Federal Reserve Bank of Chicago

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Abstract

John Law's System was a radical restructuring of French public finances, carried out from 1716 to 1720. It involved on the one hand a conversion of the existing French public debt into something like government equity, on the other hand the replacement of commodity money with fiat money. For strategic reasons, Law supported the equity at too high a level, resulting in uncontrolled money creation. The System ended with the recreation of a public debt at, surprisingly, the same level as before.

Keywords: Système, John Law, government equity, bubble, debt conversion (JEL B31, E42, N13, N23).

1 Introduction

The government's budget constraint and the interplay between its components across time and states is at the core of many macroeconomic questions. The nature and timing of taxes, the ability to and advisability of borrowing, the proper structure of government liabilities, are all recurrent themes. The purpose of this paper is to present a particular historical episode which uniquely illustrates them.

The episode takes place in the early eighteenth century in France. From 1716 to 1720, a Scotsman named John Law undertook a radical restructuring of French public finances. Because the entire operation appeared to be based on rational principles, it has been called "Law's System." The operation involved the floating of shares in a private company, the issue of paper money, and the conversion of government debt. The System ultimately unravelled with a coincident, and dramatic, fall in the market value of both the money and the equity.

Law's System, also known as the Mississippi Bubble, ranks as one of the mythical early bubbles (Garber 1990, 2000). It also represents a daring experiment in public finance, carried out by a man whom Schumpeter (1954, 295) placed in "the front ranks of monetary theorists of all time." Its story has been told many times,[1] but not (in my estimation) in a way that does full justice to the economic issues. This paper seeks to do just that.

The System had two components, one involving an operation in public finance, the other involving fiat money. The operation resulted in the conversion of the existing French public debt into a sort of government equity. Strictly speaking, a publicly traded company took over the collection of all taxes in France, ran the mints, monopolized all overseas trade and ran part of France's colonies. This company offered to government creditors the possibility of swapping their bonds for its equity, making itself the government's creditor. Since it was already collecting taxes, the government's annual payment was simply deducted from tax revenue by the company. Thus, bondholders became holders of a claim to the stochastic stream of fiscal revenues.

All the company offered was an *option* to convert, and visible capital gains provided a strong inducement for bondholders. As it happened, the System's other component was a plan to replace the existing commodity money with fiat money, at first voluntarily, later based on legal restrictions. Law used money creation to support the price of shares, and legal restrictions to support the demand for money. Inflation did not follow immediately, but exchange rate depreciation did, leading Law to reverse course and seek ultimately fruitless ways to reduce the quantity of money. The end result was a reconversion of shares and money into bonds and a return to the pre-existing arrangements.

In retrospect, Law's System appears conceptually reasonable. Sims (2001) argues that government debt is like private debt in a fixed exchange rate regime, but like private equity in a flexible rate regime; he also thinks that the latter is preferable. France was notionally on a fixed exchange rate regime (with frequent departures); I interpret Law's System as

[1] A complete bibliography of the early writings on Law by Paul Harsin can be found in Faure (1977). Major recent works include Harsin (1928, 1933), Faure (1977), Neal (1990), and Murphy (1997).

an attempt to move government debt closer to equity without sacrificing price stability. As for replacing commodity money with fiat money, what incongruity the idea held for contemporaries has clearly dispelled.

Law's System has been called a bubble; it has also been called a default. Quantitatively, I find that the share prices were overvalued at their peak by a factor of 2 to 5, but I attribute this to Law's systematic policy of price support. With fairly optimistic assumptions, a lower level of price support would have been feasible. As for the public debt, it was not significantly increased during the System, and it was restored by Law's successors at roughly its earlier level. In other words, France's first experiment in fiat money (as her second, see Sargent and Velde 1995) was far from a default, perhaps surprisingly for a country otherwise prone to defaults.

I proceed as follows. I first briefly describe the French fiscal system and practices in the late seventeenth and early eighteenth centuries, so as to know what Law was restructuring. I then describe the steps involved in the construction of Law's System and its collapse. I then conclude with an evaluation of the System. A separate appendix contains details on the securities issued during the System and their prices.

2 Features of French Fiscal System

2.1 Spending

A long tradition in macroeconomics takes as given the process governing the government's spending obligations. The main characteristics of the process faced by France in the early modern period (sixteenth to eighteenth centuries) can best be seen by dividing government spending into military and nonmilitary components (net of debt-related spending). The way accounts were kept distinguished spending in various ways: in some accounts, expenditures are divided by the treasurer who made the payments. More generally, the government distinguished between ordinary and extraordinary expenditures. The former were the recurrent, stable, and predictable items; the latter were temporary and unexpected items. Thus, my category of military spending includes ordinary items like peacetime garrisons and troops, upkeep of fortresses, horse-farms, and the like, as well as all extraordinary items related to wars. Nonmilitary spending net of debt-related items includes expenditures of the royal household (a quarter to a third of the total) and salaries and wages of government employees.

The pattern is shown in Figure 1.[2] The main source of variation in government spending comes from wars. Peacetime expenditures (standing army and non-war related expenditures, mostly labor costs of providing justice, police, etc) are stable, and small compared to wartime

[2]The numbers used in Figures 1, 2, and 3 are based on series published by three historians whose coverage varies: Mallet (1662–95), Boislisle (1683–1707) and Forbonnais (1682–1716). The series themselves are available as part of the European State Finance Database of Richard J. Bonney (URL `<http://www.le.ac.uk/hi/bon/ESFDB/` accessed June 2002, datasets `rjb/boislisl, rjb/forbon, rjb/frmalet`). Roughly, I use Mallet's numbers until 1695 and then Forbonnais's numbers, complemented with Boislisle's numbers.

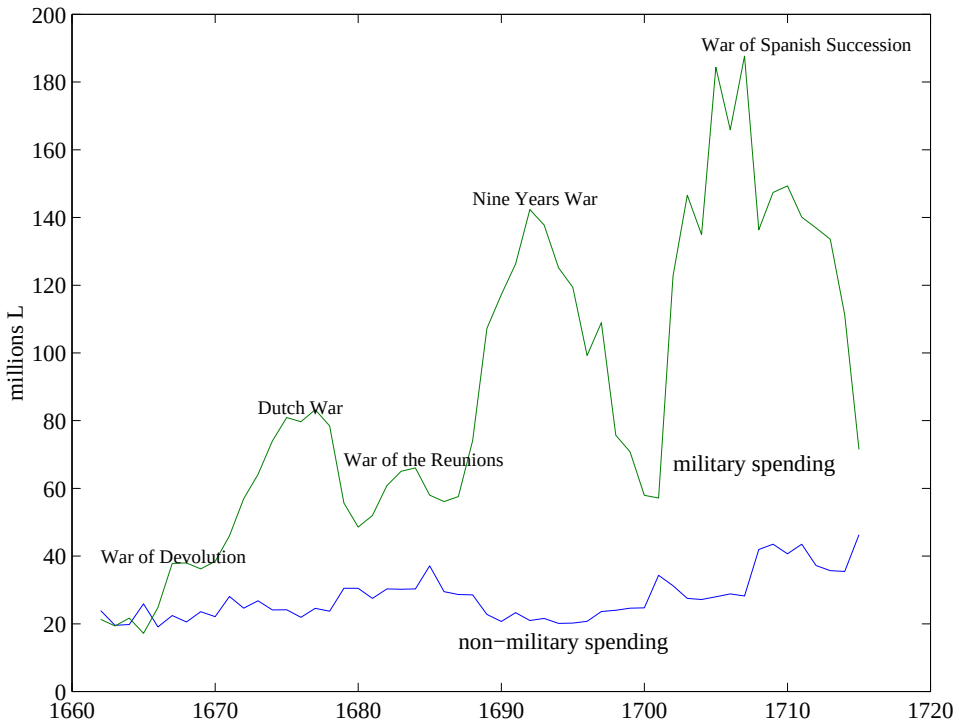

Figure 1: Military and non-military spending in France, 1662–1715 (debt service excluded).

expenditures. The main wars of Louis XIV are easily spotted on the graph: the conflicts appear to become both longer and more costly over time, culminating in the War of Spanish Succession.

Figure 2 shows the evolution of the primary surplus (revenues less non-debt spending), while Figure 3 compares revenues with spending inclusive of debt service. The French government raised taxes to some extent in wartime (notably introducing an income tax at a critical moment in the last war of Louis XIV's reign, in 1710). It also resorted to a lot of borrowing.

2.2 Taxes

Fiscal revenues consisted of a mixture of direct (income or wealth) taxes, indirect (consumption) taxes, and feudal dues arising from the royal demesne. The assessment and collection of these revenues was decentralized. For direct taxes, a global amount was set by the government, and then broken down into assessments for each province, where local authorities would proceed with the next level of assessment, and so on to the local level.

For indirect taxes, collection was carried out by tax farmers on behalf of the government. The procedure was much like the one in place since Medieval times for running the royal mints. The right to collect a given tax was auctioned to the highest bidder. The bidder offered a fixed annual payment to the king for the duration of the lease. Meanwhile, he took upon himself to collect the tax, hiring all the necessary employees. Any shortfall in

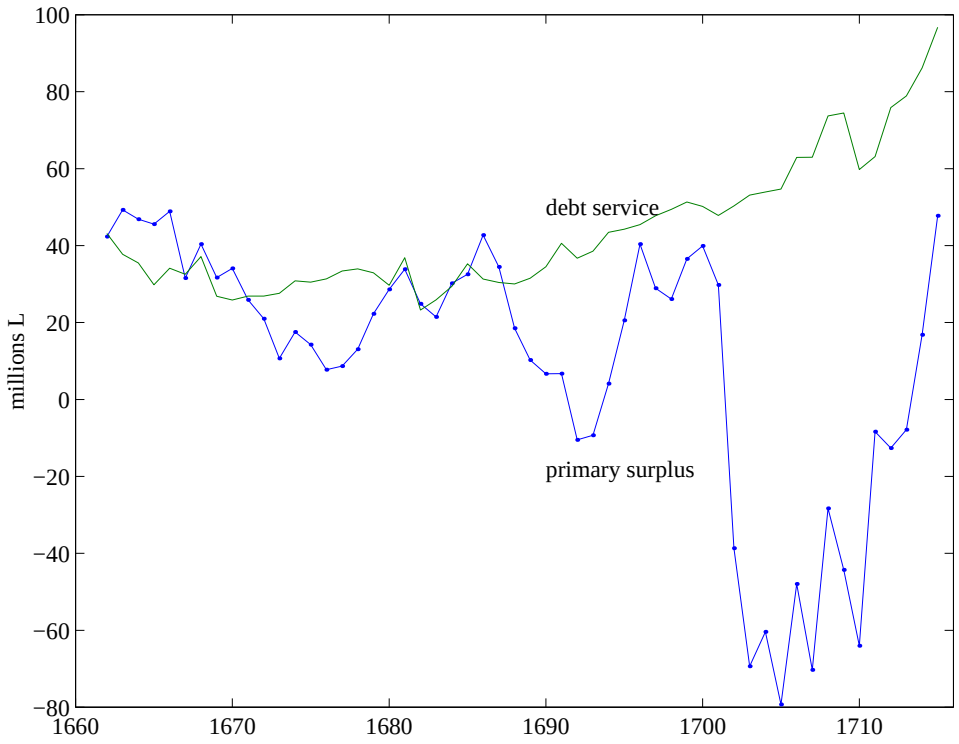

Figure 2: Primary surplus and debt service (interest payment) in France, 1662–1715.

revenues from the promised sum was made up by the entrepreneur; conversely, any revenue collected above and beyond the price of the lease was retained as profit by the entrepreneur. In the 1680s, most farming contracts were consolidated into a single 6-year contract called the "united" or "general farms." But new taxes were later created and usually farmed out separately.

Government monopolies, such as salt (which was part of the general farms) and recently introduced tobacco, were also farmed out in the same fashion. Indeed, the ability to create monopolies was one of the king's resources; one of the more outlandish examples being the exclusive right to sell snow and ice in the district of Paris, sold for 10,000L per year in 1701 (Forbonnais 4:193).

Table 1 presents fiscal revenues in selected peacetime years.

Spending is decentralized as well to various treasurers. Each tax had an associated bureaucracy of collectors and treasurers, either government employees or officers (direct taxes) or employees of the tax farmer. The treasurers spent some of the monies they collected, upon presentation of payment orders emanating from the government, and turned over the remainder, if any, to the royal treasury in Paris.

2.3 Borrowing

Government borrowing at the time took several forms, depending on the maturity.

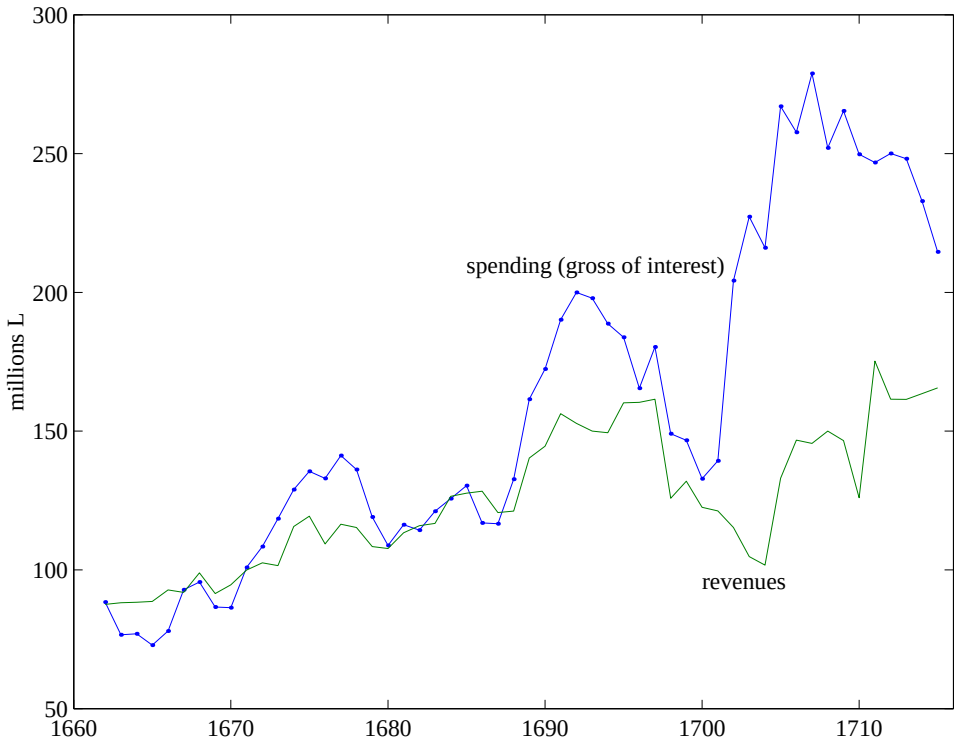

Figure 3: Revenues and spending, 1662–1715.

Given the decentralized nature of tax collecting and disbursement, payments often took the form of payment orders issued by the Treasury to treasurers: these orders would then be taken by the payees to the treasurers in order to collect cash. The orders were often made payable a year or more in the future, and were taken at a discount by the payee. The anticipatory notes allowed the government to borrow against specific future revenues. At other times, it seems the government or its treasurers issued pure IOUs in exchange for goods and services, particularly in wartime.

Long-term borrowing took two forms. The first was in annuities (*rentes*), which were either life annuities (payment contingent upon the life of a particular individual) or perpetual annuities. Usually, annuities were assigned on a specific tax revenue, and the interest was paid by the tax collector either directly to the creditor or to a centralized paying office located in Paris. In this sense, the debt was called "funded." The annuity contract was a common instrument between private parties as well, and was medieval in origin. As a result of the Church's strictures against loans, annuities always carried a repayment option: the creditor could never demand repayment of the original capital, but the debtor had the option to extinguish the debt by repaying the capital in full.

The other form of long-term borrowing was through the sale of offices. An officer was someone who held a government position not on commission or at the king's leave, but as of right, and enjoyed various privileges attached to the position (in particular the collection of fees related to his activities). Offices were sold, and the king paid interest on the original

	1683	1700	1715
indirect taxes			
united farms	62.8	58.6	47.0
other farms	2.2	8.0	12.9
direct taxes			
taille and misc.	47.7	41.6	51.8
capitation	—	—	25.8
dixième	—	—	24.0
royal demesne			
woods, incidental		3.4	3.9
Total	116.0	112.1	165.6
livre index	1.05	1.08	1.00

Table 1: Revenues of the French state. The livre index measures the silver content of the unit of account (1 in 1715). Sources: Mallet, Boilisle, Forbonnais (5:212).

sale price, which was called the wages of the office (*gages*). A wage increase was really a forced loan, requiring the officer to put up the additional capital. Officers could not be removed except for misconduct; however, the office itself could be abolished, as long as the king repaid the original sum. Thus, offices as a form of debt also carried the same repayment option as annuities. Creation of offices was a feature of wartime, and the War of Spanish Succession gave rise to extraordinary ingenuity in the invention of new offices. From 1689 to 1712 over 3,000 offices were created to supervise the markets of Paris in the minutest details, including "inspectors-gourmets of wines", inspectors of pig's tongues, and distinct officers in charge of respectively loading, unloading, and rolling barrels (*Encyclopédie méthodique: Finances*, 1785, 2:49).

Offices and annuities (which I will generically call bonds, and whose owners I will call bondholders) could be transferred or sold, but with fairly high transaction costs. Both were considered forms of real estate, and could be mortgaged. In the late 17th century the French government, like others in Europe, had begun experimenting with life annuities, tontines, and lottery loans, but on a limited basis, and had not yet issued bearer bonds. Even the short-term debt described above was registered in the sense that the payee's name was on the instrument, and could be transferred only by endorsement.

A final form of borrowing combined tax creation and lending. The procedure consisted in creating a new tax for some limited time and immediately farming its collection in exchange for a single, lump-sum payment representing the tax's net present value.

2.4 Money

Money at the time is a system that involved two separate elements. The first was a set of standardized objects produced by government-operated factories (called "mints"), which people exchanged against goods and services. They were called coins, and were made of metals like gold and silver. The second element was a unit of account, called the *livre* (abbreviated L in this paper). Numbers such as prices and monetary obligations were expressed in the unit of account. The king regulated the relation between the two elements, coins on one hand, unit of account on the other. He did so by naming two vectors. One assigned a number of units of account to each coin. The other set the price at which the

mint was obligated to provide each coin in exchange for quantities of gold or silver (either in the form of foreign or domestic coins, or in the form of bullion or wrought metal). These vectors could change.

For a given coin, there are two numbers set by the king: its "face value" and the number of such coin that will be paid out for an amount of metal. Knowing the metal content of a coin, one can compute an index of the numbers of units of account per weight of metal, which is called mint equivalent (ME). Likewise, one can express the second number as a mint price (MP), also in units of account per weight of metal.[3] I will track changes in the vectors assigned by the king to the main silver coin using the ME and MP.

The meaning of a face value X assigned to a coin was that the coin was legal tender for any debt or in any purchase up to the amount X livres. If X changed, the coin could discharge a greater or smaller debt. Sometimes X was set to 0, and the coin was demonetized.

It was always the case that $MP \leq ME$, the difference $1 - MP/ME$ being called the seigniorage rate which the king charged to convert metal into legal tender. The ME of silver had been constant since 1641, and in 1679 MP had been set equal to ME. However, from 1689 to 1726, the ME of silver changed 64 times, 8 times in the year 1720 alone (see Table 5. It remained unchanged from 1726 to 1795.

One reason for changing the parameters of the monetary system was to engage in a monetary "reform," to induce or coerce individuals into submitting to the seigniorage tax, which was usually increased at the same time. This was done by announcing the demonetization of an existing coin, and its replacement with a new coin of higher face value. Owners of the older coin who needed legal tender had to turn it in exchange for new coins, and thereby submit to seigniorage rates that ranged from 6 to 25%. This method was used in 1689, 1693, 1701, 1704, and 1709.

2.5 France in 1715

In 1715, Louis XIV dies after a reign of 72 years. The War of Spanish Succession ended with a draw, but it had proven very costly for France. At his death, Louis XIV left debts of 2800mL livres of which 1068mL were in perpetual annuities (bonds with coupon payments that go on forever), 830mL in sold offices (the "wages" paid to the officer being the interest on the price of the office), and 920mL in floating debt (various notes and bills whose final payment had not been settled, some of which bore interest in the meantime). The interest payments amounted to 45mL for the annuities and 41.5mL for the offices. With revenues at 166mL and spending at 71mL, the primary surplus was only 48mL, to service at least 86.5mL in debt service, without even taking care of the floating debt which would add some 40mL at a 4% interest.

The debt was large, no matter by what measure. The interest alone amounted to two or three times the primary surplus. The face value was about the same as France's output at

[3]The weight of metal used in this paper is the marc, or half pound (244.7g) of standard silver (22/24 fine).

Date		Perpetual		Offices		Unfunded		Total		Revenues	Surplus	Livre index
		capital	interest	capital	interest	capital	interest	capital	interest			
	1700	460.0	24.0	487.4	24.1			947.4	48.1	122.6	39.9	1.60
	1707	642.7	35.7							145.6	-70.3	1.60
Feb	1708	672.7	37.7			482.8				150.0	-28.3	1.51
	1710	757.6	42.2							126.0	-64.0	1.25
Oct	1710	757.6	37.9									1.25
Sep	1713	885.0	44.0							161.5	-7.8	1.25
Oct	1713	750.0	30.0									1.25
Sep	1715	1068.6	45.2	830.0	41.5	918.9		2817.5	86.7	165.6	47.7	1.78
Dec	1715	1044.1	42.0					2793.0	83.5			1.25
Jan	1716			830.0	39.5			2793.0	81.5	163.9	87.1	1.25
Jun	1717	933.6	41.3	830.0	39.5	558.1	13.0	2321.7	93.7	169.4	93.5	1.25
May	1720	1600.0	48.0	370.3	10.6	0.0	0.0	1970.3	58.6			0.60
Oct	1724	1800.0	51.5	741.4	35.2			2541.4	86.7	185.4	67.5	1.20
Nov	1726	1800.0	49.0	741.4	35.2			2541.4	84.2	199.4	92.1	1.00

Table 2: The debt in France, 1700–26. Sources: BN Fr. 7740, fol. 39, 43. Vührer 1:129–30, 139; Clamageran 3:45–46, 107–114; Forbonnais 4:307; Marion 1:63–69, 121, 149; *Etat général des dettes*; Riley (1987). *: imputed from the interest payment, assuming the same average rate as in 1717. The livre index measures the silver content of the unit of account (1 in 1726).

the time.[4] Britain's debt burden at the time was lower, both on the government's finances and on the country's resources. In 1715 the primary surplus was £2.5m, against a debt charge of £3.2m. Total debt of around £38m in 1716 compared to output of around £60m (Mitchell 1988, 575, 578, 600). [5]

At Louis XIV's death his great-grandson and successor Louis XV was five years old, and a regency was installed, with the late king's nephew, the duke of Orléans, as regent. It was during this regency that Law's System would unfold.[6] Before this took place, however, the regent's government took a number of measures to address the fiscal situation.

One of the first measures was monetary reform of the livre on December 23, 1715, followed by another reform on May 31, 1718. The two reforms cumulatively reduced the ME of the livre from 28 to 60, diminishing some expenses but some revenues as well. The main advantage, in the short-term, was to force coin holders to submit to a seigniorage rate of 20% in 1715, 33% in 1718. The devaluation of December 1715 brought in 62.8mL in 1716 and 12.7mL in 1717, while that of May 1718 brought in 29.9mL over one year.[7]

The Regent's government, headed by the duke of Noailles, carried out partial defaults and reductions in October 1715 (on perpetual bonds), January 1716 (on wages of offices), April 1716 (on the floating debt), and in June 1717 (on the perpetual bonds). As a result it cut 7mL from the debt service and brought the debt down to 2bn. Moreover, the floating debt was shrunk from over 900mL to 200mL through a variety of more or less forcible means, and converted into bearer notes called *billets d'État* bearing 4% and with no definite redemption date or assigned backing. These notes traded at a 37% discount soon after their issue, in mid-1716 (Dutot 1935, 2:241). Although there was still some 240mL in unfunded arrears and floating debt, debt service was now at 92.5mL. A special levy on "profiteers" was assessed through a special court, mostly payable in government debt (see White 2001). The wartime levy on incomes was ended in August 1717 because of political pressures, resulting in a loss of 25mL in revenues (BN Fr 7766, fol. 250–55), but collection of indirect taxes improved by 5mL. Spending cuts, particularly in the military, brought the primary surplus to 93.5mL. By 1718, after the second devaluation, French finances were not too far from balance, although 40mL remained in unpaid arrears.

The Regent's cabinet was fairly successful at using the most traditional methods of French public finances, of which they were not proud: monetary manipulations, disguised or overt defaults, arbitrary fines levied through rigged courts. They put an end to the emergency, but left the State militarily diminished and unable to face an eventual conflict.

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[4] Riley and McCusker (1983, 281, Chart 1) give a population of 21.5m in 1700 and 130L per capita output in 1700, corresponding to a total 2800mL for output.

[5] £60m for national income (Brewer 1989, 41); £55m in 1688 for national income (Mitchell 1988, 821) citing Lindert and Williamson; I have computed GDP of £65m in 1700, £73m in 1725 using Crafts (1985) for growth rates and starting from nominal amounts in 1831 from Deane and Cole (1967, 166).

[6] Throughout this paper, the phrase "the king" will refer to the Crown or its government, rather than literally to the 10-year old whose face appeared on the coins of the realm.

[7] Bibliothèque nationale manuscripts (hereafter BN), Fr. 11159, fol. 287 and Joly de Fleury 566, fol. 199.

The European political situation, however, was still unsettled. The War of Spanish Succession had ended in 1714 without a peace treaty between the principal antagonists, Spain and Austria, leaving those powers unhappy with and uncommitted to the settlement which had been imposed on them. In 1717, Spain retook some of the Italian possessions it had lost or ceded. The Regent was allied with Britain and wanted to force Spain to accept a compromise, but this could require another war. It is no surprise, then, that the Regent's mind was open to someone who would propose a radically new and rational way to manage public finances based on credit.

2.6 Law's System: an overview

John Law's origins and early career as son of a Scottish goldsmith and man-about-town in London is recounted in Murphy (1997). He fled England after killing a man in duel in 1695 and spent the next twenty years moving around Europe, writing on economics and proposing to various sovereigns a plan to found a Bank, more or less influenced by the Bank of England (founded in 1694). He came to France in early 1715 and submitted his proposals to the government, emphasizing the help that it might receive from his proposed State bank. He ultimately convinced the Regent, but opposition in the cabinet forced him to settle for a smaller and purely private Bank. Law's beginnings were modest, but progressively the various companies he created merged into a gigantic conglomerate that took over most of the fiscal activities of the French state.

Law's experiment in public finance lasted from the creation of his General Bank in May 1716 to his escape from France in December 1720. Whether or not he was following a coherent plan inspired by his theoretical writings, or whether he was improvising as he went along, his scheme became known as a "System."[8] There are four stages in the history of the System. The first stage, from 1716 to 1718, established a privately owned bank that successfully issued bank notes. The second stage, from 1717 to 1719, saw the parallel formation of a trading company, whose shares were publicly traded, and whose purpose shifted from colonial development and overseas trading to management of public funds. In the third stage, from 1719 to 1720, the bank and the company merged, Law became finance minister, the company reimbursed the whole national debt, and its notes became the sole currency. The final stage, the year 1720, is the period of collapse, followed by a complex cleaning-up operation. My presentation will follow these four stages.

3 Law's System (1): the Bank

3.1 The General Bank, May 1716

The first step was the creation of the General Bank in May 1716. Law had initially proposed a 100%-reserve public bank that would handle the government's financial transactions, but

[8]The phrase "le nouveau Système des finances" appears in a defense of his policies, written or inspired by him, and published in newspapers in February 1720 (Law 1934, 3:98).

the plan was rejected in October 1715. The Regent, sympathetic to Law, allowed him to set up a purely private bank. The Bank's capital was raised by an IPO: 1200 shares were offered at 5,000L each, payable mostly in billets d'État at face value (which stood at a 60% market discount to their face value at the time) and the rest in cash; Law himself bought a quarter of the shares (Law 1934, 3:245).[9] Moreover, only 1/4 of the purchase price was required immediately, the rest payable at some future date. Thus, it took only 690L in cash to initially buy a share. The Bank's assets consisted initially of 375,000L in cash and 1.125mL in billets d'État, the interest on which was used by the Bank as working capital (which only amounted to 45,000L per year). It seems that the remainder of the subscription price was ultimately paid by shareholders.[10]

The Bank was structured similarly to a modern limited liability company. A general assembly was to be held twice a year with dividend distribution. Shareholders voted in proportion to their shareholdings, management was responsible to them, etc.

The Bank's main activities were to discount bills, sell foreign exchange, take deposits and manage current accounts (charging a fee of 0.025% on transfers between accounts and on cash payment orders), and issue notes payable in specific silver coins (écus) on demand to the bearer. It was not allowed to engage in trade or to borrow.

3.2 The Bank notes

Getting the notes to circulate, and not return constantly to the Bank for redemption, was critical to the Bank's profitability. The Regent and several influential and wealthy backers seemed to have played a role in this, by depositing large sums at the very early stages; so the first note issues were made against deposits, not discounting, and the depositors were willing to hold the notes they received and not redeem them.

More importantly, various measures were taken by the government to enhance the attractiveness of the notes. A decree of Oct. 7, 1716 ordered that the various tax collectors redeem the bank notes into cash on demand. The government was implicitly undertaking to accept these notes at face value from the tax collectors. This enrolled the vast network of hundreds of tax collectors and tax accountants throughout France into unpaid branches of the General Bank, and also made the notes close to legal tender for taxes. On April 10, 1717, a decree made the bank notes explicit legal tender in the payment of taxes by individuals. On Sept. 12, the government's tax accountants and cashiers were to keep accounts and make receipts and payments in notes.

The notes, denominated in écus, provided protection against a particular type of monetary manipulation, namely devaluation of the silver coinage. It worked as follows.

[9]The share of billets in the purchase price was not specified by the letters patent creating the bank. Murphy (1997, 158) states 75% billets and 25% cash; Dutot states all billets; an undated manuscript source (BN NAF 22245, fol. 293) indicates 1/16 only in cash.

[10]Murphy (1997, 158) says it was not, but the declaration of Dec. 4, 1718 which nationalized the Bank states (art. 2) that the 6mL in billets d'État had been invested in shares of the Company of the West, and the Bank's account of 1723 lists dividend payments on 12,000 such shares (Harsin 1928, 309). Hence the subscriptions must have been paid in full.

The bank issued notes in denominations of 10 écus, 100 écus and 1,000 écus. The écu was the standard silver coin, roughly the size of a thaler or Spanish dollar. In 1718, 8 écus were minted out of a marc of standard silver, and its face value was 5L. A 100 écus note was therefore a claim to 100/8 marcs of coined silver, and had a legal tender value of 500L. The bank notes had the following promise written on it: "the Bank promises to pay on sight to the bearer 100 écus of the weight and fineness of this day" (Lafaurie 1981, 68). In other words, the bank notes were claims to a determinate number of coins of a determinate type.

When new silver écus were issued in June 1718 of lighter weight (10 to a marc) and higher face value (6L), the old écus were given a new legal tender value of 6L until August 1 and 0 afterward. The new mint price was set at 40 per marc. Hence, after demonetization, the old écu would fetch 5L at the mint. The holder of 100 écus had 500L in coins before May 1718, but suddenly found himself owning a pile of silver which was temporarily worth 600L, but would soon have no legal tender value, and which would only purchase 500L in new legal tender at the mints.

A decree soon clarified that, since the old écus were circulating at 6L like the new ones, the existing 100 écus notes of the Bank would be taken at 600L by tax collectors and at the royal mints ("les billets de la Banque seront pris en paiement et acquittés [...] sur le pied de 6 livres l'écu").[11] The holder of a 100 écus note, then, saw his holdings in units of account increased from 500L to 600L, and his note was legal tender for taxes at 600L, or convertible at the mints or the tax collectors' offices into 600L of the new legal tender. He was thus clearly better off than the holder of coins. This essentially waived part of the seigniorage tax for all holders of notes, and was a subsidy, in the form of a tax credit.[12] It made the note an attractive way to hold money balances, given the recurrent monetary reforms.

3.3 The Bank's "nationalization" in December 1718

The result was that the Bank was able to issue a fairly large amount of notes, 40-50mL per year on average, while maintaining a reasonable specie reserve (about 50%); when the Bank was converted to a Royal Bank in December 1718, it had 39.5mL in circulation. The notes circulated at par and were trusted. The Bank's total dividend payments (3 half-yearly payments from 1716 to 1718) amounted to 615L, a respectable 15% rate of return on the cash price of the initial shares, although not as high as one would expect given the note circulation. If it held 50% of assets in specie and the rest in bills yielding 4 to 6% (the discount rate it charged), the income should have been about 1,000L per share annually.

[11] Arrêt du Conseil (hereafter AC) Jun. 1, 1718. The notes were taken at 600L in payment of taxes, and redeemed in silver at the same rate. No time limit was set in the decree. The notes issued after June 1718 were claims to 100 new écus, or 10 marcs of coined silver, and were also legal tender for 600L. But since the old notes and the new notes were claims to different quantities of metal, they were considered different.

[12] There was also a provision that allowed one to bring a marc of old écus and 16L in billets d'État, and receive 56L in new écus; this allowed individuals to pay most of the seigniorage tax in the form of billets d'État. In the event, the demonetization of the old écu was postponed to November 1, and in the meantime, on September 20 the mint's price for the old coins was raised to 6L, thus reducing the seigniorage tax to the same level as on note-holders, whose advantage was therefore short-lived.

The Bank's success was visible in other ways. It succeeded in lowering the commercial paper rate in Paris, because the Bank successfully discounted at rates from 4 to 6%. It provided valuable foreign exchange services to the government, and to private clients as well. By late 1718, the Regent was convinced that the Bank was a profitable enterprise, and accepted Law's suggestion, already made in May, to nationalize it. The Regent, on behalf of the king, bought out all the existing shareholders in cash at the face value of the shares (5,000L).[13] The operation was made public by a declaration of Dec. 4, 1718. The Bank would henceforth be managed by Law on behalf of the king, and all profits turned over to the Royal Treasury.

For a shareholder who was bought out in December 1718 by the King, the rate of return on his investment over 18 months was an annualized 64%, a very good deal indeed. This nationalization had two consequences: it gave the king a functioning printing press for the first time,[14] and it shows the gains to be made by investing early in a company launched by Law.

4 Law's System (2): The Company

Meanwhile, Law went to work setting up a trading company, the Company of the West (*Compagnie d'Occident*).

The Company's initial business was to develop Louisiana. This was a common arrangement by which European rulers had developed their colonies in the Americas and elsewhere: the rights to develop the colony were granted to a private entrepreneur or a company, who was given monopoly rights to ensure profitability. The ruler generally profited by receiving a payment from the entrepreneur, and eventually by increasing his tax base as the colony prospered. Also, since the early 17th century, it was thought that long-distance trade such as that with India and the Far-East could only be carried out by large companies with monopoly rights, on the model of the Dutch and English Indies Companies.

The colony of Louisiana consisted in the watershed of the Mississippi river, or 41% of the lower 48. It had been French for over forty years but no one had made much money from it, and by 1717 its population was about 500. The colony's previous proprietor returned it to the king in payment of taxes in 1716, but strongly suggested that its development be entrusted to a company with a financial structure similar to Law's Bank. Projects for a small-scale company were being drawn in early 1717 when Law took them over, made them far more ambitious and secured the government's approval in August 1717 (Giraud 1966, 3:3–27).

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[13] Law himself bought out the shareholders using "my own funds or my credit" (Law 1934, 3:246) and was later reimbursed by the Regent.

[14] The earlier instruments issued in France with the name of "billets," such as the *billets de monnoye* and *billets d'État*, were interest-bearing, registered bonds with no convertibility and no redemption date, rather than non-interest bearing bearer demand notes.

Louisiana was ceded to the Company as a fief in perpetuity;[15] moreover, the Company had a 25-year monopoly on trading with the colony,[16] as well as on the profitable beaver fur trade in Canada. The Company was allowed to raise a private army, to enter into treaties with the Native Americans, and to call on the government for military assistance against other European powers. At the expiration of the monopoly, it would retain ownership of the colony but it would have to sell any forts and military equipment to the king.

4.1 The IPO

As in the Bank's IPO shares were issued, this time wholly payable in billets d'État. The IPO began on September 14, 1717 and 29mL had been subscribed within two weeks, but of that amount 13.3mL were bought by Law himself (Murphy 1997, 171).[17] After that, subscriptions were very slow, and dragged into 1718. In June 1718 measures were taken up to speed up payment, notably by introducing a down-payment system (a subscriber paid 20% of the price to secure an option on a share, with the rest payable within five months, else he forfeited the down-payment). The subscription was closed on Dec 31, 1718, with 100mL sold; of that, 40% was owned by the King, using spare billets d'État that had been printed but not spent.

4.2 The Company's resources

For a holder of a billet d'État, subscribing to the IPO meant converting a 4% bond into a share in a Company whose main assets were the same bond and Louisiana. From the point of view of the government, the debt was still the same, and it had given away an existing asset that, to be sure, had proven so far about worthless. There seemed to be only upside potential for the subscriber, and it is a little hard to see why the government went along, unless the idea (explicitly negated in the terms of the Company's charter) was ultimately to substitute the returns on Louisiana for the interest on the bonds. This would be the idea behind the System, but it was not officially the initial idea behind the Company.

Consistent with the notion that the underlying debt remained intact and merely changed hands, the Company had an arrangement with the government to exchange the billets d'État it received during the subscription for perpetual annuity contracts between itself and the King, with interest accruing from January 1717. These annuities would provide a working capital of 4mL per year. The Company's first dividend was not payable until July 1718.

[15]The company was technically the vassal of the king for Louisiana, and its only obligation was homage to the king and a fee of 30 marcs of gold (7.3kg) at the beginning of each new reign.

[16]The monopoly was extended to 50 years in August 1719 and became perpetual in July 1720, but was rescinded in 1730 when the Company returned the colony to the king.

[17]This amounts to 26,600 shares. However, in 1724, Law stated that his initial stake amounted to 12,000 shares and was later increased to 20,000, or 10% of the IPO (Law 1934, 3:246); he may have been speculating, or else buying for other parties.

Thus the 4mL was available to the Company for about 18 months before a payment was due to the shareholders.

In practice, the subscription was slow, and the first annuity contract was not signed until February 1718. Furthermore, the tax on whose income the annuities were assigned was a sort of stamp tax (*contrôle des actes*), which was farmed out; but the farm's revenue of 2mL per year was already encumbered with other obligations. The only payment from that farm in 1717 was 250,000L, on direct order of the Regent. In 1718, The regent added the tobacco farm and the postal service farm as guarantees for the annuities due to the Company for 1mL each, and the tobacco farmers lent 1mL to pay for the interest of the year 1717 on behalf of the stamp tax farm. Nevertheless, the prospects for 1718 were uncertain. Should the subscription be filled, the Company would expect to receive in 1718 4mL for the previous year and 4mL for the current year, when the three farms together were yielding at most 6mL per year (Giraud 1966, 3:39, 44–48; BN Joly de Fleury 566, fol. 254-61). This financial uncertainty probably accounts for the slow take-up of the IPO.

The Company nevertheless immediately began its activities. As Giraud (1966) documents, it inherited some assets from the previous owner of the Louisiana concession, including one ship. Law hired competent and knowledgeable people as directors and they proceeded to purchase, lease and build new ships, so that by December 1718 it had a dozen ships at its disposal and had already made several voyages to Louisiana.

4.3 Mergers and acquisitions

From its creation, Law's Company grew by a series of mergers and acquisitions, and extended its activities from trade to tax collection:

- Aug. 1, 1718: the Company purchased the right to run the tobacco monopoly for 4.02mL per year.
- Dec. 4, 1718: it bought the Company of the Senegal for 1.6mL cash.
- May 1719: the Company bought the Company of the Indies and the Company of China for its net worth (to be assessed; it turned out to be 1.5mL, Haudrère 1989, 102).
- Jul 1719: it received the Company of Africa's privilege on trade with North Africa. The price was 68,000L plus the value of assets (which turned out to be 150,000L, Haudrère 129).
- Jul. 25, 1719: it purchased the right to run the royal mints. The company paid a lump sum of 50mL to run the mints for nine years. (The sum was never paid in cash, instead the Company retired an equivalent amount of government bonds.)
- Aug. 27, 1719: it bought the right to run the *Fermes Générales* (General Farms), which collected most of the excise taxes in France and about 30% of government revenues.

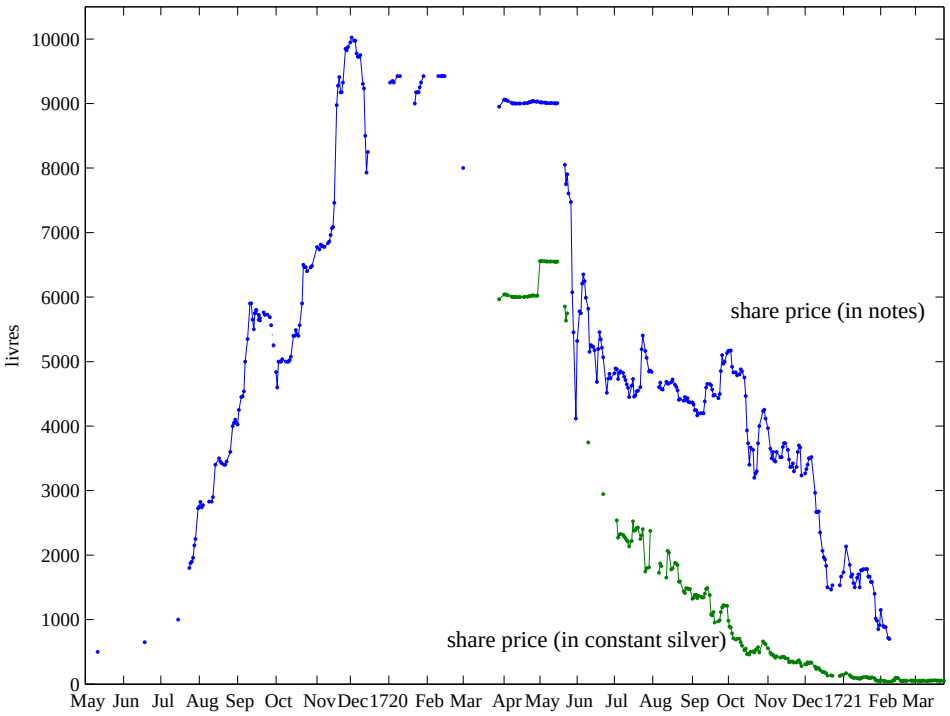

Figure 4: Prices of shares in the *Compagnie des Indes*. From June 1720 to Feb. 1721, the series is also shown converted into silver coin at 60L/marc. Source: see Appendix.

The lease was to run for 9 years, and be worth 52mL per year (instead of 48.5mL previously). The same day, its charter and privileges were extended for 50 years.[18]

- late Aug 1719: it bought out the officers in charge of collecting all direct taxes (recettes générales, about 55% of revenues).
- Feb 1720: it took over the Royal Bank.
- Sept. 1720: it bought out the Company of Santo Domingo and received the monopoly on the slave trade in Guinea.

The difficulties that the Company encountered in getting the King to pay interest on his debt explain the first takeover, that of the tobacco farm. Already in early 1718, the farmers

[18]The General Farms were at the time under a lease begun in 1718. The King unilaterally broke the existing lease and transferred it to Law's Company. The previous holder was a syndicate led by the Paris brothers, which was authorized in September 1718 to finance itself through a share issue: the shares were sold in exchange for 100mL in 4% government bonds at face value. A 10% down-payment was required, with the remainder due by September 1719 (Dutot 2000, 80). It appears (Archives Nationales, hereafter AN, G/7/1176, letter of Paris to the Regent, Aug. 17, 1719) that the issue was nearly complete; its shares were traded on the market (prices for July and November 1719 in BN NAF 22245, 294–96), and the Musée Carnavalet in Paris has a copy of one dividend coupon (collection Fabre de Larche, GB 22). This company came to be known as the "Anti-System," although it was probably formed at Law's instigation (Lüthy 1959, 1:313–15, Faure 1977, 151–53). After the lease was broken, the shares became part of the public debt.

had lent the king funds to pay the overdue interest for the previous year. Law proposed to take over the tobacco lease for 4.02mL, so as to almost exactly cancel the 4mL annual interest payment owed by the king. Law believed that he could run the monopoly better, expecting to generate 6 to 8mL per year. And, by running the farm himself, he was sure of being paid his interest. The same logic would be applied to the successive purchases of tax farms.

4.4 Financing the expansion

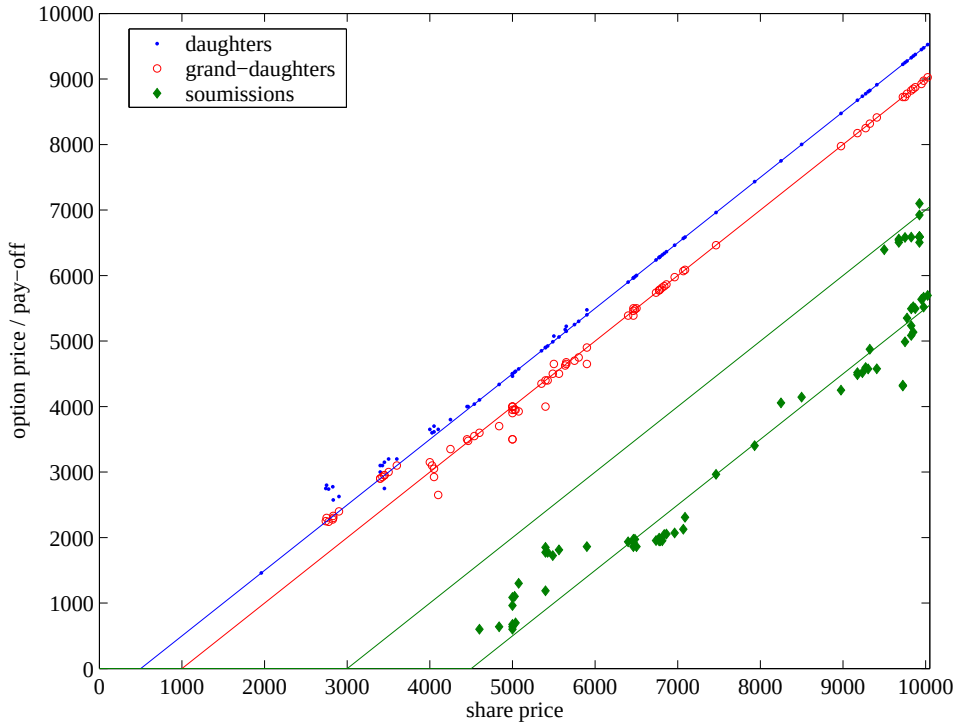

Figure 5: Prices of the daughters, granddaughters, and soumissions (construed as options) plotted against the price of the underlying share. The straight lines show the pay-off of each option. Source: Appendix.

The Company purchased the tobacco farm with its billets d'État, but the later acquisitions were financed by successive issues of shares. Every time, the shares were payable in monthly installments. The successive offered prices were increasingly high, although each new share had equal standing with the older shares, and was in particular entitled to the same dividend.

Here is the list of successive share issues of the Company from its inception to the end of 1719:

1. June 1717-Dec 1718 (IPO): 200,000 shares at 500L each, payable in government bonds (billets d'État) at face value

2. June 1719: 50,000 at 550L each in cash, 50L down and the rest payable in 20 monthly installments

3. July 1719: 50,000 at 1,000L each in cash, payable in 20 monthly installments

4. Sep–Oct 1719: 300,000 at 5,000L each in cash, payable in 10 monthly installments (the last 9 changed to 3 quarterly payments)

The second and third issues took the form of a rights offering: a subscriber to the June issue had to own four original shares (which came to be known as the "mothers", as opposed to the July shares known as "daughters"), and a subscriber to the July issue had to own four mothers and one daughter to purchase one "granddaughter." This requirement helped turn the secondary market in the older shares into a frenzy. Law also demonstrated the profits to be made in a bull market by introducing Parisians to options, buying call options on shares of the Company in March–April 1719, and cashing in after the merger with the Indies Company had helped boost the price of his Company.

After making a down-payment, a subscriber received a certificate that entitled him to a share upon full payment of all the installments. By missing an installment he forfeited his share, and all previous payments made. This feature, noted by Cochrane (2001), made the certificates into options on shares rather than shares, with a strike price paid over time. It also characterized the fourth issue, generally called "soumissions." Figure 5 shows the prices of the second, third and fourth issues, plotted against the price of the underlying share, that is, of the first issue. The pay-off from the options is also plotted: since they had different strike prices, the 45-degree lines do not coincide.[19] As the Figure shows, the price of the options tended to coincide with the pay-off as the share price rose, particularly for the first two issues. The pattern is less clear for the last and largest issue, perhaps due to changing beliefs about the future behavior of the share price. The option feature of the certificates proved crucial in late 1719, as I will indicate.

The billets d'État received with the first issue (100mL at face value, bearing 4%) were supposed to provide 4mL per year in cash-flow. But they were used to buy the tobacco monopoly in August 1718. The other source of financing for the Company's acquisitions was note issues by the Bank, which was managed by the same people (and eventually merged into the Company in February 1720). In December 1718, the General Bank's note issue had stood at 40mL; by July 1719, the Royal Bank's issue stood at 400mL, and reached 1bnL in January 1720. It appears that the Bank simply lent notes to the Company in exchange for IOUs (*récépissés*) signed by the treasurer of the Company (see Harsin 1928, 310).

Figure 4 shows the price of shares in the Company for the period in which daily quotations are available. Prior to August 1719, we have only random indications of the price of shares: 250L in May 1718, 240 in early June, 290L in late July and early August, 240L in early October, 238L on Nov. 10, 180L on Dec. 12, 237.5L on Feb. 6, 1719, 500L on May 10,

[19]The successive strike prices are 500L for the second issue or daughters, 1000L for the third issue or granddaughters, 4500L for the soumissions before the first payment was due in January 1720, and 3000L after January. Interpreting the prices recorded in the contemporary sources is difficult; see the Appendix for the details.

650 on June 17, 1000L by mid-July ((Lüthy 1:310, 312, 358; Dutot 2000, 90; Piossens 1749, 3:150, 4:70; Murphy 1997, 190). It thus appears that the successive share issues were offered at close to market prices.

5 Law's System (3): the apex

Law's System reached its apex, and the price of the Company's share peaked, at the beginning of 1720. Two main elements crowned the system. The first was a virtual takeover of the French government, by which the Company substituted its liabilities (shares) for the whole national debt. The second was the substitution of the Company's other liabilities (notes) for the metallic currency. At the end of the operation, the Company, owned by the former creditors of the State, collected all taxes, owned or managed most overseas colonies, monopolized all overseas trade, and freely issued fiat money which was sole legal tender. Its CEO also became minister of finance on January 5, 1720.

5.1 Conversion of the national debt

The conversion of government debt into liabilities of the Company, which was decided jointly with the takeover of the Fermes Générales, began on Aug. 27, 1719.

Formally, the conversion took place as follows. The Company offered the government a perpetual loan of 1200mL (raised on Sept. 17 and Oct. 10 to 1600mL) at 3%.[20] Between the government and the Company, the loan took the form of a perpetual annuity at 3% owed by the king to the Company, assigned on the revenues of the General Farms. The annual 36mL payment (raised to 48mL) would in practice be deducted from the annual lease payment of 52mL that the Company owed for collecting the taxes of the General Farms.

The government was to use the 1600mL to buy out the funded government debt (that is, the existing stock of perpetual annuities) and miscellaneous other debts, listed in Table 3.[21] This buy-out was compulsory, but perfectly legal. Perpetual annuities and offices, by their legal nature, included a call option: the creditor could never demand repayment of the capital, but the debtor could reimburse at any time.[22] Bondholders would receive drafts from the Royal Treasury on the Company in the amount of their holdings, payable by the Company's treasurer in specie or bank notes at the bondholder's option.

[20] Of this sum, 100mL corresponded to the Company's original asset, the billets d'État, on which it agreed to reduce the interest from 4% to 3% (AC of Sept. 17). This 3mL annuity remained as the Company's main asset after the collapse of the System, and it used it in 1723 to buy the tobacco monopoly in perpetuity.

[21] The debts listed in the AC of Aug. 27 include: all perpetual annuities; the shares in the General Farms company, which were originally issued in exchange for perpetual annuities; the *billets de la caisse commune*, short-term notes bearing 4% issued by the Receveurs généraux, the billets d'État, and all offices and "charges" which had been abolished since 1711 or would be abolished, and whose reimbursement was not yet funded.

[22] The king's debt to the Company created by the operation, as well as the bonds to be issued by the Company to raise funds, could not be called for at least 25 years.

	capital	interest
reimbursements ordered Aug 31 1719:		
rentes on the Hôtel de Ville	961,731,525	38,469,261
offices (*charges*) eliminated*	254,377,341	16,958,490
notes of the *caisse commune*	33,730,409	1,349,216
billets de l'Etat	250,000,000	10,000,000
actions of the Fermes générales†	[100,000,000]	—
total	1,499,839,275	66,776,967
other reimbursements ordered to Jul 1720:		
other rentes	2,933,258	117,330
augmentations de gages	200,000,000	11,939,366
unpaid arrears (interest-bearing)	36,427,796	1,633,000
unpaid arrears (non interest-bearing)	237,919,732	9,516,790**
total	1,977,120,061	89,983,453

Table 3: Reimbursement of debts from 1715 to 1720. Source: *Etat général des dettes* (1720). Notes: * only 160mL were liquidated by Sep. 1, 1720. †: these amounts are probably already included in the total of rentes. **: assuming a 4% rate of interest.

Of course, the company did not have on hand such a vast amount of cash, greater than the money stock. To raise the funds, it was initially authorized to borrow the same amount (1200mL) from the public by selling 3% bonds. But at some point the Company changed its financing strategy and turned to equity. On August 26, before the repayment of the debt was announced, the Company's share stood at 3600L. By September 9, it had risen to 5350L. Two days later, the Company asked the government permission to raise 500mL by selling shares at 5000L in cash. The success of the share issue led to other share issues at the same price (September 26, October 2) totalling another 1000mL. Moreover, shares ceased to be sold for cash; instead, only drafts issued by the Treasury to bondholders and other government bearer debt were accepted. In the end, the Company never issued the 3% bonds.[23]

[23]There is some debate over what was offered to the public initially, a debate that matters for the interpretation of Law's intentions. The text of the AC of Aug. 27 authorized the company to sell either *actions rentières* to the bearer or perpetual annuity contracts at 3%. The AC of Aug. 31, announcing the reimbursement of the public debt, speaks of *actions* and *actions rentières* equivalently. Faure (1977) has read both *actions* and *actions rentières* to mean annuity-like bearer securities, or bonds, emphasizing the *rentière* aspect, and argued that the share issues of September and October were not part of the original plan. For him, the Aug. 27–31 decrees represent a conversion of government bonds into Company bonds at a lower interest (a "wise" plan), while the September share issues represent a radical shift to a "mad" plan. Murphy (1997, 200) emphasizes the *action* aspect and reads both terms to mean shares; hence, for Murphy, there is no change in policy, just imprecise wording. However, article 12 of the AC of Aug. 31 prohibits the Company from amortizing the *actions rentières* for 25 years, a clause that is understandable for bonds, but makes little sense for shares. Moreover, the Company later issued *actions rentières* (on Feb. 23, 1720), which were bearer bonds paying a fixed interest but carrying no voting rights (see the Appendix for details). There is no reason to think that the same term could mean shares in August 1719 and bonds in February 1720. The ambiguity stems from the use of the term *action* for a bond; the choice of words may be due to the fact that bearer bonds were unknown at the time, and needed to be distinguished from ordinary annuity contracts. In the end, I side with Faure in distinguishing two plans, one based on bonds and never carried out, the other on shares.

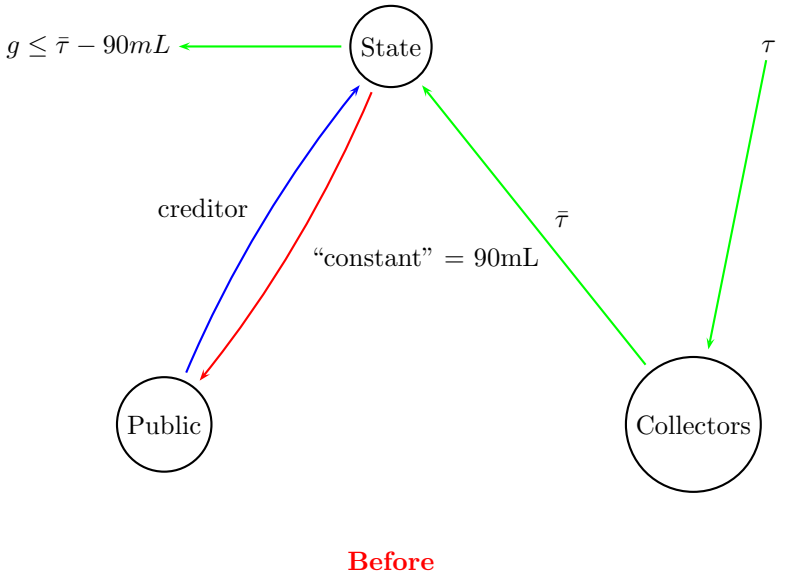

Figure 6: French public finances before and after the System.

In other words, since government bonds were accepted in payment of the shares, the operation was simply a gigantic swap of government bonds, bearing on average 4.5%, for Company equity. The company's profits came from the 3% interest it was owed by the government, plus any profits on its commercial and tax-farming activities.

The end result of the process was that the company collected about 90% of taxes in France, passed on a fixed nominal amount to the government, and distributed the rest as dividends to its shareholders. Figure 6 illustrates the System. Prior to the System, taxes τ were collected by various tax collectors and a fixed sum $\bar{\tau}$was passed on to the State. The State was in turn creditor for an annual payment of roughly 90mL, which I label as "constant" between quotation marks because of the government's unreliability; what is left is spent on government purchases g. In the System, the Company has consolidated all tax collection, and has also inserted itself between the State and its creditors. The Company now owes a variable amount no less than 48mL to its shareholders, and the State has more to spend on g.

5.2 Money: paper competes with metal

Over the same period of time, the Royal Bank continued to be managed by Law on behalf of the Treasury. Little is known about its management during this period, until it was outright merged with the Company in February 1720. It is likely that the Bank ceased to be a classic private bank and just became a tool in the hands of Law. Under what conditions did it issue notes is not clear: I suspect that it was freely lending to the Company.[24]

The notes issued by the Royal Bank became increasingly prominent, and quickly changed from being the liabilities of a private bank, claims denominated in fixed amounts of silver, to the status of sole legal tender, disconnected from any standard. This process was entirely consistent with Law's stated belief that metallic money was inferior and wasteful, and would better be replaced by paper money or by a highly liquid, interest-bearing security.

A first step was taken on Jan 5, 1719, when new types of notes were issued, which were not denominated in specific coins, but rather in units of account, in sizes of 10L, 100L and 1,000L.[25] The smallest notes of the General Bank had been 60L; the new 10L notes were in direct competition with silver coinage. The note stated: "The Bank promises to pay on demand to the bearer 100 livres tournois in silver coins" without saying how many coins. (See Figure 7). Then, in April 1719, a decree explained that the new issue of écu-denominated notes had not been met by any demand, and that older écu-denominated notes were increasingly turned in to be converted into the new livre-denominated notes. It was therefore decided to abandon écu-based notes altogether and order the conversion of the remaining ones into livres-based notes. The Bank's liabilities were therefore only denominated in units of account, although still payable on demand in silver.

[24]The bank's account drawn up in 1723 has an item of 1,857,588,347L "paid to the cashier of the Indies Company"! (Harsin 1928, 310).

[25]Notes of 10,000L were authorized on Sept. 13, 1719.

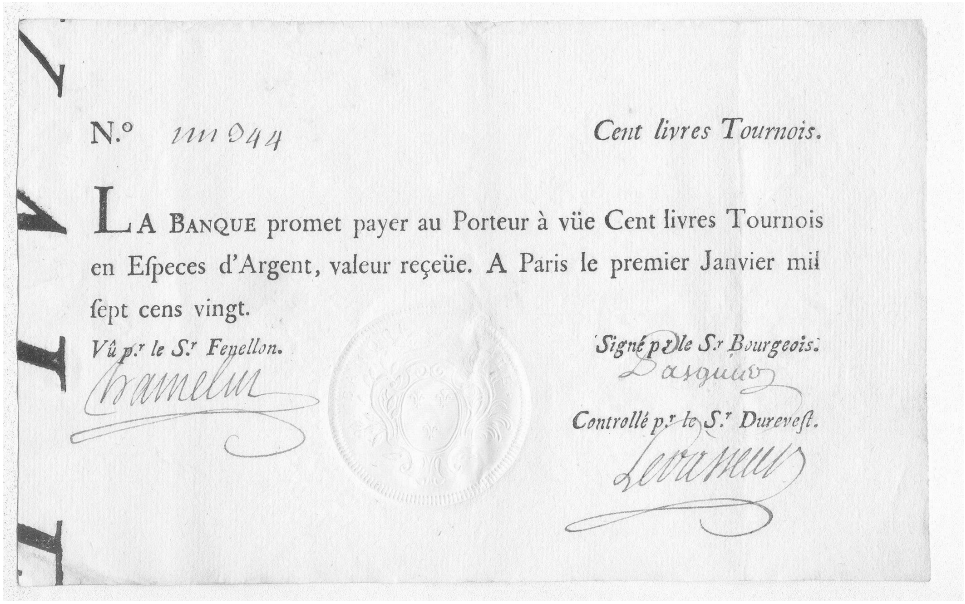

Figure 7: A 100L note of the Royal Bank issued Jan 1, 1720.

As we have seen, monetary reforms in which the face value of coins was increased benefited debtors who had coins. The holder of a note denominated in coins (as were the notes before 1719) benefited to the same extent. With notes denominated in units of account, the benefit disappeared. But in the case of a monetary reform *decreasing* the value of coins, the holder of a note was protected against the loss in legal tender value. This was made clear by a decree of April 22, 1719 which stated that livres-denominated coins were not subject to changes in value in the case of a lowering of the value of coins. As if by coincidence, two weeks later a decrease in the value of gold coins was announced, from 36L to 35L; it was followed by further decreases from July to December, down to 32L. The silver coin was also decreased from 6L to 5.8L, then 5.6L, over the same period. At the same time, the king's tax collectors were advised that, in case of currency alteration, they would be held responsible for the capital loss on their specie holdings to the Treasury (a departure from usual practice).

The legal tender status of notes changed as well.

- On Dec. 27 , 1718, transactions larger than 600L were to be made only in gold, or in bank notes in cities which had branch offices of the Bank.[26] The legal tender of silver coins was thus limited to 600L. Notes tendered in payment could not be refused, except if the local branch was not making payments in specie.

- From Jul. 25, 1719, creditors in towns with branch offices[27] could refuse gold and silver payments, and demand payment in notes instead. Gold and silver were thus losing

[26]Those were Paris, Lyon, La Rochelle, Tours, Orléans, Amiens.

[27]At the same time, branch offices were established in all cities in which a mint was located, about twenty.

their legal tender status.

- From Dec. 1, 1719, the Company itself would deal exclusively in notes, could demand payment in notes (in particular for all the taxes it was collecting) , and would only pay out notes. Its payments to the king would also be made in notes.
- On Dec. 21, 1719 it was announced that no payments could be made in silver for more than 10L and in gold for more than 300L, effective immediately in Paris, from March 1 in cities with branch offices of the Bank, from April 1 everywhere else. All payments to the government made in cash were subject to a 5% surcharge. Bills of foreign exchange were made payable in notes.
- On Jan. 22, 1720 the seigniorage tax was set to 0%.
- On Jan. 28, 1720 notes were given legal tender throughout France, and it was announced that the seigniorage rate would go up to 10% (this increase was repeatedly postponed and then cancelled on Feb. 25).
- On Feb. 27, 1720 it was made illegal for anyone to own more than 500L in gold or silver coins, and no payment above 100L could be made other than in notes.
- On Apr. 1, 1720 all gold and silver clauses in contracts were voided.

The growth of the outstanding paper money stock is shown in Table 4. Contemporary estimates of the gold and silver specie stock in the late 17th-early 18th century are around 1200mL.[28] Interestingly, the decree of Dec. 1, 1719 argues that the authorized issues of 640mL would be sufficient for "circulation and all operations of commerce." Within three months, the amount was tripled.

5.3 Money: paper replaces metal

The complete elimination of gold and silver was announced on March 11. After May 1, it would be illegal for anyone but the heavily regulated goldsmiths to own gold in coin or bullion. Silver coin and bullion was also made illegal, from Jan. 1 1721, except in the form of the lower denominations of 1.5L and below. At the same time, a planned for revaluating the livre in terms of silver was announced, whereby the 1L coin was progressively lowered in value to 0.5L by January 1. All silver was to be carried to the mint, where it would be purchased with a 20% seigniorage rate. All gold was also to be sold to the mint, at a rapidly decreasing price, in exchange for notes.[29] The Company would be the only one using gold

[28] Dutot (2000, 5) estimates 600mL at 30.6L per marc in 1699, and 900–1000mL at 49.8 per marc in the 1730s; Forbonnais (1758, 4:98) estimates 500mL in 1683 at 26.75L per marc; Law (1934, 3:201) estimates 600mL at 28L per marc in September 1715. Converted in silver marcs, these estimates are in the 19–21m marcs range, which would give 1200mL at 60L per marc (the standard from May 1718 to March 1720). The AC of Feb. 27, 1720 states that there was currently about 1200mL in specie in France, based on minting records.

[29] Although official texts are not clear, it is likely that the mints, run by the Company, only paid out notes only since Dec. 1, 1719.

	notes issued less notes burned						value of estimated circulation		
	10,000L	1000L	100L	50L	10L	total	nominal	silver livres	
								(current)	(60L/mc)
						(1)	(2)	(3)	(4)
30 Apr 1719	0.0	28.0	10.0	0.0	0.0	38.0			38.0
31 May 1719	0.0	96.0	13.0	0.0	0.9	109.9			109.9
31 Jul 1719	0.0	144.0	15.0	0.0	0.9	159.9			159.9
31 Aug 1719	0.0	334.4	45.0	0.0	1.2	380.6			380.6
30 Sep 1719	120.0	334.4	45.0	0.0	1.2	500.6			517.9
30 Nov 1719	240.0	334.4	45.0	0.0	1.2	620.6			642.0
31 Dec 1719	332.9	370.0	54.6	0.0	11.6	769.0			769.0
30 Jan 1720	358.6	379.9	57.2	0.0	14.4	810.1			810.1
29 Feb 1720	466.8	507.5	77.3	0.0	18.2	1069.7			1069.7
5 Mar 1720	458.6	530.9	82.2	0.0	18.2	1089.9			1089.9
31 Mar 1720	—	—	—	—	—	1261.5			841.0
30 Apr 1720	—	—	—	—	—	2054.0			1369.3
22 May 1720	—	—	—	—	—	2116.5			1539.3
31 May 1720	804.8	1158.5	239.4	0.0	32.5	2235.1			1625.5
30 Jun 1720	—	—	—	—	—	2359.0	2289.0	1636.6	1190.3
31 Jul 1720	—	—	—	—	—	2081.7	1873.4	1030.3	515.2
31 Aug 1720	538.9	1065.3	341.5	0.0	61.2	2006.8	1526.8	912.4	456.2
30 Sep 1720	529.4	1001.9	341.4	52.9	76.1	2001.7	1250.0	372.3	248.2
10 Oct 1720	533.0	1009.0	342.2	73.6	80.7	2038.4	1218.4	242.3	161.5
31 Oct 1720	524.1	987.8	342.0	131.6	83.6	2069.0	1128.2	236.0	157.4
27 Nov 1720	521.6	979.7	341.1	134.9	91.7	2069.1	973.0	120.4	80.3
8 Jan 1721	521.6	979.7	341.1	134.9	91.7	2069.1	673.8	58.2	46.6

Table 4: Outstanding stock of notes, by denomination, and estimated circulation (in mL). Column (1) sums the previous columns and consists of notes issued less notes burned. Column (2) adjusts for the fact that some notes had been retired but not burned. Column (3) converts into current silver livres at the market value of notes, while column (4) converts column (3) into constant silver livres of 1719, at 60L per marc of silver. Sources: see Appendix.

and silver for foreign trade: import of gold and silver was made illegal. Silver would remain as mere subsidiary coinage, which would not even be convertible into notes (decree of April 6), although notes remained convertible into silver, albeit subject, presumably, to the 500L restriction.

The creation of a final silver coin was not without analogies with the earlier monetary reforms. The Company had a particular interest in the high seigniorage rate, since it was also running the mints, since July 25, 1719. In the original contract, the Company promised to pay 50mL (from October 1719 to December 1720) in exchange for the profits of running the mints for nine years. The king pledged to not raise coins or reduce their fineness at any time during those nine years; and, should he lower the coins, he promised to lower the mint price at the same time (leaving intact the seigniorage rate, which had stood at 20% for silver and gold since October 1718). Both promises were to be broken repeatedly, two days later in fact concerning gold (Dutot 107), but most strikingly in January 1720 when seigniorage was set to 0. The March 1720 reform was a compensation for this lost income.

Date	MP	ME	Date	MP	ME			
1 Sep 1715	28	28	6 Mar 1720	80	80	1 Dec 1720	63	75
23 Dec 1715	32	40	1 Apr 1720	70	90	23 Aug 1723	68	69
1 Feb 1716	32	40	1 May 1720	65	82.5	4 Feb 1724	60.5	63
1 Jan 1717	31.5	40	29 May 1720	82.5	82.5	27 Mar 1724	49	50
3 Mar 1718	36	40	1 Jul 1720	75	75	22 Sep 1724	39.2	40
31 May 1718	40	60	16 Jul 1720	67.5	67.5	30 Sep 1724	40.7	41.5
1 Oct 1718	48	60	31 Jul 1720	120	120	1 Jan 1726	35.6	36.3
28 Sep 1719	46.4	58	1 Sep 1720	105	105	1 Feb 1726	34	41.5
8 Dec 1719	56	60	16 Sep 1720	90	90	26 May 1726	44	49.8
23 Jan 1720	60	60	1 Oct 1720	78	90	15 Jun 1726	46.9	49.8

Table 5: Mint prices and mint equivalents of the silver coinage, in livres per marc of silver 11/12 fine. Sources: original decrees at `http://www.ordonnances.org/`.

5.4 Money and Prices

There are two ways to measure the depreciation of the paper currency, denominated in units of account. One is against its direct monetary competitor, namely silver coin. The other is through a broad price index. For the latter, we have Hamilton's price index, based on commodities purchased by hospitals in Paris, shown in Figure 9. For the former, we have foreign exchange data until September 1720, which can be converted into a price of paper livres for silver (ignoring many things like transaction costs). From June 1720 we have direct observations on the price of bank notes (by denomination) in Paris against coin, although one must keep in mind that "coin" means "current silver livres" whose silver content changed several times over the period. The result is shown in Figure 8.

Several features are worth noting in Figure 8. First is the coherence of the foreign-exchange based series (until September 1720) and the bank-note based series (from June 1720). In the period for which the two overlap, they track each other closely.[30] A second point is that, until October 1719, the foreign exchange series remains close to the mint price, that is, the silver import point.[31] By late January 1720, the foreign exchange series rises above the mint equivalent. But, as noted above, from January 1720 on, bills of exchange in London on Paris were actually claims to bank notes rather than silver coins, since they were payable in notes. The discrepancy thus measures indirectly the degree to which bank notes are depreciating with respect to silver. In this light, the devaluations of March 1720 (25%), April 1720 (11%), and July 1720 (44%) appear as attempts to bring the silver livre

[30]The foreign-exchange series is originally in the form of English pence sterling per "écu de change," a fictitious unit corresponding to three livres (units of account). It is normalized so as to represent French livres per fixed quantity of silver, based on the official silver content of the English penny (62d per troy ounce of silver 92.5% fine). The bank-note series is originally in the form of livres of specie per 100L note. To plot the bank-note series on the same scale as the foreign-exchange series, the livres of specie are converted to their silver content as defined at each point in time by the laws.

[31]If it were much lower, it would mean that French livres were overvalued in London, and that it would be profitable to sell bills of exchange at the prevailing price in London and ship silver to Paris and have it minted and redeem the bill in Paris.

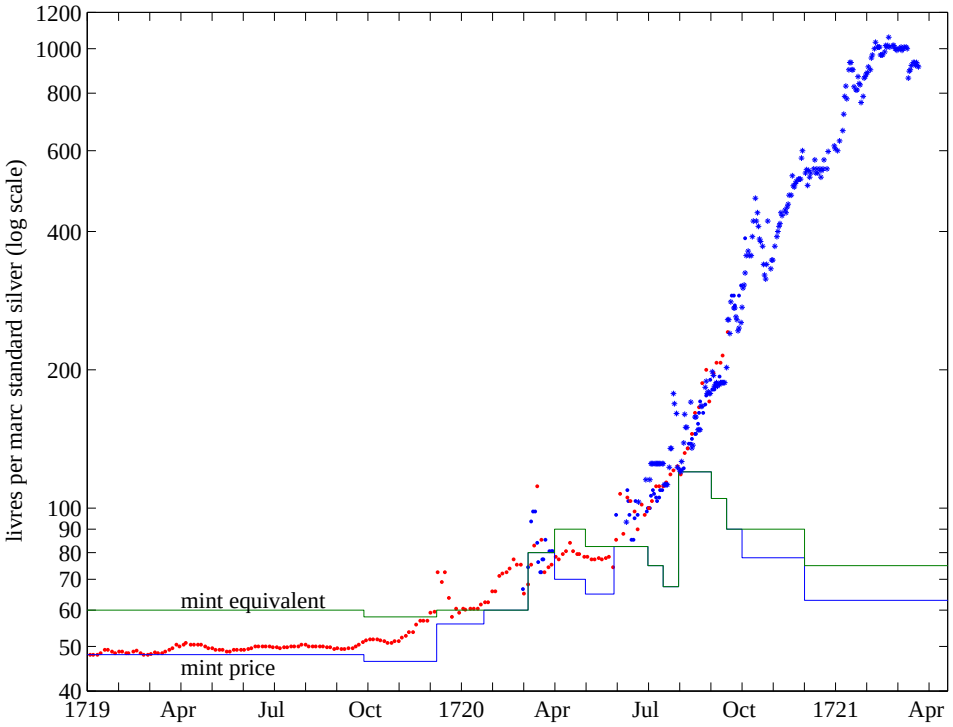

Figure 8: Indices of the bank-note price of a marc of standard silver. The dots are (transformations of) the price of French livres in foreign exchange markets, January 1719 to September 1720; the stars are based on the specie price of bank-notes, June 1720 to March 1721. The mint equivalents and mint prices for the French silver coinage are also shown. Source: *Course of the exchange* (ESFDB database), Appendix

back into line with the paper livre.

Hamilton's commodity price index presents a quite different picture when it is plotted against the parameters of the silver coinage (Figure 9). The price index measures movements in prices denominated in units of account per goods, and the mint equivalent and mint price lines are in units of account per silver. The price level and the silver content of the livre track each other quite well from 1711, when Hamilton's series begin, to 1718 (all indices are normalized to coincide in the year 1725, at the end of the graph), suggesting a constant silver price of goods. The devaluation of 1718 does not have much of an immediate impact on goods prices, however; but by late 1719 goods prices seem to have caught up with silver. Indeed, the remarkable rise of the price level in January 1720 (+25% in one month) is what brings about the catch-up. Hamilton's index continues to rise through 1720, but much more slowly, only 19% from January 1720 to the peak in August 1720. At the same time, the quantity of money in circulation multiplied by a factor of 2.6 (Table 4). This increase in paper money, which consisted overwhelmingly of large denominations, does not seem to show in overall prices, although Faure (1977) presents considerable but anecdotal evidence from throughout France of price increases, particularly in commodities markets, in the spring of 1720 (note that Hamilton's data is drawn from hospital records). After the System, we can

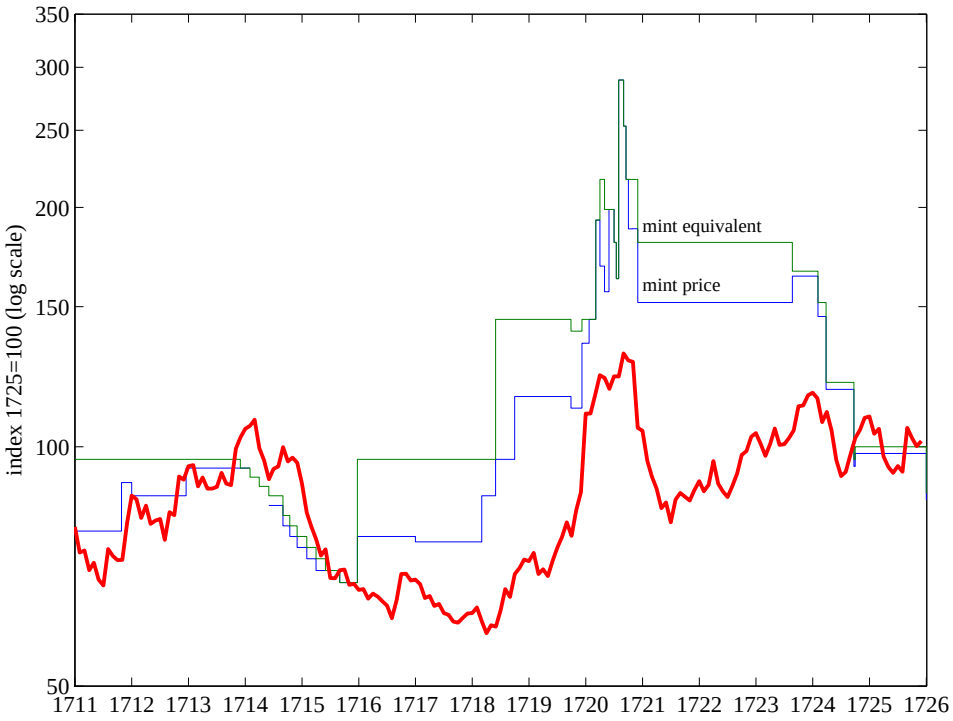

Figure 9: Commodity price index in Paris, monthly 1711–1726 (Hamilton 1936). The mint price and mint equivalent are also shown for reference.

infer that the silver price of goods (the ratio of Hamilton's index to the mint price) remains relatively low until the revaluations of 1724.

The two measures of the value of money (paper money against silver, and money against a commodity index) present different patterns. Figure 9 is not reminiscent of fiat money inflations of later periods, but Figure 8 is, and we do know that Law monitored the latter quite closely (Dutot 2000 uses foreign exchange throughout his book as an indicator of the state of affairs). It was no doubt a growing source of concern to him in the spring of 1720.

6 Law's System (4): Collapse and Clean-up

6.1 Seeds of disaster (to May 1720)

It was a crucial aspect of Law's scheme that the share price remain high. The fact that bonds were converted into highly priced shares is what made the conversion profitable: as long as the PE ratio was higher than the comparable ratio on government bonds (22 according to Table 3), the result was a lowering of the government's debt service. However, the call-option feature of the subscriptions meant that bondholders could back out if the price of shares fell too low for their liking and lead to the scheme's unravelling.

There is later evidence that the former bondholders were not all in a hurry to convert their bonds into shares (Lüthy 1:320): on January 12 they were given a deadline of April 1

Semester	Dividend	Date Announced	Shares: number	price	PD ratio	Date Paid
1718:I	10					Jul 1718
1718:II	10		200,000			Jan 1719
1719:I	10	27 Mar 1719(?)	200,000	250(?)	25(?)	Jun 1719
1719:II	10		200,000			Jan 1720
1720:I	60	26 Jul 1719	250,000	1960	33	—
1720:I+II	200	29 Dec 1719	600,000	9413	47	Jul 1720-Mar 1721
1721:I+II	360	20 Jun 1720	200,000	5216	14	—
1721:I+II	0	24 Mar 1723	56,000	1200		
1722:I	100	24 Mar 1723	56,000	1200	12	Apr 1723
1722:II	100	24 Mar 1723	56,000	1200		Jul 1723
1723:I	150	24 Mar 1723	56,000	1200		Jan 1724

Table 6: Semi-annual dividends announced and/or paid by the Compagnie des Indes, and number of shares at the time of announcement. Source: Appendix.

to receive their reimbursement, and on February 6 a new deadline of July 1 after which the interest on their bonds would be reduced to 2%. Since it appeared that some bondholders preferred to keep a fixed income, the Company was authorized to issue up to 500mL in 2% bonds (called, confusingly, *actions rentières* or "annuity shares") in denominations of 1000L and 10,000L, and bondholders were given the option to exchange their government bonds for either shares or company bonds.

Law used a variety of means to shore up the price of shares. By the fall of 1719, the Company was giving out low-interest loans against shares as collateral. It was also intervening directly in the market and buying up shares. As early as October 5, 1719 the Company had ordered its treasurer to buy any share offered at a price of 5000L (Dutot 2000, 129). This was the spot price at the time; it was also the subscription price for the current, debt conversion share issue; the Company's policy effectively guaranteed any bondholder repayment of his bonds at par in notes, a first hint of the debt monetization that was to come. Then, in late December 1719, an office was formally opened at which shares and subscriptions could be bought and sold for prices determined each day by the Company. The office functioned with some interruptions until mid-February (Faure 1977, 340), during which time the Company bought 800mL worth of shares, or about 16% of its capitalization, with a corresponding addition to the money supply.[32]

Law now needed to deal with shares and notes in order to manage the growing money supply. Between late February and early March 1720, his policies were marked by inconsistencies and sudden reversals.

At first, Law tried to curb the growth in the money supply. On February 22, after a general assembly of shareholders, the Bank was formally merged with the Company, limits were placed on further issue of bank notes, and the Company was prohibited from lending to the King; in return, however, the Company bought back from the King his 100,000 shares at 9000L each, payable 1/3 during 1720 and the rest over the course of 10 years. Also, the price

[32]Hautchamp (1743, 1:109). The stock consisted at the time of 300,000 original shares, which the Company was buying at 9925L, and up to 300,000 subscriptions, valued at 6600L: a total capitalization of 4.96bnL.

support policy was officially halted. The effect on prices was immediate: from the support price of 9925L the market price of shares fell to 8500L by March 1, while the subscriptions fell from 6600L to 5450L (Dutot 2000, 225).

Law quickly reversed course on the price of shares and, on March 5, opened another office for the buying and selling of shares at a fixed price of 9,000L. At the same time, the outstanding subscriptions lost their option and were all converted into shares at a 2:3 ratio, while reimbursements of the public debt continued to be made, but in bank notes. From March to late May 1720, the company spent another 1213.5mL (Hautchamp 1743, 1:121) to buy 27% of its stock, resulting in the increase in outstanding notes shown in Table 4.

The exchange rate between coin and note was also subject to reversals. On March 5, Law effectively devalued the metallic livre by 1/3, changing the face value of the recently issued silver coin from 1L to 1.5L. This was the first monetary manipulation since May 1718, and was accompanied by a pledge that "the bank note is a form of money that is not subject to any variation."

Then, within days, Law reversed course and set forth the plan for the full replacement of metal by paper described earlier. The plan included a gradual appreciation of the livre relative to silver, above and beyond its previous level, since the 1-livre piece was scheduled to be fall back from 1.5L to 0.5L by January 1721. Figure 8 suggests that the devaluation of March 5, 1720 was merely ratifying the fall in the market exchange rate of the French livre (which meant the Bank's notes) relative to other metal-based currencies. If so, this represented a powerful warning sign of inflation, which Law somehow expected to contain by his demonetization plan. Indeed, he expected to engineer a serious deflation.

6.2 The devaluation of May 21, 1720

Law presumably realized the process by which shares were being replaced by legal tender notes. On May 21, an arrêt was published that represented a major change in the System. The preamble, drafted by Law himself[33] recites the achievements of the System, but attributes to "ill-disposed individuals" attempts to undermine it, and presents the devaluation of March 5 as a means supporting the credit of the System by depreciating the coinage, and the plan of March 11 as a means of restoring the proper foreign exchange rates. Such measures, he wrote, would necessarily induce a deflation in the prices of all goods and assets, and consequently a similar deflation was necessary for the System's liabilities. Thus, abandoning the tenet of constancy of the paper money affirmed weeks earlier, Law devalued both the shares and the notes by roughly equal amounts, in monthly stages, from 9000L to 5000L for the shares, and the shares down to a half of their face value by December 1. To alleviate the burden on small noteholders, the notes remained legal tender at their original face value in payment of taxes for the rest of the year 1720.

The Bank started paying its notes on demand in specie at the new parity, but within days public outrage against the measures was growing; on May 27 the devaluation of May 21 was rescinded, and a few days later the planned demonetization of March 11 was halted, and

[33] A draft in his own hand is in AN G/7/1628-1629.

the freedom to hold and use specie returned. On May 28 Law was fired and placed under house arrest, but within days he was freed and resumed his seat at the cabinet. Probably the Regent understood that no one but him could save the System.

6.3 Saving the System (May–November 1720)

Law never gave up hope, and from his recall on June 1, he tried to save the System. The primary goals were to reduce the quantity of notes in circulation and to save the Company (and Bank) from bankruptcy. To this end, a series of measures aimed to withdraw notes from circulation and convert them into other, mostly non-demand liabilities of the Bank or the government: (1) life or perpetual annuities, (2) bank accounts, and (3) a new subscription of Company shares (see Fig. 10 for a schematic representation of these conversion operations). These three means were outlined in an Edict of July 1720 which reaffirmed and extended the Company's privileges. The bonds were expected to soak up 1000mL, the bank accounts 600mL, and the new shares 600mL. The thrust of the measures was to retire the high-denomination notes (1,000 and 10,000L), which represented 88% of the total issued by late May.

The Company had already started issuing bonds in February 1720, and it began an issue of life annuities in May 1720, which sold out by late June. These liabilities of the Company only amounted to 150mL. In June, the government put on sale traditional perpetual annuities at 2.5%, for a face value of 1000mL, effectively reversing the conversion of the debt and renationalizing it. Former bondholders who still had their bonds or their liquidation receipts had priority to purchase the new bonds, which could otherwise be bought with notes. The notes retired were to be burned publicly.[34]

One second outlet for the notes is of interest. The "bank accounts" (*comptes en banque*) created on July 13 were proposed to Law by private bankers (according to du Hautchamp), and modelled on the bank accounts of the public banks of Amsterdam and Hamburg, which served to settle large transactions. Law gave his Bank's accounts a monopoly as means to settle all transactions greater than 500L, wholesale trade, bills of exchange, and they could only be purchased by the deposit of high denomination notes.

Both outlets, bonds and bank accounts, were slow to take notes out of circulation. By July 19, only 159mL of the government's perpetual annuities had been subscribed (Faure 1977, 471). As for bank accounts, within three weeks of the opening of the accounts, only 100mL of notes had been withdrawn in this manner; the final figure would be 239mL.

The third way to retire notes was to convert them into shares. The first attempt was at a capital call of 3000L per share announced on June 3. Those who made the payment would receive a dividend of 360L per share; those who didn't would only receive a fixed coupon of 200L. Since the number of shares was set at 200,000, this capital call could be expected to soak up 600mL in notes. It was clearly not successful, since on June 20 shareholders were authorized to pay in with shares instead of notes, each old share taken

[34] In August 1720, the king created a further 8mL (later reduced to 6mL) in perpetual annuities at 2%, and 4mL in life annuities at 4%, with the explicit goal of exchanging them for high-denomination notes.

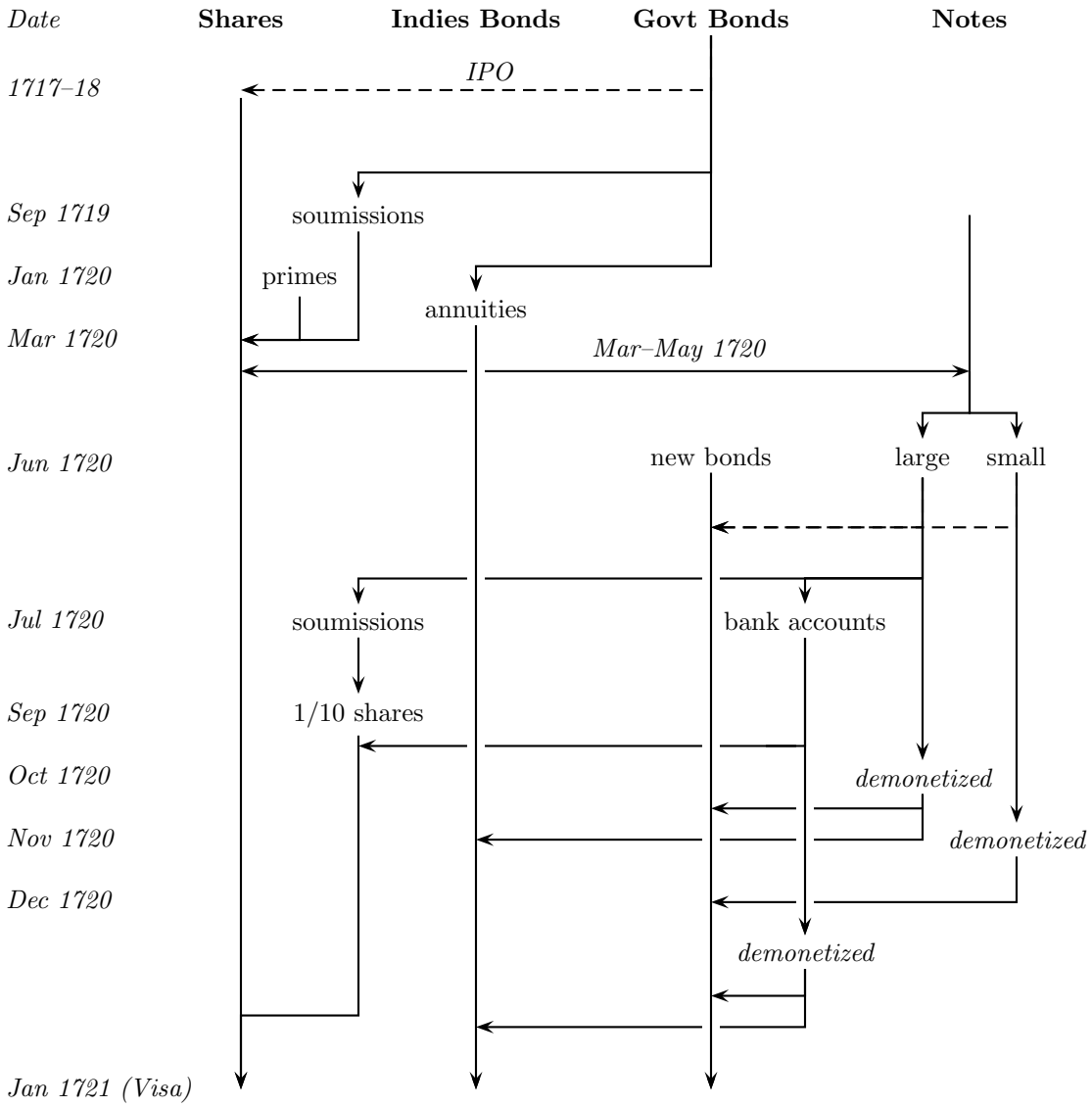

Figure 10: Conversion operations between the various instruments of the System.

at a face value of 6000L: the operation simply amounted to a two-for-three reverse share split, except that the promised dividend increase (from 600L for the three old shares to 720L for the two new ones) was more difficult to justify in the absence of any cash receipts. Furthermore, with the renationalization of the debt, the Company's loan to the government was partially cancelled (1000mL in bonds were issued), and the corresponding interest of 30mL, a substantial fraction of the Company's income, owed by the king could not be counted on to support the promised dividends.

A second attempt at retiring notes with a new issue of shares was made on July 31 and August 14, again in the form of subscriptions: the price was 9000L, with 1000L down-payment in notes and the rest due over the course of six months. This appeared to have some success, and 70,000 subscriptions were sold. On September 15, however, the subscription scheme was altered: the subscriptions, on which only one payment had been made, were made convertible each into a tenth of share; this conversion was made mandatory on November 1.

The bank could redeem or buy notes directly in exchange for coin. It did not do much redeeming. The Bank's window, closed during the events of late May, reopened on June 12 but only to convert large denominations into small denominations, while some local officials in Paris converted small denominations into silver on a very limited basis. On July 9 the Bank it started to redeem small amounts of notes in coin, but the ensuing melees led to an indefinite suspension on July 17 (Faure 1977, 477–89). After the end of May, the Bank's notes were in effect inconvertible. There are indications, however, that the Bank bought notes on the open market, in other words at a discount over face value (Faure 1977, 501; see Figure 12 for the market value of notes).

After a very sharp devaluation of the silver currency failed to bring the notes more than briefly back to par in early August, Law decided to jettison the note altogether. On August 15, the government announced its plans concerning their ultimate fate. The demonetization of high-denomination notes was announced for October 1, and that of low-denomination notes for May 1, 1721.[35] The freedom to denominate contracts in gold and silver above 1000L was restored. Until October 1, the notes were still legal tender for debts and taxes (a decree of September 15 limited the validity of both high and low denominations to 50% of any payment except for existing debts). After October 1, the high denominations could only purchase government bonds, bank accounts, or company shares. During the month of October an additional outlet for notes was provided at the mints, where they were taken along with old coins in exchange for new coins.

The bank note continued to depreciate, and the demonetization was brought forward. On October 10, the government reckoned that about 700mL in notes had been retired and burned, and another 730mL retired but not yet burned,[36] leaving an outstanding stock of 1169mL, and it considered that there were enough options available for their conversion to

[35]The issue of low-denomination notes continued until October; 10% of the notes converted in bonds or bank accounts were returned to the owner in the form of low-denomination notes.

[36]The arrêt of October 10 also mentions 90mL converted for specie by the Bank, but Dutot omits it.

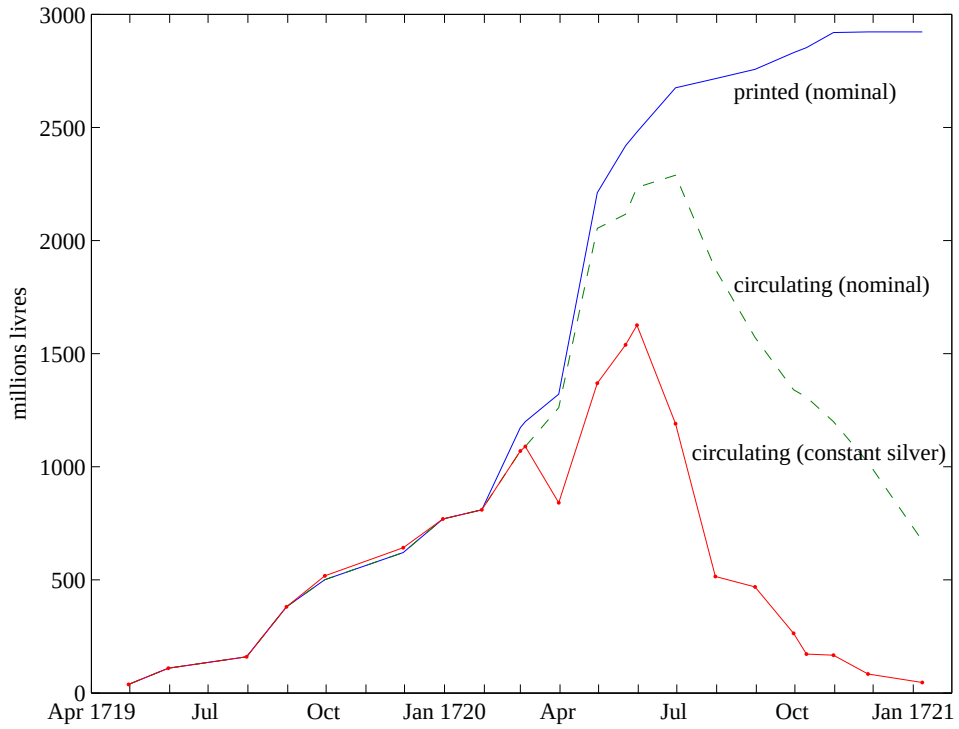

Figure 11: Net issue of notes, actual circulation (nominal and constant silver value). Source: Table 4.

bring forward their demonetization to November 1 for all payments. The Company retained the ability to make their payments for debt service, wages, and dividends, in notes until January 1. The notes remained accepted at face value to purchase the government annuities of June and August 1720.

The bank accounts had been intended to survive the notes. On September 15, Law tried to recreate elements of the System, with the bank account in the role of the note. He created a dual unit of account, one based on the metallic currency, the other on the bank account. The nominal value of bank accounts was reduced by a factor of 4, and the ability to buy them with notes apparently ended. But at the same time, he made it possible to convert shares into bank account balances at a rate of 2000L per share, just as the shares and notes had been convertible into each other in March. This created a nominal exchange rate between bank accounts (which were called *nouvelles écritures*; Dutot 2000, 362) and paper currency of 4:1. On October 22, the aggregate amount of bank accounts was limited to 100mL (presumably in bank-account units). They remained the official means of payment for the large transactions detailed above, and foreign exchange was quoted in terms of bank account balances. The dual-unit system was abandoned on December 26, when the bank accounts were overnight demonetized, converted back to paper-currency units (i.e., multiplied by 4), and made exchangeable into government bonds. The bank accounts never proved successful. A total of 407mL (in paper-currency units) had been created, consistent with the 100mL limit; but of those, only 239mL had actually been issued, and 51mL were

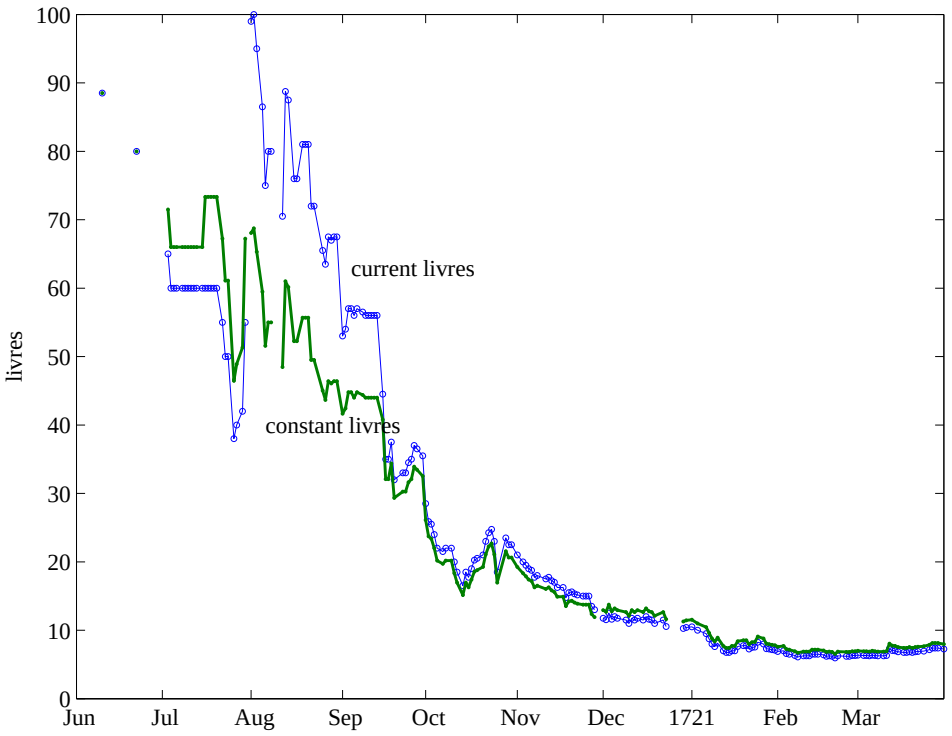

Figure 12: Price of 100L note in current silver livres and in constant silver livres of June 1720 (82.5L / marc). Source: Appendix.

held by the Royal Treasury or the Company, so that only 188mL were in fact held by the public (Paris-Duverney 1740, 2:258).

7 The Aftermath

Law left France in early December 1720. Cleaning up the System took several years. The immediate problem was what to do with the wreckage of the System, namely, the various instruments and securities (company shares, bank notes, bank accounts, government bonds of 1720, company bonds, receipts from various treasurers). All instruments were submitted to a liquidation called the "Visa," managed by seasoned financiers and former rivals of Law, the Paris brothers.[37]

The result of the Visa was a newly recreated national debt, in the form of perpetual and life annuities. The Indies Company was put in receivership in April 1721 and emerged again in April 1723; it continued as a trading company until 1769. I review the Visa itself

[37]The four Paris brothers, former wartime suppliers turned financiers, had been involved in the management of government finances in the 1716–18 period, among other things reforming accounting and tax collection practices. In 1718 they organized at Law's behest the short-lived publicly-held General Farms, and later fell out with him. They remained in power from 1721 until May 1726. There exists no serious study of their career and policies.

and the ensuing fate of the Company.[38]

7.1 The Visa of 1721

After Law left France, individuals were still able to purchase government bonds with the instruments of the System, until Jan 6, 1721, when the government froze such conversions. Three weeks later it ordered all the System's instruments to be submitted to an agency created for that purpose. The owners were required to list the instruments in their possession and explain how they had acquired them. Anything not submitted to the Visa became worthless. This first step was completed by August 1721.

The second step was to convert these claims into public debt, "based on the realm's abilities and on the rules of fairness": that is, (a) to reduce the aggregate amount, and (b) to treat the individual claims based on the information submitted. For the aggregate amount, the government announced that it would accept a total debt capital of 1631mL, and an annual interest payment of 40mL. To solve the allocation problem across individuals, the government announced a matrix: the rows were the instruments, the columns were the manner in which they had been acquired (from a reimbursement, from a sale of real estate or personal estate, etc); the entries in the matrix were the coefficient by which the nominal amount was to be reduced.[39] The coefficient ranged from 100% (government bonds traced to a reimbursement) to 5% (any security submitted without explanation).

Applying the matrix to all the claims took over a year, employed thousands of employees, and cost 9mL (Dutot 1935, 2:266). The regulations governing their activities are intricate and detailed (see Hautchamp). Fraud and corruption inevitably occurred, but was harshly repressed. The work was completed in September 1722. Claimants were given certificates of liquidation, which they could then convert into government bonds, either perpetual or life annuities. For the purpose of redeeming the certificates, a total of 1700mL in capital, 47mL in perpetual annuities, were created from 1720 to January 1724, slightly more than initially promised.[40]

What exactly had become of the notes?

Notes were either converted into other instruments (either bank accounts or bonds) or

[38] We have little information on the accounts of the System and the Visa. What we have comes mostly from a controversy in the 1730s. In 1738 Dutot published his *Réflexions politiques* ..., which contained in passing a criticism of the Visa; this book prompted one of the Paris brothers, Paris-Duverney to reply in 1740 with an *Examen du livre intitulé Réflexions politiques* ...; Dutot wrote a rejoinder but died before publishing it; Harsin published it in 1935. The archives of the Visa were publicly burned in 1722, those of the System were burned in 1727 (a 250-page manuscript inventory of the latter exists in AN V/7/235).

[39] To check on the statements made by owners concerning the origin of their securities, the government ordered notaries to submit all documents relating to reimbursement and other financial transaction since September 1719.The information collected was then solemnly burned in September 1722 to protect "le secret des familles."

[40] A few other outlets were also provided for these certificates, such as the purchase of some offices that were recreated, the payment of tax arrears, or the purchase of new coins, since the monetary reform of September 1720 continued until 1724.

(1) total notes printed	2822.3	
(2) burned Jun - Nov 1720	752.6	
of which:		
(2a) bank accounts submitted to Visa		148.6
(2b) bank accounts not submitted to Visa		38.8
(2c) bank accounts redeemed by Company		51.9
(2d) other		513.4
(3) not burned (1−2)	2069.7	
of which:		
(3a) notes submitted to Visa Jan 1721		645.4
(3b) notes not submitted to Visa		28.4
(3c) other (=3−3a−3b)		1395.9
(4) (2c+2d+3c)	1961.1	
(5) Bonds submitted to the Visa	1417.2	
Unaccounted for (4−5)	544.0	
Total submitted to Visa (2a+3a+5)	2211.2	

Table 7: Accounting for the notes of the Bank. Sources: Calculations based on Paris-Duverney (1740) and Dutot (1935).

redeemed before the Visa, submitted to the Visa, or neither. Some of the notes converted or redeemed were burned (in particular all those converted into bank accounts), others weren't. Table 7 collects existing information.

As Table 7 shows, most of the notes converted or redeemed into something other than bank accounts (line 5) can be accounted for with the various government and Company bonds which were themselves submitted to the Visa, but this leaves a remainder of 544mL in notes not converted into bonds. There are two possibilities.

Some of the remainder probably consists in shares issued after June 1720 to reduce the circulation of notes. We know that up to 70,000 subscriptions were issued in July 1720, which accounts for 70mL, and which were converted into shares in Sept. 1720 at a rate of 1/8 share per subscription. Also, up to 500,000 tenths of shares were issued at 800L each in September 1720, which would potentially account for up to 400mL. But we do not have any information on the number of tenths of shares actually issued: we only know that there were about 200,000 shares in July 1720, that a maximum number of 250,000 was set in September 1720, and that only half that amount was submitted to the Visa in January 1721. We can only say that between 70mL and 470mL of the remainder could have been converted into shares.

Another part of this remainder consists of notes exchanged for specie between June and October 1720. Recall that Law had proceeded to buy back the metallic stock from March to May 1720; Faure (1977, 378, 385) finds at least 221mL in notes issued for coins at 82.5L per marc. After the July 31 devaluation, the same coins could buy back at par 320mL in notes at par, or 550mL at market value. Marais (1863, 1:372) says that the Bank was buying notes with specie on the market at a 25% discount over face value, and Dutot (2000, 323, 383) complains that 51mL in specie held by the mints in late August were all spent to exchange the notes of well-connected owners, although he does not say at what price. Also, in September 1720 new gold and silver coins were issued, which could be purchased with up

to 1/3 of the price in small denomination notes.

In summary, one can say that of the 2800mL of notes issued, 2200mL ended up in the Visa liquidation and became government bonds, and of the remaining 600mL some was redeemed in coin at varying rates, and the rest converted into shares of the Company.

The 2211.2mL of Table 7 submitted to the Visa were reduced in face value to 1700mL, a 23.5% average reduction, but with much variation across individuals. The authors of the Visa (Paris-Duverney 1740) insist that their goal was to bring back the debt to a sustainable level while maintaining fairness, by which they meant a bias for small holders. No claim of 500L or less was reduced: these small claims represent half of the individuals and 40% of the sums involved. This means that the remaining 60% of the sums were reduced by 39% on average. The cash value of the liquidation certificates issued by the Visa was around 25% of face value on the open market in 1722 (Dutot 1935, 2:279). This means that the average holder of a note ultimately got about 20% of face value in March 1722, which was the market value as of early November 1720.

A supplementary tax on excessive profits from trading in the System was levied on about two hundred individuals and reduced the debt by another 190mL. The rest, about 1500mL, was converted into life annuities at 4% and perpetual annuities at 2%, the bulk of the latter still in existence in 1789 (Marion 1914, 1:474).

7.2 Government finances during and after 1720

Table 8 summarizes what indications I have found about French finances from 1715 to 1726.[41] The numbers are very approximative because, in contrast with numbers for the period up to 1715, they come mostly from summary planning budgets rather than ex-post accounts. For the year 1720 we do not have even such a summary document; and in 1721 the government had so little information that it used as a basis a plan made for 1717. The numbers I have put in Table 8 would correspond to mid-1720, under the System.[42]

The Table shows clearly the general pattern of public finances during that period. In 1715, the debt burden is large. In 1716, exceptional seigniorage revenues allow the government to deal with the most pressing debts, but in 1717 political pressures force the government to rescind wartime direct taxes In 1718 it had to resort to seigniorage again,

[41]For revenues and expenditures: BN Fr. 7766, fol. 250-55; BN, Joly de Fleury 566, fol. 254-81; BN, NAF 22245, fol. 365; Affaires Étrangères, M & D France 1258, fol. 150-1, 200-4. For direct taxes: Clamageran 3:198, 226-32, AN K885, 1, p. 40, AN K886, no 13. For indirect taxes: AN K885, 1, p. 51, 59, 2, p. 58; AN G/7/1176; Dutot (1935, 2:214-19); BN, NAF 5010. The negative number for seigniorage in 1724 reflects the cost to the government of capital losses on coins held by tax collectors during the revaluations of the coinage in that year (BN, NAF 22245, fol. 365).

[42]BN, Joly de Fleury 566, fol 277. For 1720 I have done as follows. I have interpolated civil spending from 1718 and 1721. I assumed 14mL for the navy (compared to 12mL in 1721); expenditures for the army were 74mL in 1720 (BN Joly de Fleury 566, fol. 278). I put debt service at 36mL, the debt to the Company. I assumed that direct revenues, miscellaneous revenues, and revenues from the post farm were unchanged from 1719; revenues from the general farms were 27.4mL (BN NAF 5010) net of the 36mL payment to the Company. I have set seigniorage revenues from the mints at 0, although from September 1720 on they were positive.

	1715	1716	1717	1718	1719	1720	1721	1722	1723	1724	1725
direct	101.7	100.4	75.3	63.8	58.8	58.8	66.9	78.7	87.7	88.6	80.9
indirect	59.9	60.1	59.8	59.7	67.0	66.8	76.7	90.9	103.1	108.6	104.0
misc	3.9	3.9	3.9	2.7	2.9	2.9	3.6	3.9	4.1	4.4	6.2
seigniorage	0.0	75.5	12.7	17.9	12.0	0.0	24.0	20.0	0.0	-33.5	0.0
total revenues	165.6	239.9	151.6	144.1	140.8	128.6	171.3	193.5	195.0	168.0	191.1
military	71.5	50.7	50.7	45.8		88.0	76.4			66.3	61.0
civil	46.3	26.1	25.2	36.6		35.0	34.1			41.0	40.6
total non-debt spending	117.8	76.8	75.9	82.3		123.0	110.4			107.3	101.6
primary surplus	47.8	163.1	75.7	61.8		5.6	60.8			60.7	89.5
debt service	86.7		93.7			58.6				86.7	
livre index	28	40	40	60	60	82.5	75	75	75	40	41.5

Table 8: Government finances, 1715–26. Sources: see text.

and it was still some ways from balance. More cuts in expenditures were planned for 1719, and indirect tax collection was starting to improve. The System was accompanied by a number of tax cuts and an amnesty for overdue taxes, leading to a fall in revenues. Spending had surged, meanwhile, because of the war with Spain in 1719. After the end of the System, revenues increased, at first because of seigniorage, then because of increases in regular tax revenues. This eventually allowed the government to reach balance by 1725 or 1726.

The primary deficit at the peak of the System was over 50mL, which is as large as it was during the War of Spanish Succession. Law's management of the traditional components of government finances, cutting taxes in time of high expenditure, was good policy (and highly unusual for France), but might seem less than prudent when undertaken at the same time as his other radical reforms.[43] It can be argued that the high level of spending in 1719 and 1720 was exceptional and temporary, and that revenues would soon improve as they did. It is true that the improvement in revenues came in part from reversals of Law's tax cuts in 1722 and further tax increases. In part they came from improved tax collection in the early 1720s, which accrued to the government because the indirect taxes were not farmed but managed on the government's account (*en régie*). The same improvements would have accrued to the Company and its shareholders, not to the government, at least for the remainder of the lease on the farms (until 1724).

Faure (1977) castigated Law's "good fairy policy." If the deficit in 1719 (the war year) was twice that of 1720, we can figure that about 150mL in deficits were financed by money creation during the System.

7.3 The Indies Company

The Indies company survived the collapse of the System. The government decided on January 1721 to hold it accountable for the bank notes; the shareholders strenuously objected

[43]Law (1934, 3:38–76) intended to completely do away with existing taxes and replace them with a single tax on land, an idea that would find partial implementation in 1791.

that the bank had been merged with the company against the latter's will and had always been a tool of government policy. The government progressively relented; and gave the company the means to continue as a viable commercial enterprise, by absolving it of the System and giving it new monopolies.[44]

The shares in the Indies Company were also submitted to the Visa. The number of shares was 600,000 as of March 12, 1720, reduced to 200,000 by June 3 as a result of the Company's repurchase program and of the king's gift of the 100,000 he owned to the Company as part of the rescue effort in early June (Dutot 2000, 251, 260). These were converted into new shares at a 2:3 ratio over the summer, leaving 133,000 new shares. An unknown number of these failed to submit to the "second stamp" of October 1720 (see Appendix). In 1721, only 125,000 shares were presented to the Visa, and they were reduced to 55,735. The market value of shares fluctuated quite a bit after the liquidation, but it averaged about 1000L between March 1722 and August 1723 (Dutot 1935, 2:279). Assuming that the average share was cut in half by the Visa, and taking into account changes in the unit of account and the reverse share split of June 1720, this final value of the Indies share corresponds to the market price of mid-November 1720 (about 300L), or of the spring of 1719 (about 270L).

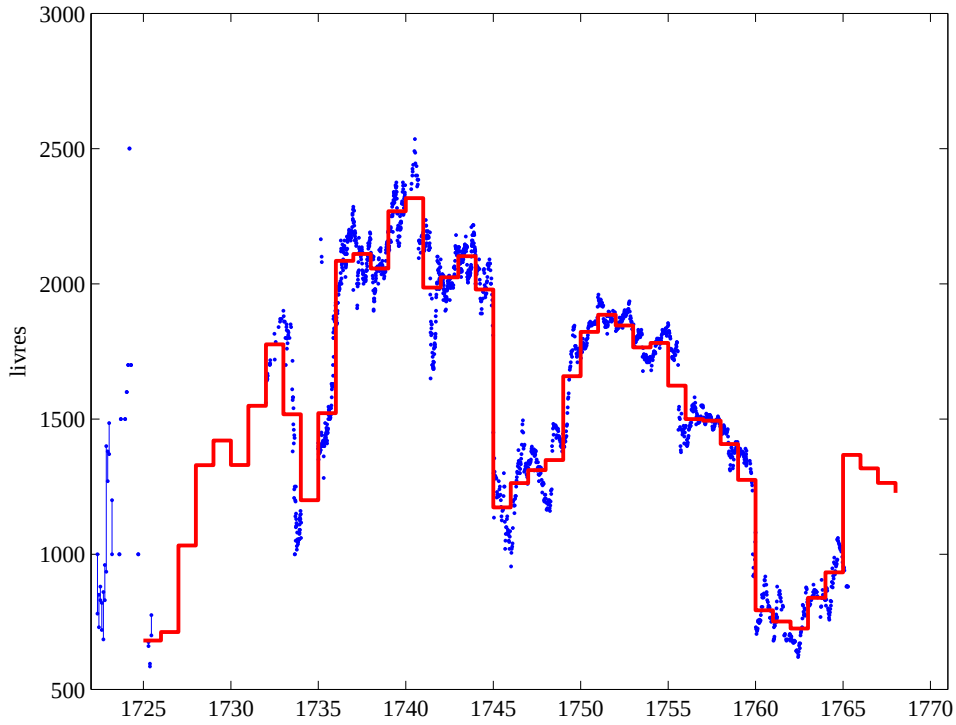

Figure 13: Price of the Indies Company share: annual average and weekly observations where available. Source: Morellet (1769) for the annual averages; newspapers (*Gazette d'Amsterdam*, *Affiches de Paris*) for the observations; Dutot and Hautchamp for the early observations.

[44]The Company was lucky to count among its principal shareholders a royal prince, the duke of Bourbon, who would succeed the duke of Orléans as prime minister after the latter's death in December 1723.

Next, the Company was disentangled from the System. This involved some accounting exercises between Company and government. The government had converted the Company's liabilities into its own bonds, making the Company a debtor of the government. The debt was settled partly by offsetting it against the Company's conversion of government debt in 1719–20,[45] partly by an write-off of 583mL. The Company emerged from receivership in March 1723, and in June 1725 a series of edicts absolved it from any further liability for the System, and confirmed its remaining privileges.

monopoly	*acquired*	*lost*
Louisiana	Aug 1717	Jan 1731
Canadian beaver	Aug 1717	Feb 1763
tobacco	Aug 1718	Jul 1721
Senegal trade	Dec 1718	Feb 1763
India and China trade	May 1719	Aug 1769
North African trade	Jul 1719	Nov 1730
mints	Jul 1719	Jan 1721
General Farms	Aug 1719	Jan 1721
Recettes G$^{\text{ales}}$	Aug 1719	Jan 1721
Haiti slave trade	Sep 1720	Jul 1725
Guinea trade	Sep 1720	Jul 1767
domaine d'Occident	Mar 1723	1725
coffee distribution	Aug 1723	1727
tobacco monopoly	Sep 1723	Jul 1747*

Table 9: Privileges and monopolies of the Indies Company. *: exchanged for a perpetual annuity of 9mL. Sources: Morellet (1769), Haudrère (1989).

At the same time, the Company was placed under tighter government supervision, with the finance minister sitting on the board, and made to focus on its "core competencies." It lost the lease on the General Farms and the mints, and the collection of the direct taxes, in January 1721, and the lease on tobacco in July 1721. It initially retained all its trading monopolies, but shed them one after the other as they proved unprofitable or unenforceable, retaining only the monopoly on Canadian furs, the slave trade in Guinea and Senegal, and the trade with India and China (see Table 9). The Company continued to operate until the treaty of Paris of 1763 deprived France of its possessions in Canada and India, and the company of its commercial viability. The Company was liquidated in 1770 and its shares converted into government bonds (Velde and Weir 1992).

The Company share was traded on the market from the end of the Visa in 1722, and quotations were reported in newspapers through the 18th century. As Figure 13 shows, the price was quite volatile, both at high frequencies and at low frequencies. The main disruptions are wars: Polish succession in 1733, Austrian succession in the 1740s, and the Seven Years War in the 1750s. The Company was obligated to pay a fixed dividend, initially 150L per year, backed by the commercial profits, and by the tobacco monopoly which the

[45]The Edict of June 1725 mentions *assignations sur le trésor royal acquittées par [la Compagnie] en 1719 et 1720*, which Giraud (1966, 3:70) interprets as the liquidation certificates converted into shares or notes by the Company.

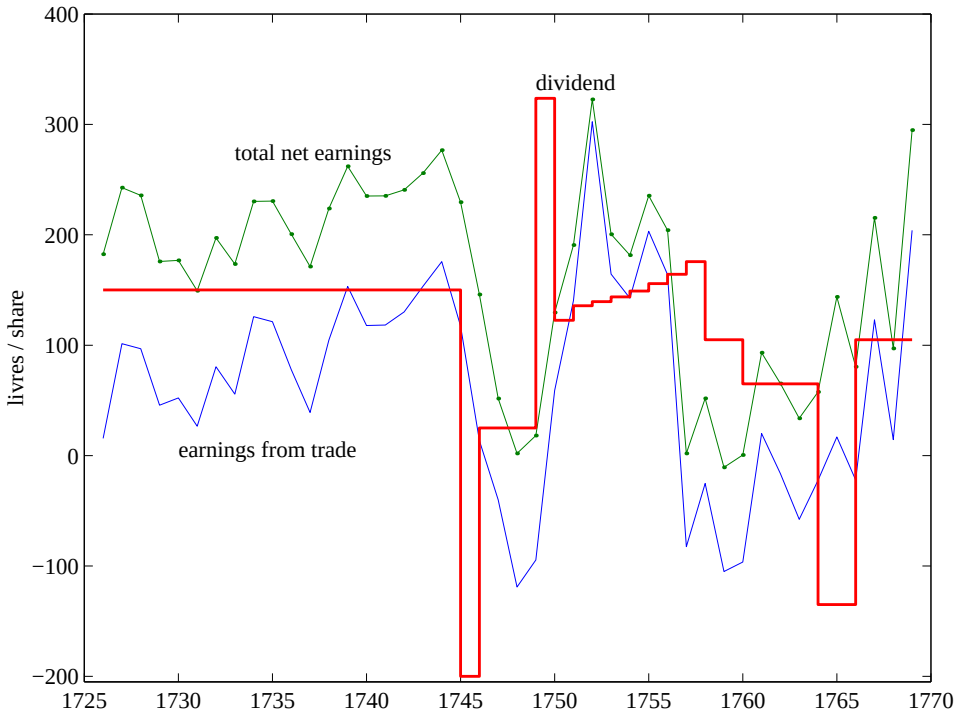

Figure 14: Commercial earnings (profits on sales of merchandise less shipping costs), net total earnings after interest, and dividend of the Indies Company (inclusive of the 1745 loan). Source: Morellet (1769), Haudrère (1989).

king ceded in 1723 in payment of his debt of 100mL (representing the original billets d'État brought by the subscribers of 1717–18). A first crisis brought about a suspension in the payment of dividends in January 1745; the dividends of 1744 and 1745 were not paid in cash; instead, the Company took the coupons (wroth 300L) along with a 200L cash payment, and issued in exchange a 5%-bearing bond, which it endeavored to reimburse over 15 years. When dividend payments resumed, they were set at 80L. A second crisis at the end of the Seven Years War brought about in 1764 a capital call on shareholders in order to maintain the same dividend, and an end to the repurchase of the 1745 bonds.

Figure 14 plots the actual dividend payments, with capital calls counted as negative dividends. It also plots the commercial earnings on a per-share basis, and the total net earnings after interest payments.[46] The bulk of commercial revenues (90%) came from trade beyond Cape Hope. Commercial earnings averaged 2.6mL from 1725 to 1769 (64L per share), while total net earnings averaged 7.8mL (162L).

[46]Commercial earnings are calculated as the net revenue from sales of imported merchandise less shipping costs (construction, maintenance and fitting of ships, provisions, wages of embarked personnel). Total earnings adds revenues from the tobacco monopoly and deducts interest payments on annuities and on the 1745 loan. Repayments on the 1745 loan are not deducted, as they are counted as (delayed) dividend payments. I haven't yet found data on other expenditures such as personnel and fixed investment in France and the colonies, so the net earnings figure are an upper bound.

8 Six Short Questions about John Law

8.1 What did Law think he was doing?

Although, as Murphy (1997) emphasizes, Law was both a policymaker and a theorist, there remains a disconnect between the two aspects of his life. His writings on economics in general and schemes for banks in particular cease in 1715, shortly before his last pleas were successful; and we have little direct testimony on what he thought he was doing when he created the System, aside from a few apologetic pieces anonymously published in 1720, and a lengthy self-justification sent to the duke of Orléans in 1723 (Law 1934, 3:98–190).

Law entered economics by way of adding to an existing literature on land banks. The idea of replacing commodity money with a substitute had been around for decades, and in England in particular a stream of proposals had been published since 1650, all centered on the idea of a land bank. His first essay, published by Murphy in 1994, belonged to that tradition, and his magnum opus, *Money and Trade* (1705) was an attempt to provide deeper theoretical underpinnings for the proposal he would continue to put forth until 1710 or so. The goal is essentially to replace commodity money with an alternative that better fulfills the functions of money. Law emphasizes particularly stability and liquidity among the desirable properties of money; the former leads him away from silver, whose value fluctuates over the long term as demonstrated by the Price Revolution, and the latter toward financial securities that he sees traded on the London market. He does not address in his writings the fact that shares can be considerably more unstable in value than silver; in fact, this tension is at the root of his fateful decision to fix the price of shares in term of notes in March 1720.

Money and Trade, however, places another consideration at the center of his proposal, namely the elasticity of currency. Law wants to put under-utilized resources to work by providing a source of loans to entrepreneurs, thereby stimulating employment, output, and ultimately the demand for money, in a manner compatible with stable prices. He also sees a lowering of interest rates as a desirable consequence of expanding the money supply. This explains his insistence on achieving an interest rate of 2%, as indicated by the return on the Indies shares, which justified in his opinion both the high valuation of the shares which he sustained, and the massive debt conversion that he engineered.

Law's writings, however, are close to silent on the centerpiece of the System, the debt conversion and the takeover of all tax collection. No such idea appears in any of his pre-1715 writings, and he makes only vague hints at grandiose projects in his correspondence with the Regent in late 1715. A few apologetic writings dating from March and May 1720 are known, as well as some writings from 1723–24 to the Regent and to his successor as French prime minister, but they shed little light on the rationale for the System.

At one level, it seemed natural for the government to enjoy the benefits of lower interest rates that his Bank had seemingly brought about. In this sense, the debt conversion scheme is a forerunner of the perfectly orthodox policies followed by Britain later in the 18th century, of calling outstanding bonds at their face value and replacing them with less expensive debt once market rates had fallen low enough.

Another idea (Law 1934, 3:88–89) is that government debt crowds out productive in-

vestment, and converting it into the equity of a trading firm allows to channel savings into wealth-creating activities. But by stating that the Company could someday earn greater returns than the 5% previously enjoyed by bondholders, he flatly contradicts his stated goal of 2% dividends.

Another explanation given by Law in 1723 (Law 1934, 3:188) is political: he would have left the Bank and the Company as they were in mid-1719, had it not been for the shaky state of government finances. But, mindful of the difficulties he had met in 1718 in being paid his interest by the king, he felt that his companies would inevitably be raided by the government; lowering the interest on the debt, and thereby bringing the budget into balance, was a way to prevent it.

His takeover of debt collection can be motivated as a tactical move, intended to put out of business the class of financiers who had long profited from the government's poor handling of its finances and its inability to borrow from a capital market. Law's System, as a by-product, had imported into France the active securities markets that Amsterdam and London already had. In the new rationalized system of public finances, the financiers were deprived of their function as lenders, and likewise as tax collectors.

Lüthy (1:314-5) suggests another tactical reason for the takeover of the Farms: as a consequence of the 1717 decree requiring tax collectors to accept the Bank's notes as legal tender for taxes, they were holding large amounts of notes, and this put them in a position to run the bank at any time. Law's buy-out was necessary in order to ward off this threat from his enemies.

Finally, Law repeatedly (3:80, 87, 108, 156) argued that centralizing all fiscal functions in a single entity gave the proper incentives to everyone, by aligning the King's interests with those of his creditors. The Bank, merged with the Company, was now a resource that was vital to the government, and he could not afford to default on his commitments to the Bank, and in particular manipulate the currency (see Greif, Milgrom and Weingast 1994 for a similar argument about the Bank of England). The Company was an single independent entity, controlled in principle by its shareholders and not by the King (notwithstanding the fact that the King was its largest, albeit not majority, shareholder), and in a monopoly position vis-a-vis an otherwise sovereign and unaccountable monarch. This was in some ways an extension of the old principle behind government borrowing from tax collectors (who held tax revenues as collateral for their loans), but also a radical experiment in quasi-democratic control of the crucial element of the State, its ability to collect revenues and borrow.

8.2 Was the System a bubble?

This is an age-old question, one that has been asked in one form or another since 1720. During the year 1718, the price of a share in the Company of the West stood around 250L. After the Company's restructuring in 1722, the share price was about the same, adjusting for share splits and changes in the units of account. In-between, the price peaked at 10,000L in January 1720 (see Figure 4). Can a 40-fold rise and fall in the price of an asset be justified on the basis of reasonable beliefs about prospective returns on this asset?

8.2.1 Expected earnings

Law's companies paid dividends twice a year, and dividends were announced in advance (see Table 6). The dividend announced on Dec. 29, 1719, at the peak of the System, is of particular significance. Could the dividend of 200L per share announced by Law justify the market's price of shares at 9000L?

Writing in 1723, Law (1935, 3:212–13) counted that he needed revenues of 80mL to pay the 200L dividend to 400,000 shares, omitting 100,000 shares held by the Company as collateral for loans, and a like amount owned by the King (which were ultimately given for free to the Company in June 1720). He presented some estimates of likely earnings to the general assembly, and Dutot presented slightly lower estimates (see Table 10). I now evaluate those estimates.

Source	*Law (1)*	*Law (2)*	*Dutot*	*revised*
King's debt	48	48	48	48
General Farms	12	8	15	10
Recettes G^{ales}	1	1	1.5	1
Mints	12	10	4	0
Tobacco	6	5	2	10
Trade	12	8	10	6.5
Total	91	80	80.5	75.5

Table 10: Expected revenues from the Company's activities as of Dec. 1719. Law's first evaluation was presented in December 1719 to the shareholders; his second evaluation was made in May 1723. Source: Harsin (1928, 174), and see text.

The minting profit was obviously a one-time gain, which Law could not expect to make on a continuous basis, especially given his plan to replace gold and silver with paper money.

Trade was overestimated, as the information presented above on the Indies company after 1720 indicates. The average dividend paid per share, inclusive of repurchases of shares in 1730–33, is 117L (at 60L/marc) or 6.5mL in aggregate, in 1719 livres.

The most difficult piece to estimate is the profit on the general farms. The price of Law's lease was 52mL, which was an increase over the previous lease of 1718 (48mL). Dutot (1935, 2:214) states that the revenues during the lease year 1720 were 90.4mL, but he does not take into account the fact that the livre was on average at 80/marc during that period: at 60L/marc, this would amount to 67.6mL, or a 15.6mL profit; which is the profit claimed by the Company after the fact, in April 1721 (Giraud 1966, 3:80). There is evidence that profits would have increased over the next few years. The Farms were managed directly by the government for the next few years, and, according to White (2001), the receipts rose from 61mL in 1721 to 91.5mL in 1725 in that period. That would have yielded an average profit of 22.8mL, but these would not have lasted. During the Carlier lease which followed (1726–32), the average profit was 4.9mL (5.9mL in 1719 livres), but over a lease price of 80mL. That is, the government ratcheted up the lease price when the lease came up for renewal. The experience of the 18th century suggests that the government might leave in the 5–15mL range as profit to the Farms, or roughly 10% of gross receipts (Marion 1914, 1:145–46). Of course, had Law's System continued in place, the government's power and

incentives in its bargaining with the Company would have been quite different, knowing in particular that part of the profit it was leaving to the Company would have been paid to former bondholders.

There is better information on the tobacco monopoly: Table 11 reports information on lease prices paid by successive farmers and, when known, the farmers' profits. The average revenue from 1724 to 1789 was about 25mL (at 60L/marc), from which a lease price must be deducted to obtain the Company's expected profits. In 1719, the Company paid 3mL per year, but, as with the General Farms, the difficulty is in estimating what lease prices would be negotiated in the future. Table 10 assumes a fairly generous 10mL average profit.

Year	Lease	Profit	Year	Lease	Profit
1698–1714	1.5	?	1730		7.0
1715–16	2.0	?	1731–32	7.5	4.5
1717	2.2	?	1733–38	7.8	6.5
1718–21	4.0	2.4	1739–44	8.0	10.5
1722	1.2	?	1745–50	8.0	13.3
1723	1.8	?	1751–56	13.0	12.1
1724		7.9	1757–62	15.0	8.7
1725		7.4	1763–68	22.2	?
1726		6.9	1769–74	23.1	0.9
1727		6.9	1775–80	24.1	2.3
1728		7.1	1781–86	26	?
1729		6.8	1786–89	27–31	?

Table 11: Total revenues of the tobacco monopoly, broken down into lease price and farmers' profits, in current livres. Notes: the lease years run from October 1 to September 30. The Company owned the monopoly from 1724 to 1747, and did not farm it from 1724 to 1730, hence there is no lease price for those years. Sources: Dutot (1935, 2:222–26), Morellet (1769, 51), Marion (1923, 525), Clamageran (3:254, 402, 444), Matthews (1958, 129–30).

As Table 10 shows, it is not too difficult to come up with an estimate within 10% of Law's projection,[47] and one can perhaps justify a 200L dividend in steady state, with the important caveat that, in steady state, Law could not expect to pay no dividends to the king's shares, or to those shares held as collateral for loans. Paying dividend on those additional shares, based on the earnings estimate of Table 10, would bring the dividend down to 125L.

Even granting the 200L dividend, can one accept a valuation of 9000L per share, a P/E ratio of 45? Law clearly thought so, as he explicitly set a target interest rate of 2% for his System.

8.2.2 Discount factor

As described above, there are several distinct components to the Company's revenue stream. The trade component (6.5mL) can be evaluated by looking at the Indies Company as it survived after 1725. Its price was quoted on the market, and we see that the price-dividend

[47]Harsin's estimate of 99mL (cited in Faure 1977, 304) is perhaps overly generous.

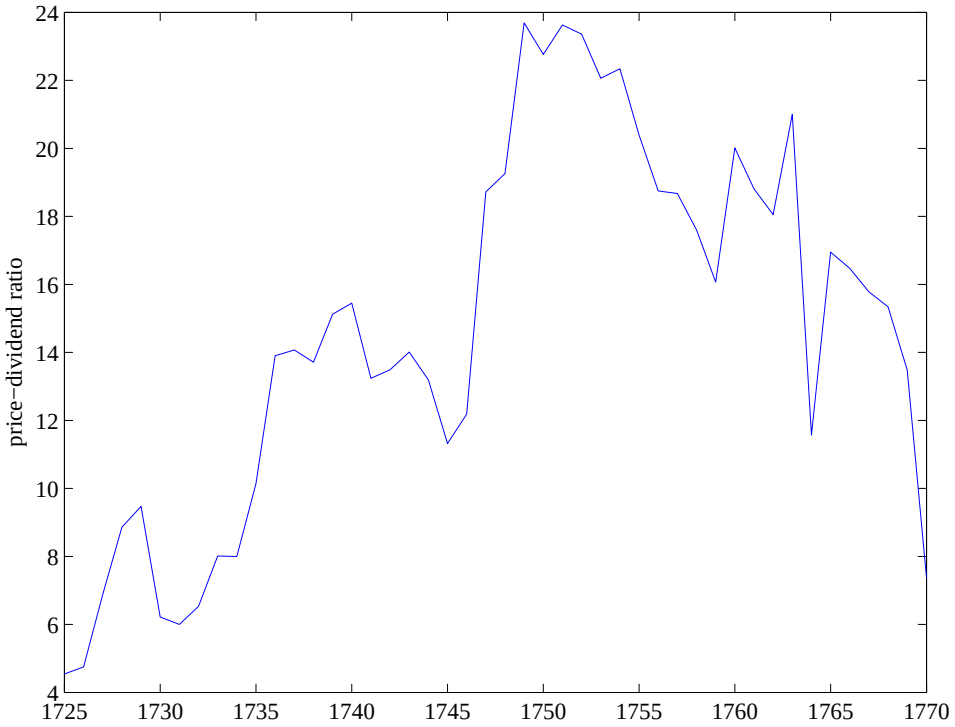

Figure 15: Price-dividend ratio on the Indies Company stock, 1723–69. Source: Morellet (1769).

ratio fluctuated widely between 4 and 24, and averaged about 15 (Figure 15). The fiscal component (tobacco, general farms, collection of direct taxes, amounting to 21mL) was probably subject to similar risks as the Indies trade, since (as shown in Figure 14) the main source of risk were foreign wars. Not much growth could be expected to boost the ratio, except perhaps in the tobacco monopoly, which shows 1.5% annual real revenues growth. Overall fiscal revenues grew by about 0.6% annually in real terms from 1726 to 1789, slightly above the estimated 0.5% GDP growth (Maddison 2001).

The largest component of revenues (almost two thirds) was the king's debt. The market price on 4% debt in 1718 was 50% of face value (Veron de Forbonnais 6:67; Law 1934, 3:199), and after the Visa it was 20 to 27% on 2% debt (Dutot 1:343). Both figures suggest a PE ratio of 12.5. Of course, these valuations of French government debt come from a time when default risk was probably seen as fairly high. A market price of 8% on French debt is about 5% higher than the price on Dutch debt at the same time, or English debt around 1730.

8.2.3 The back of the envelope

Annual revenues of 75.5mL and a factor of 15 yields a valuation of 1132mL, or a share price of 1875L, which is one fifth of the peak share price of 9000L, or overvaluation by a factor of 5. This isn't quite fair to Law, who would have argued that his System was bound to reduce interest rates on government debt, both by making the debt more secure and by lowering interest rates in an economy lacking in financial intermediation. He also argued

that his System would boost economic growth, and these claims taken at face value all tend to raise the PE ratio. However, to justify the market valuation on the basis of 75mL in earnings would require, say, Dutch interest rates of 3% and a growth rate of 1.5%, which no European country enjoyed before the start of the industrial revolution. Assuming alone that Law's System would have brought interest rates to Dutch levels would leave overvalued by a factor of 2; this seems to me as far as one can go on behalf of Law. It seems difficult to avoid the conclusion that the Company was overvalued several times over.

8.2.4 A manipulated market

Overvaluation does not mean bubble or irrationality. It remains to note that the prices which we see rising in late 1719 are not "pure" market prices. Law had been influencing, if not manipulating, the price of his company's shares for a long time (Lüthy 1:310, 319). As early as May 1718 he was buying futures on the shares of his Company, as a way to publicize his beliefs about future capital gains. But it is in the late fall 1719 that the Company became an active participant: it lent 2500L against the security of a share (effectively putting a floor on the share price), then on October 9 it decided to buy back shares from any shareholder at 5000L each (Dutot 2000, 127, 168), intervened directly in the market (for example selling for 30mL of shares in one week in November to keep down the price); finally, in late December an office was set up to buy and sell shares at prices posted every day (Faure 307–308, 319, 340). The office operated intermittently until the price of shares was officially pegged at 9000L on March 5; and when it stopped its operations, the share prices faltered. From January 1720 at the latest, probably from November or December 1719, one cannot consider the "market" price to represent anything but Law's policies.

Price manipulation is not out of character for Law. His writings from during and after the System are replete with justifications of coercion in the better interest of people, such as the statement that "it was necessary to use authority and induce the people to contribute to their own welfare" and a commentary on John 5:6 to the effect that "some sick men refuse to heal" (Law 1934, 3:91, 170). Although he is commenting on the coercive measures taken in early 1720 against gold and silver, he probably saw price manipulation as a way of helping people help themselves in spite of themselves.

Ultimately, massive price manipulation, or price fixing, is what led to the expansion of note issue in 1720. Although Law was probably acting in good faith and out of confidence in his System's prospects, the rise of 1719 is nothing but the preview of the price-pegging of March 1720 and the subsequent monetization of the company's equity.

8.3 Did the System make sense?

On a conceptual level, Law's System involves a number of basic principles that are not absurd. His debt conversion scheme relies on the idea that all government liabilities are backed the same way, with future revenues that are either strictly fiscal (revenues from existing taxes) or quasi-fiscal (the ability to create monopolies). In fact, the French monarchy had a long history of raising funds by selling claims to these revenues. Furthermore, that backing is inherently stochastic. The debt conversion simply made explicit this stochastic

nature, by converting existing claims on a constant component of these revenues into claims on the variable component. It also generalized an existing commitment device, whereby the tax collector serviced the debt. The novelty was to do so at once, with a single entity, and retroactively for the entire existing debt.

The other novelty of Law's scheme was the replacement of specie with paper. This was the more radical innovation, and one that stood in ill repute for much of subsequent time. By the 1930s, of course, increasing experience with fiat money and the notion that government policy (including monetary policy) could and should be used to stimulate the economy resulted in a rise in Law's reputation. History does not suggest, however, that the first large-scale experiment with paper-based fiat money was likely to succeed (see Sargent and Velde 2001 for earlier experiments with fiat money).

As noted earlier, the viability of the System depended in large part on the relations that would exist between the King and the Company. Greif, Wilgrom and Weingast (1994) suggest arguments why placing a monopolist vis-a-vis a sovereign without commitment technology might be a good idea. The clean separation of the two actors did not obtain in practice, however: the King was a major shareholder, Law was both the king's minister and the Company's CEO, and ultimately the Company's powers and monopolies derived from the King's will.

Quantitatively, the crucial aspect of Law's System was the ability to justify a high enough share price to carry out the debt conversion on profitable terms. To offer the king better terms than he was paying on his debt, the PE ratio on the Company's shares had to be higher than 22. A dividend of 125L (based on the revenue estimate of Table 10) and Dutch-like interest rates of 3% could bring valuation to about 5000L, the price at which Law launched his debt conversion in September 1719. With the benefit of modern theory and experience, and with a good dose of optimism, it is possible to accept that the System could have worked.

8.4 Why did the System collapse?

The view that the System was driven by a stockmarket bubble takes care, in a slightly vacuous way, of explaining the price rise of 1719, and leads into a search for an explanation of the crash itself. There are naturally the usual conspiracies of powerful vested interests threatened by Law's reforms, which Law himself, Dutot, and Murphy blame generally. Haudrère (1989, 1:78) claims that disappointing results in Louisiana were not known until the second half of 1720 and that profit-taking was to blame for the downward pressure on share prices. Law (1934, 3:110) himself, in March 1720, rails against people who try to cash in on the high prices, without understanding that the shares are assets to be held for their income like real estate: "men must put themselves in the same frame of mind with respect to the shares as to their other assets; it seems that they have a hard time doing so on their own."

In my view, the rise itself was the result of covert and later overt price support, carried out in part to entice the bondholders to submit willingly to the debt conversion. The massive conversion of shares into notes in the first half of 1720 can be seen as profit taking,

or simply as the result of an asset being pegged at too high a value. The collapse was stanched by Law's ability to print notes and at the same time create demand for them with the demonetization of gold and silver. But, aside from the openly coercive nature of the procedure, the exchange rates were soon indicating that this would not be sufficient to prevent inflation. Once Law started backtracking, in May 1720, no orderly retreat was possible.

It is harder to understand why Law insisted on pegging the shares so high. Lüthy (1959, 319 n40) argues that early insiders had an interest in keeping share prices up until they could reap their profits. Whether this was enough of a consideration to move Law in such a dangerous direction is questionable. It seems more likely that he miscalculated the price of shares (or, equivalently, the long-term interest rate) at which he thought the System was sustainable.

8.5 Was the System a default or a swindle?

Whatever Law's original intentions (and there is no evidence that he originally intended to default on the debt), the debt conversion into a more or less compulsory monetization into notes that were ultimately not convertible into silver.[48] The point of the Visa was to reverse this monetization by another forced conversion of notes into bonds. The reduction from 2800mL in notes, or 2200mL in claims submitted, to 1500mL in bonds, is called by Marion (1914, 1:112) "yet another default, following the reductions of 1713 and 1715, the first visa [of 1716], the conversions of 1720, preceding the new violations of public faith by Fleury, Terray, and many others, and perpetuating a tradition disastrous for creditors and which would continue throughout the Old Regime."

Yet a large part of this mass of notes was issued in exchange for shares, themselves exchanged for bonds. The nominal amounts involved do not matter to the question: was it a default? Table 2 shows that the debt burden was roughly the same in 1724, after the System and the Visa, as it was in 1717 after the operations of the Noailles administration. The debt was increased in the meantime (I estimated about 150mL), but not by a large amount. If default there was, it was on the order of 5 or 10%, which is modest by the standards of the Old Regime denounced by Marion. As for the Visa itself, it is hard to see the deployment of so much bureaucratic talent as a default.

Was Law a swindler? His Company was not an empty shell, but immediately and aggressively engaged in its trading and colonizing business, sending ships east and west, founding New Orleans (named after the Regent). His reforms in tax collection and fiscal administration were short-lived but Marion himself (1914, 1:105–07) recognizes their value. Most strikingly, while Law initially grew rich with his System (as was surely his plan), he invested his fortune (at least 9.5mL according to Marion 1914, 1:99) in French real estate, not a good move for someone planning a quick getaway.

[48] Faure's book, titled "Law's bankruptcy," refers to the date of July 17, 1720, when the Bank suspended payment.

8.6 What to make of the System?

This paper is about a single data point, a unique although hardly unknown experiment. No theory will be proved or disproved by it. It is also a large-scale and extremely complex experiment, involving aspects of finance, public finance, and macroeconomics, and carried out at the scale of a country. The System is of interest, beyond its picturesque details, either as an example or a point along a path of theory and experimentation. Law's interest in creating a fiat money that would serve as a tool for policy-making is almost anachronistic; indeed, his critical fortunes did not revive until the 1930s, when such a notion became orthodox. The other concept that emerges from the System, that of government equity, is not one that has been formally reprised yet; Law may turn out to have been even more of an anachronism than we think.

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