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WORKING PAPERS IN ECONOMICS

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Lessons from the Money Mania for Money Creation

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Lessons from the Money Mania for Money Creation*

Abstract

The first attempt in the human history to consciously create money ended in a collapse in 1720, well-known as the money mania. This unfortunate start raises doubt on money creation as a whole such that today there are still voices questioning created money even though it is now indispensable for the world economy. But this misfortune also has the bright side in that it delivers an extensive example of risks which created money has to consider. In this paper, I review the central facts from the money mania and highlight lessons we can still learn from it.

Keywords: money mania, money creation, convertible money, non-convertible money, John Law, risk

JEL: B17, B19, E40, E59, N23

1 Introduction

In 1716, John Law set up a private bank to issue paper money. Issuing paper money was not new in his time, the Bank of England already issued paper money quite successfully and many view it as the model Law was trying to copy. In the entire human history, the first paper money can be traced back to as early as the Chinese Song Dynasty in the 11th century.¹ But the paper money issued by Law has the decisive difference to its predecessors in that it is not designed as the paper document certifying the ownership of precious metal and thus a supplement of metal money, but should function itself as money based on Law's proposal in 1705.² Thus, Law was the first person who issued created money,

*The views expressed in this paper are solely the responsibility of the author and should not be interpreted as reflecting the views of the Bundeswehr University Munich or of any other person associated with the Bundeswehr University Munich.

¹Some believe that the first prototype of paper money already emerged in the Chinese Tang Dynasty in the 7th century.

²Law was not the first person working out a theory for money creation, in Law (1705), pp.147, he also mentions a particular Dr. C. who made a similar proposal, but Law was the first known person who issued the created money.

he also intended to replace the metal money with it but didn't succeed. His failure strengthened the role of precious metal as money and the then-prevailing view that money issuance should be determined by the available amount of precious metal, contemporary historians influenced by this view therefore misinterpreted Law's failure as the natural consequence of deviating from this principle.³

In section 2 I review the central facts of money mania which are recorded in Guo (2018) which are themselves cited from Lacretelle (1812) and others. Lacretelle was a famous historian at the L'académie de Paris. Like other historians in his time, he used to record the historical facts not chronologically but in topics and subtopics, which facilitates reading but mingles historical facts with his personal views. Nonetheless, he also named the dates of the non-trivial events which enables Guo (2018) to reconstruct the timeline of the history.

While the chronologically sorted facts enables the reader to reinterpret the money mania by himself, I also offer my own interpretation in the following sections. In section 3 I outline my understanding of money which is based on Guo (2018) but not restricted to convertible money.⁴ Using the theory presented in section 3, I will interpret in section 4 the facts listed in section 2. Section 5 offers recommendation for today's money creation. Section 6 concludes.

2 Review of money mania

In 1715, France was highly indebted after the war years. The government debt was approximately thousand times the primary surplus and amounted to 3000 millions of livres.⁵ After some rather unsuccessful attempts to improve the public finance, the regent decided to give John Law's proposal a try so the latter set up a private bank in May 1716⁶ and could show the first success. In August 1717, Law was authorized to establish the Mississippi company (compagnie d'Occident). After further success with the bank and the company, his originally private bank, now tightly linked with the company, was erected into the Royal Bank in December 1718.⁷

The regent could at first win the support of the parliament and exclude his rival, the Duke of Maine,

³See also MacKay (1852) and Anonymous (1842)

⁴Convertible money means money which is promised convertible in fixed price to a particular asset, usually another money. I will cite the definition in the text of section 3.

⁵The numbers are taken from MacKay (1852), chapter 1, also mentioned by It, p136–37.

⁶See Lacretelle (1812), p285.

⁷See Lacretelle (1812), p290, p295, for the dates and Guo (2018), chapter 4, section 4, for an outline.

from power with its help.⁸ In the years following, his relationship with the parliament deteriorated and the latter directed the anger towards Law and his bank and forbade him in managing the public finance and his bank in administrating the revenues in August 1718.⁹ In the same month, two weeks later, the regent was surprised by the presence of his rival and the brother of the latter on an important meeting.¹⁰ The regent fought back and arrested the president of the parliament and two others¹¹ and, as mentioned, erected the bank into the Royal Bank in December.

The regent did not only intimidated the parliament, but also humiliated his rival on that very meeting and deprived him and his brother of certain privileges.¹² The wife of the Duke of Maine then colluded with Spain to overthrow the regent but was soon discovered and defeated, namely in December, the same month when Law's bank got even more privileges and erected into the Royal Bank.¹³ After the defeated conspiracy, Spain provoked the war to France.¹⁴ The regent had difficulty to directly fight against Spain because the Spanish king was a grand-son of Louis XIV, in addition to that Spain and France were also otherwise tightly linked,¹⁵ so he paid a lot of gold to his allies who were more militarily involved in this war while also paying his own army generously.¹⁶ France could win the war together with its allies in February 1720.¹⁷

Towards end 1719, as the success of France in the war was in sight, Law's bank also reached its zenith despite the large outflow of silver. He publicly made quite a few announcements. He announced to very soon repay all public debt and thereby free the government from the control of parliament – seemingly the parliament was a big creditor of the indebted government. He attempted debasing species which would favor his paper money. He also proposed the separation of legislation and jurisdiction.¹⁸ At least part of his plan dismayed the parliament and Law's rival bankers started attack on Law's money and financial system and could already bring the share prices to tremble end

⁸See Lacretelle (1812), p118.

⁹See MacKay (1852), chapter 1.

¹⁰See Lacretelle (1812), p219–20, and Guo (2018), chapter 4 section 4, for a brief listing of the events.

¹¹See MacKay (1852), chapter 1

¹²See Lacretelle (1812), p220–23.

¹³See Lacretelle (1812), p224–45, and Guo (2018), chapter 4 section 4 for a short list.

¹⁴See Lacretelle (1812), p268–69.

¹⁵See Lacretelle (1812), p268, p270–71, p273–74.

¹⁶See Lacretelle (1812), p273, p277, and Guo (2018), chapter 4 section 4, for an outline.

¹⁷See Lacretelle (1812), p280–81.

¹⁸See Lacretelle (1812), p309.

this year.¹⁹

In January 1720, Law was appointed the comptroller-general of finance. In the same month, Prince de Conti redeemed his bank notes in silver which filled three wagons and triggered off a capital flight.²⁰ In February, Law forbade the possession of gold and silver more than 500 livres and ordered the precious metal above that threshold to be brought to the Royal treasury in exchange for shares and bank notes, which of course raised protests. His Mississippi company was renamed and got more privileges, while at the same day a run on his bank caused three deaths.²¹ Despite the fluctuations, throughout this period, the share price was rising which caused many crimes and murders, the most prominent one occurred in March in which the young brother of a prince murdered a broker to rob his shares.²² In May, the regent announced the reduction of share price and note value to one half after the council decision, the parliament protested.²³ The edict (of depreciating notes and shares) was withdrawn and the share price possibly continued to rise until August,²⁴ but Law was dismissed from the ministry and the bank stopped payment in specie. In December, Law exiled. The regent attempted to get him back and re-establish the bank but died in 1723. Law himself died in 1729 in poverty.²⁵

The success and failure of Law's money and financial system was known as money mania in the history.

3 Theorem of money creation

After reading the previous section, different readers, depending on his pre-knowledge, may draw different conclusions from these chronologically sorted facts. Indeed, the interpretation of an event is always based on a (written or unwritten) theory. In this section, I present my model or theory of money before using it to analyze the money mania in the next section.

In Guo (2018), money is viewed as an interim good which can facilitate the exchange of other goods. This view is not in itself new, Law already mentioned it in Law (1705), a theory he apparently

¹⁹See Lacretelle (1812), p309–10.

²⁰See MacKay (1852), chapter 1, Lacretelle (1812), p310, p318, and Guo (2018), chapter 4 section 4.

²¹See MacKay (1852), chapter 1 and Lacretelle (1812), p311–12, p318.

²²See MacKay (1852), chapter 1, and Lacretelle (1812), p324–25.

²³See MacKay (1852), chapter 1, and Lacretelle (1812), p313–15.

²⁴See the bar diagram in Sandrock (2007).

²⁵See MacKay (1852), chapter 1, and Lacretelle (1812), p321–22, p363, p381–83.

adopted from earlier researchers. To view money as a good with own value has an important implication, namely the value of money can exceed the value of goods from which money is made. Law put it this way:

“It is reasonable to think silver was barter’d as it was valued for its uses as a metal, and was given as money according to its value in barter. The additional use of money silver was applied to would add to its value, because as money it remedied the disadvantages and inconveniencies of barter, and consequently the demand for silver increasing, it received an additional value equal to the greater demand its use as money occasioned.”²⁶

Of course, the above statement also applies to other kinds of money made of other goods. Law proposed in his book money made of real estate, and briefly discussed money backed by government debt respective revenue and commercial debt/credit.²⁷ Money made of a single good, be it silver or real estate or government revenue, may or may not be the result of money creation. As mentioned earlier, paper money backed by silver already existed since at least the 11th century, but without the knowledge that money is in itself a good whose value can deviate from (and in the ideal case exceed) the value from which it is made, the earlier paper monies were merely documents certifying the ownership of silver. By viewing money as a stand-alone good with own value derived from its demand and supply, Law soon progressed in the practice and backed his paper money with various kinds of asset ranging from real estate and government revenue to trade privileges and right of refinance.²⁸ Thus I assert that John Law was the first person who really created money, the money issued by him was no longer a supplement of metal money and its value derived from the value of the latter, but a stand-alone money whose value is determined by its own demand and supply.

Law’s statement which does not only apply to created money but also to other monies such as silver money can be concisely expressed in an equation:

$$\text{value of money} = \text{value from use as money} + \text{value from not-use as money}$$

²⁶See Law (1705), p15–16. Spelling and capitalization adjusted by me according to the current spelling rules of English.

²⁷See Law (1705), p67–69, p110–47. He also mentioned money made of (consumer) credit (for future labor income) in Law (1705), p21.

²⁸See Guo (2018), chapter 3 section 4. The facts can be found in MacKay (1852), chapter 1, and Lacreteille (1812), p294–95, though as historians and non-economists they did not highlight the relationship between money and assets used to back it.

Or let V denote value of money, M denote value from use as money and N denote value from not-use as money, then we have:

$$V = M + N$$

In equilibrium, the value of money equals its face value, F :

$$V = F$$

The value of M is derived from the demand and supply of money. The demand of money results mainly from the need of money for transaction purpose which can fluctuate heavily and unpredictably especially due to various shocks. The shocks range from innovation in payment technology and shift in preferences to economical/political events tangent to trade and/or payment. Because people usually do not exactly know when they will spend money, the value of M also depends on the value of N , which assures a minimum value of money even if it ceases to be used as such, be it due to shocks or being outcompeted by other monies, and thereby reduces its fluctuation in value and increases its attractiveness for use as money at an uncertain time point in the future. As pointed out in Guo (2018), although it is theoretically possible to use an otherwise worthless symbol as money which means $N = 0$, that would be a money of poor quality whose value floats unpredictably and forcing its use as money which means ban of other monies by law would result in high enforcement cost.²⁹ Note that N is not to be confused with the often mentioned intrinsic value, which is not defined the same way everywhere but all sources have in common that they state that fiat money has no intrinsic value because it is nether pressed in nor backed by commodity such as precious metal. In the equation above, N stands for the value of money when it ceases to be used as money, thus in case of metal money, it is the value of the metal on the commodity market, in case of redeemable money, it is the value one gets when redeeming the money and is at most the value of the asset (usually precious metal) promised for redemption, in case of fiat money it is then at most the value promised for one unit of money, namely the inverse of promised price level.

The value of N could also depend on the value of M , especially empirically, which makes the

²⁹See Guo (2018), chapter 3 section 3.

management of money issuance more difficult. Law backed his money to a substantial extent by his enterprise, the Mississippi company, and there was a positive correlation between the company share price and the amount of bank notes. According to MacKay (1852), he issued ever more paper notes with rising share price, later both share price and the bank collapsed roughly at the same time. One could argue that here N is not really dependent on M because N is by definition the value of the Mississippi company if it would not be used as asset backing the paper money, but empirically there is only one share price, so the value of N cannot be directly measured. This is more obvious when considering commodity money such as gold: when gold price rose during the gold standard one can conceive that part of the price rise was due to gold being used as money or asset backing money, but it could also be partly due to the increased demand for jewelry resulting from higher income. Of course, if one has enough data then one can estimate each component of the price, but there is not always sufficient data for a satisfactorily precise estimation. Take Law's Mississippi company for example: it was already known that Mississippi was not abundant of silver, thus informed persons such as Mr. D'Aguesseau argued that Law's bank was based on lie,³⁰ which suggests that the rising share price was largely due to his inflationary monetary policy. But Law believed in the value of land *per se* and argued in his 1705 proposal that data from two centuries show that silver price fell due to increased supply while land value increased due to increased demand and more trade and manufacture can further increase land value.³¹ For lack of data it cannot be answered definitely whether Law's bank had a solvency or liquidity problem.

To understand the difference between solvency and liquidity problem, one can view N in its three components:

$$N = N_1 + N_2 + N_3$$

where N_1 is the material value of the medium in which money is current. In case of metal money there is $N = N_1$ implying $N_2 = N_3 = 0$. Because the total value of N is in the hands of the money holders, there is no trust problem vis-à-vis the money issuer. In case of paper money we have approximately $N_1 = 0$ and $N = N_2 + N_3$, which means that the paper money is backed by the N_2 ,

³⁰See Lacroix (1812), p293.

³¹See Law (1705), p125–31 and p203.

the asset in which it is redeemable, and N_3 , other assets which could be sold in N_2 to meet a possible redemption inquiry. If

$$N_3 < F - M - N_1 - N_2 \quad (3.1)$$

meaning $V < F$ then the money issuer is insolvent. But because there is a trust problem when $N_1 \ll N$ which is typical for created money, namely money holders are not sure whether the money issuer is solvent or not because they don't see N_1 and N_2 , and tend to withdraw their money in case of suspected insolvency especially when the money is in form of convertible money³² and thus a withdrawal almost costless for the first withdrawers, then the money issuer would have to sell his assets N_3 under value due to lack of time to find purchasers, meaning $N'_3 < N_3$ or even $N'_3 \ll N_3$. If $N'_3 < F - M - N_1 - N_2 < N_3$ then the money issuer is illiquide though solvent. Not only the insolvent, but also the illiquide money issuer cannot survive a bank run, unless the latter can win more time, e.g., through a temporary liquidity injection.

With the above mentioned, we can review the money mania as a case study for money creation.

4 Money mania as case study for money creation

Although Law proposed to create paper money (which he called credit) redeemable in land (which he called money and should replace precious metal as money),³³ what he set up in 1716 was a conventional bank issuing paper notes redeemable in specie. This decision was possibly due to the better acceptance of specie (metal money such as silver coins). At least in the first year, Law conducted the bank business as usual and could achieve success.³⁴

In case of paper notes redeemable in specie, $N_1 = 0$, N_2 is the reserve in form of specie and N_3 are other assets. It is reported that Law held N_3 prevailingly in form of securities on government debt (billets d'état) and land-related securities (shares and bonds of Mississippi company and loans with landed securities), though he also secured other assets such as trade privileges for his bank which

³²Law calls convertible money in form of paper money credit and the money/asset in which it is redeemable money.

³³See Law (1705), chapter 3 for the terminology and chapter 7 for the proposal of a land-bank.

³⁴See MacKay (1852), chapter 1.

are part of N_3 as well.³⁵ Because Law took the billets d'état at face value although they were highly discounted on the market,³⁶ also the success of his Mississippi company was far from certain (certain was only that the Mississippi river was poor of silver, if the region could rise in value due to increased trade and manufacture in a time horizon of centuries as Law predicted cannot be easily answered), most economists believe that Law's bank was insolvent according to equation 3.1³⁷ though it cannot be completely ruled out that it was a liquidity problem.³⁸

Whether Law was insolvent or illiquide depends much on the value of M . We often take $M = 0$ when viewing commercial banks, not only because they issue convertible money and are thus subject to bank run, but also because the commercial banks compete with each other such that none of them can serve the whole market and anyone could lose the entire market if outcompeted. To set $M = 0$ when assessing the solvency of a commercial bank is unfavorable for it, but probably beneficial for the society as a cautious measure, because competition implies that any bank could face $M = 0$ if losing the whole market to its competitors. Besides, the commercial banks under this more strict assessment rule can better serve as a security buffer for the central bank which is more important for the stability and growth of the economy. If all surviving commercial banks can manage to have $N \geq F$, then the central bank, whose asset consists in majority in credit to banks, is on a safer side. Concerning Law's bank, it was a mixture of central bank, commercial bank and government treasury.³⁹ The tax had to be paid in his bank notes,⁴⁰ other goods and services could be either paid in specie or his bank notes, but not notes from competing banks because Law had obtained a monopoly.

By making his bank notes payable at sight and in the coin current at the time they were issued,⁴¹ Law increased M by increasing the acceptance of his bank notes, which can better preserve the value than the specie which was subject to the risk of debasing.⁴² Besides, as paper money the bank note is easier to carry around than specie and can make payment quicker and easier. These advantages

³⁵See MacKay (1852), chapter 1 and Guo (2018), chapter 3 section 4

³⁶It is however unclear if Law only accepted billets d'état at face value when setting up the bank or continued this practice when latter issuing the bank notes. The former is less problematic because it doesn't increase F .

³⁷See Schumpeter (1923), chapter 6 section C8 and p114.

³⁸See Guo (2018), chapter 4 section 2

³⁹See Guo (2018), chapter 3 section 7.

⁴⁰See MacKay (1852), chapter 1. It is not stated whether specie could also pay tax, this is likely especially at the beginning when circulating bank notes were not yet enough to cover the entire tax payment.

⁴¹See MacKay (1852), chapter 1 and Guo (2018), chapter 1 section 2.

⁴²According to Law (1705), p66, this measure was already practiced by the bank of Amsterdam to make its bank notes attractive.

of bank notes over specie lead to a higher M , the former also to a higher N_2 because people, also foreigners deposited specie for bank notes.⁴³

Given that the bank promised to pay the coin current at the time they were issued in case of redemption, it was actually not very necessary for Law to propose the debasement of specie. Anyway, in 1718 the newly appointed premier, Mr. D'Argenson, ordered to debase specie by taking in 4 unit of specie and 1 unit of billets d'état from their holders and returning 5 unit of specie with the same metal content as the older 4 unit of specie.⁴⁴ This measure doesn't change the face value F of the specie in term of livres, the unit of account at that time, but reduces the N_1 of specie by 20%. Because no one promised price stability for specie (nor for bank note at that time), the holders of specie lose by inflation, accordingly the parliament was strongly against the debasement. It is unclear whether Law was responsible for it. As said, his bank still had the same repayment promise to fulfill as before, though the bank also benefited by showing the attractiveness of its notes and possibly increasing N_2 if disappointed specie holders decided to exchange their specie against bank note. But the government gained even more by canceling its debt at almost no cost. For some unknown reason the parliament decided to focus their anger on Law and his bank in August, at the same time it also approached the rival of the regent. After four turbulent months, France declared war to Spain.

During the war year, outflow of silver largely reduced N_2 of the Royal Bank, which was more severe than a loss in N_3 in the same amount, because the former can be directly used for a possible redemption. But after more than two years of successful banking, the paper note could already take the lead from specie as means of payment. The sufficiently large M kept inequation 3.1 from being met. Possibly encouraged by this success, end 1719, as the war victory was in sight, Law announce several measures, which triggered off financial attacks.

It is unknown why Law made these announcements instead of quietly regaining the reserve and other assets which can secure his notes even if neglecting M . Maybe he was nervous about the large discrepancy between F and $N_2 + N_3$,⁴⁵ maybe he overestimated his reputation and underestimated the risk of attacks, anyway, he announced debasement of specie which should render holding specie outside the bank unattractive and thus raise N_2 of the bank in the ideal case. But as we now know

⁴³See Lacroix (1812), p300.

⁴⁴See MacKay (1852), chapter 1.

⁴⁵Law was aware of the danger of a small N_2/F ratio while believing sufficient N_3 can make up for it, see Law (1705), p66–68.

the contrary was the case: the bank could not keep its promise of redemption and had to close within one year. However, different than stated by established historians such as MacKay and Lacretelle, the countermeasures undertaken by Law were not useless and even had a positive chance of success, though at last the failure was realized. Let's look at the first five months in 1720.

In January, Prince de Conti withdrew his bank notes and let him pay out species which filled three wagons. According to MacKay he was offended by a refused purchase of shares to his conditions and withdrew bank notes to revenge. According to Lacretelle he was alarmed by the trembling of the share prices caused by the financial attacks and attempted to cash in. For whatever reasons, the three wagons passing the streets of Paris alarmed some traders who then secretly withdrew their bank notes and transferred wealth abroad. The flight of species became so severe that people got difficulties to get enough species for daily purchases which were still paid in species, that led them to doubt the solvency of then bank. In February, a bank run caused three deaths. Law, now the comptroller-general of finance, forbade possession of gold and silver above 500 livres and ordered the exceeding part to be brought to the treasury in exchange for shares and notes. Despite the despotic character of this measure, it should quickly raise N_2 of the bank. Besides, the bank slowed down its process of redeeming notes which of course displeased its customers and aimed to gain more time for selling its N_3 asset for a fairer price. Despite the protests to be expected, Law could maintain the share prices at high level which caused as side effects robberies and murders, the most prominent one occurred in March. Many believe that Law artificially raised the share price by issuing too many notes which was a possible scenario, however that would show that the bank notes did not become worthless after the first bank run. The decisive death verdict for Law's bank and finance system came in May, as a council of state and the regent decided to reduce the nominal value of the shares and notes to half because the species in the whole country was only half as much as the outstanding notes. Law was against this measure but could not convince the council with an own solution. The parliament was also against this measure. Seemingly, the majority of the parliament had already bought shares and notes in the meantime as the attacks did not succeed. Though the regent canceled this edict due to the protest from the parliament and was pleased according to Lacretelle because he misinterpreted the protest as vote for Law's system, now it became commonly known that the notes and shares were overvalued. Latest in August the share price collapsed and in December Law exiled, meaning the end of his system.

Those who have read Law's book know that he wanted to make his bank notes convertible in land instead of in specie, but his bank still issued notes convertible in specie, apparently he could not fully convince the decision makers in France of his new idea when setting up the bank, nor could he convince them in May 1720 that it is better to not restrict the money amount to the amount of specie in the country. That he could not convince his contemporaries probably was not only because the latter could not so easily understand and accept a new idea, but also because his new idea was not yet thoroughly thought-out, though innovative. A piece of land in place A can differ much in price to another piece of land in place B, also the price development over time can differ substantially. If the money convertible in land (or in his word credit on land) should be redeemed, then which piece of land should be paid out or the ownership of which piece of land should be transferred? If he means that a value should be paid out which corresponds to a standardized piece of land, say the value of a particular piece of land in place A in the year when setting up the bank, then that value has to be expressed in term of another good. Then what he really wanted to promise is a kind of price stability, or in his words "... it's supposed the receiver (of money) may, as his occasions require, buy an equal quantity of the same goods he has sold, or other goods equal in value to them".⁴⁶ But if he only wanted to preserve the value of money, and already conceived a paper money which can standardize very different value and value development of different pieces of land, then there is no reason to restrict this standardization, securitization and monetization process to land only, but any asset including specie or precious metal can be made to money this way. He proposed for money made of land because the total value of land is much larger than the total value of precious metal and in his time the former rose in value compared to silver due to the influx of the latter following the Discovery of America,⁴⁷ but a money made of all assets with the feature of preserving their values over time can surely better meet the two criteria than money made of land only. Because Law's system collapsed within a few years, it is unclear how far he has developed his theory through the practice, certain is only that he could not get rid of the constraint put by promising conversion in specie and failed on this very point, and apparently he did not try to make money convertible in land as originally proposed, as pointed out in Schumpeter (1923). It is unclear if he kept his promise of preserving purchasing power

⁴⁶See Law (1705), p114. Words in parenthesis added by me for clarity.

⁴⁷See Law (1705), chapter 5 and 7.

of his money. The report of high inflation⁴⁸ seems to contradict his word, however, one must keep in mind that his bank paid interest to the money holders. As long as the return covers the inflation, the holders of his money could preserve the purchasing power, though the holders of specie suffered by inflation. Given that foreign investors reportedly preferred his money to own money, at least his bank notes were more attractive, i.e., value-stable than foreign bank notes.

5 Implication for today's money creation

Today most countries have a two tier monetary system, with the central bank issuing non-convertible money and commercial banks issuing convertible money redeemable in central bank money. As mentioned, it is cautious and probably beneficial for the society to set $M = 0$ when assessing commercial banks because they offer so similar product that one bank can be easily replaced by another bank. The central bank has more wiggle room because its money is legal tender and non-convertible, thus has de facto $M > 0$. But it is a cautious measure to set $M = 0$ when internally assessing the risk. The value of M is fluctuating and can be influenced by many factors, not only unusual events such as financial attacks. For instance, company A buys its supplier, company B, then after the purchase money payment from A to B can be replaced by internal clearance, though the purchase itself will temporarily raise the demand for money except when the merger could be conducted without money, e.g., through swap of shares. If M was only fluctuating around a constant level, then the money holders can smooth this fluctuation by holding when money demand is lower and spending or lending when the demand is higher, but if M is foreseen to decline over time because of innovations reducing uncertainty and transaction cost, then the central bank needs sufficient asset for withdrawing the liquidity. But the conventional wisdom already sets $M = 0$ even for assessing the central bank, so the conclusion is that if the inequation 3.1 were met when setting $M = 0$, then the central bank should get alarmed and try to revert it by raising asset or reducing money if possible, though actually the inequation 3.1 is not yet met because of $M > 0$. One just does not know how much M is.

When reading about money mania, some may come to the conclusion that Law's system would have survived if there were no competing currency such as specie or species were forbidden. But as

⁴⁸See MacKay (1852), chapter 1.

Guo (2018) pointed out,⁴⁹ Law's bank could even survive in May 1720 if there were a competing bank from whom he could get specie by selling assets. Today we have many competing commercial banks,⁵⁰ though they do not compete with the central bank directly. The stance of central banks towards other currencies including crypto currencies whose issuers do not demand central bank money differs from country to country, some allow the circulation of other currencies in the own currency area, some not. For instance, ECB (2012) believes that virtual currencies such as Bitcoin and Second Life's Linden Dollars have not yet substantial impact on price or financial stability, thus there is no need to intervene though the ECB preserves the right of intervention if necessary.⁵¹ Indeed, the major currencies today have strong asset backing and are managed by experts, in normal case the digital currencies cannot perform better, though as asset whose value also includes future expectation and as digital goods being able circulating worldwide, the digital currencies are priced for that some day, some country may mismanage its currency and the digital currencies could be needed. Of course, any country near the collapse of own currency will forbid other currencies to keep M as high as possible. But M is upperbounded by the convenience money offers compared to barter. If inflation gets so high that people prefer barter to own currency, then any rational country will allow the circulation of other currencies to reduce the distress associated with barter. In this case this country will not care if a foreign currency or a digital currency is used.

There is still work to be done, for the calculation of M , but also for the determination of N_2 and N_3 . Assets can change value, so $N_3 > F$ does not automatically ensure full redemption at a later time point. Law had to face loss in value of his Mississippi company when his bank needed (metal) money, also because there was not enough specie in the country to buy the asset. Schumpeter thought this problem could be solved if N_3 were invested wisely. However, he also got bankrupt following the return to gold standard in the twenties, because his investment in shares of growing companies which had been above average profitable during times of loose monetary policy became above average risky in times of tight monetary policy. For non-convertible money, all asset backing the money can be viewed as N_2 and thus not subject to the loss from conversion, but they are still subject to fluctuations in value. Central banks often invest in safer assets and are thus less exposed to value fluctuations in

⁴⁹See Guo (2018), chapter 4 section 2.

⁵⁰See Guo (2018), chapter 2, for interpreting commercial banks as different money suppliers supplying a very similar good.

⁵¹See Bank (2012).

assets. But since safety of assets can change depending on state, it is not perverse for central banks to internally run different scenarios and make sure of sufficient asset backing in all possible states.

6 Conclusion

In this paper, I reviewed money mania using the up-to-date theory of money. It turned out that the money and finance system set up by John Law was not as bad as its reputation and had a positive chance of success, though his theory and practice were not free of flaw and finally failed. Though devised as convertible money linked to land and practiced as convertible money linked to specie, Law's idea of standardizing a very diverse asset, namely land, paved the way for the later non-convertible money. His theory and practice, though three centuries old, can still offer lessons for today's money creation.

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