money market, run