Chronicle of a Deflation Unforetold

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Abstract

Suppose the nominal money supply could be cut literally overnight by, say, 20%. What would happen to prices, wages, output? The answer can be found in 1720s France, where just such an experiment was carried out, repeatedly. Prices adjusted instantaneously and fully on one market only, that for foreign exchange. Prices on other markets (such as commodities) as well as prices of manufactured goods and industrial wages fell slowly, over many months, and not by the full amount of the nominal reduction. Coincidentally or not, the industrial sector (as represented by manufacturing of woolen cloths) experienced a contraction of 30%. When the government changed course and increased the nominal money supply overnight by 20%, prices responded much more, and the woolen industry rebounded.

Keywords: monetary policy, price and wage rigidities, deflation, recession (JEL E31, N13).

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Introduction

Lucas's (1996) Nobel lecture begins by quoting Hume (1752, 41, 46–47). Hume's essays exhibit the tension between the neutrality of money that he finds "evident," at least in a closed economy, and his observation that prices lag in response to increases in money which are, therefore, not neutral. This tension has remained, in the words of Lucas, "at the center of monetary theory" ever since.

Hume derived his theoretical belief of neutrality from a priori reasoning, frequently presented in the form of thought experiments that Lucas finds "a little magical." For example, to prove that the quantity of money has no effect on the interest rate, Hume asks us to "suppose that, by miracle, every man in Britain shou'd have five pounds slipt into his pocket in one night" (Hume 1752, 66). As for the observation of short-run non-neutralities, Lucas notes that it is hard to tell what evidence Hume had aside from his everyday knowledge and the writings of "one Mons. de Tot."[1] As it turns out, these writings describe a monetary experiment that was just as magical as Hume's thought experiments, with two differences: the experiment actually happened, and it did not support the neutrality of money.

The place was France, the time was 1724. Money then took the form of gold and silver coins without face value, as was the norm. Rather, government set the nominal value of coins by decree and could change it literally overnight and without warning. Thus, for example, every man in France had 20% of his nominal money holdings slipped out of his pocket in the night of September 21–22, 1724, when the face value of the silver coin was lowered from 5 to 4. This bit of magic was just one in a sequence of face value reductions, or *diminutions*, that totalled 45% over a period of seven months.

My purpose is to revisit the 1724 experiment and its effects, but not for its position in the genealogy of monetary economics. Researchers have documented price rigidities and real effects of monetary shocks both in modern (Goodfriend and King 1997) and older data (Bordo et al. 2007). Despite the controversies that surround identification, they have used these responses of actual economies to select which models are more plausible. The reason is that "real world experimentation is not an option" and "the only place we can perform experiments is in structural models" (Christiano, Eichenbaum, and Evans 1999, 67). The deflation of 1724 implements in the real world an experiment such as theorists routinely perform on their models from Hume down to, say, Golosov

[1] Hume (1752, 49) describes "the frequent operations of the French king on the money; where it was always found, that the augmenting the numerary value did not produce a proportional rise of the prices, at least for some time" upon "the authority" of Dutot ([1738] 1935).

and Lucas (2006, Figure 4). Finding out what happened seems worthwhile.[2]

The paper proceeds as follows. Section 2 provides some background on the institutions of the period and a narrative of the experiment. Section 3 presents the quantitative evidence on prices and on industrial output. Section 4 discusses the observations made and explanations proposed by contemporary observers.

Monetary policy in 1720s France: a narrative

In this section I review the general features of France's monetary regime and policy, and describe the course of policy from 1723 to 1726.

Monetary regime

The monetary system in eighteenth-century France based on gold and silver coins.[3] Aside from two brief episodes (the *billets de monnaie* in 1703–07 and the bank notes of John Law's System in 1716–20), there was no paper money or any form of circulating bank liabilities.

A commodity money system consists of two distinct elements: the circulating medium (coins) and the unit of account, in this instance the livre (L) or franc. The key feature of coinage before the 19th century, in France as indeed everywhere else, was that coins bore no indication of face value: the relation between coins and unit of account was set by the government at will.[4]

The fact that a coin was assigned a legal tender value of N meant that it could be tendered to discharge a nominal debt in the amount of N. All gold and silver coins (except for a brief period in 1719–20) were unlimited legal tender for all debts. It was possible to denominate debts in coins of a specific date, but commonly domestic bills

[2]Hume cited authors (Melon 1736, Dutot [1738] 1935, Paris-Duverney 1740) who had either closely observed or even participated in this policy, and who published their views of the events in the 1730s. All three agreed that prices did not adjust immediately or fully to the policy, and that the French economy had undergone a sharp recession at the same time, but they disagreed on the lessons to be drawn. Somewhat more recently, the episode has been described, with little data, by (Babeau 1891, Marion 1913, Akabane 1967), although I owe to the last author the hunch that the behavior of textile output might be measurable.

[3]There were also billon (20% silver, but slightly undervalued) and copper small denominations, both minted on government account and with legal tender limited to 6L since 1719. They were reduced once, in April 1724, by 25%.

[4]This is what the U.S. Congress's constitutional power to "regulate the value" of money meant.

of exchange and other commercial bills were denominated in units of account, as were long-term forms of debt (including the government's). Foreign bills of exchange drawn on France were denominated in units of account and were always payable in the current coins at their current legal value.

The physical quantity of money was determined not by the government, but by the private sector. Gold and silver was freely minted, meaning that the government-sanctioned mints were at all times open to mint for a given posted price unlimited quantities of precious metal (old coins, foreign coins, bullion) into coins of the realm, which were the only legal tender. Thus, the physical money stock was decided by private agents through their minting and melting decisions.

The government did determine two sets of parameters, aside from the mint price. One set consisted in the physical coin specifications: size, weight, fineness and design of each coin, determined by royal edicts. The other set of parameters consisted in the legal tender or current values of each coin, expressed in livres. These values were assigned by the king in Council, in a decree known as *arrêt du conseil* (hereafter AC).

Monetary policy: general features

Monetary policy consisted in the government varying the parameters of the monetary system for fiscal or other purposes.

Several operations could take place. One was a *recoinage*: an edict was passed announcing new coins types with distinct designs and (possibly new) weight and fineness. Typically the existing coins were demonetized, that is, lost their legal tender value after a certain grace period, although they could always be sold to the mint for new coins at the official mint price. The purpose of a recoinage could be practical, for example to change the denomination structure of coins or to replace worn coinage; or it could be fiscal, to subject the whole money stock to the seigniorage tax.

A special case of recoinage consisted in changing only the design of the coin and restamping existing coins with the new design (for a fee) rather than melting and recoining them. This was called a *reformation*. Unreformed coins were, in principle, demonetized after a grace period. A reformation was a cheaper and faster form of recoinage, and was always done for fiscal purposes. Reformations were first practiced in Spain in the early 17th century on copper coinage (Sargent and Velde 2002, ch. 14), and practiced in France between 1690 and 1720.

Another operation consisted in simply changing the legal tender values of existing coins by decree without altering them. If the face value of coins was lowered, this

was called a *diminution*; if it was increased, it was an *augmentation*. The effect of a diminution (augmentation) of $x\%$ is instantaneously to reduce (increase) the nominal money supply by $x\%$ on the appointed date.

Monetary policy up to 1723

In history, contrary to our models, there is no time $t = 0$ and always a prior history. Thus I need to review the history of monetary policy in the forty years prior to the deflation of 1724, because that is what agents in 1724 had in mind when forming their expectations.

A convenient way to summarize monetary policy in a commodity money system is to track two indices. The first index, called the mint equivalent (ME), is the number of units of account per weight of standard metal contained in a given coin (Glassman and Redish 1988).[5] There is potentially one such index for each coin but different denominations of a given metal (gold or silver) always had the same mint equivalent, so one index per metal is sufficient. I focus on the silver ME because silver coinage was predominant and because relative movements of the gold and silver ME reflect changes in the gold-silver ratio which are secondary to the story.

The second index tracks the mint price (MP) paid by the mint in new coins for metal. It is in the same units as the ME.[6] The difference between ME and MP, called seigniorage, is the mint's gross profit from converting a unit of metal into coins. Augmentations and diminutions will appear as increases or decreases in ME. A recoinage may or may not change the ME, but a reformation typically increases ME

Figure 1 plots the mint equivalent and the mint price in France from 1685 to 1730. Prior to 1688, coin values had been stable for nearly a half-century. There followed a turbulent period during which reformations and occasional recoinages repeatedly increased the ME; the fiscal nature of these operations is evident from the gap that opens between ME and MP, indicating a substantial seigniorage rate. France was at the time engaged in very costly wars. A striking feature of these operations is that they were always followed, after a few years, by a sequence of diminutions, which appear as a descending step function for ME. These diminutions were always announced in advance: on a fixed schedule, coins were to return progressively to their old values,

[5]The unit of weight, which I will use throughout because it makes for round numbers, was the *marc* (mark) or half-pound (244.8g), and the standard fineness was 22 carats for gold and 11/12 for silver.

[6]A single price was offered for any quantity of metal of a given standard, whether paid in small or large denominations, so again only one MP per metal needs to be tracked.

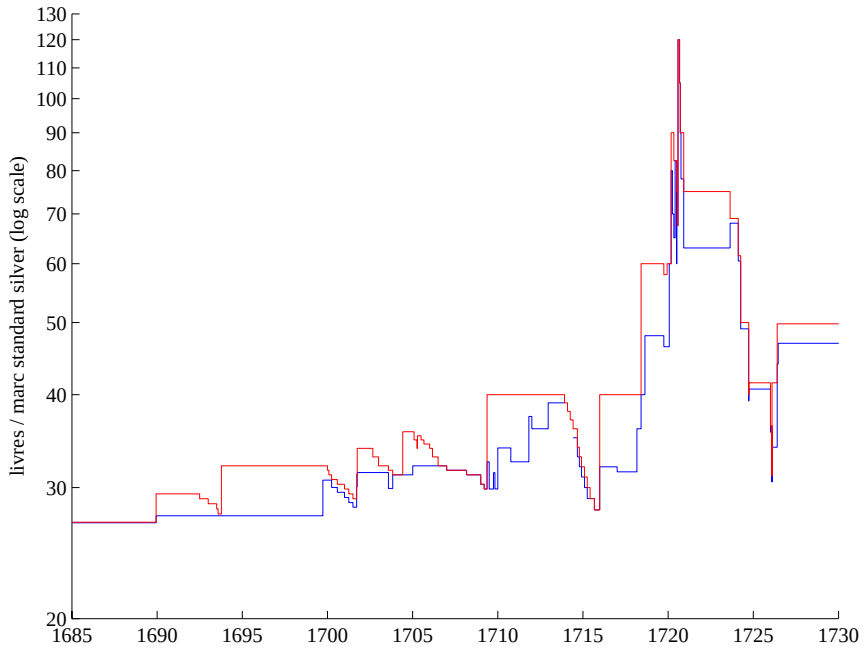

Figure 1: Mint equivalent (red, upper line) and mint price (blue, lower line), France, 1685–1730 (log scale).

without any restamping or recoinage. In 1689, the ME stood at 26.75L per mark. For 25 years it moved up and down but by 1715, at the death of Louis XIV, it had returned close to that level (see Table 1 for a chronological account of the mint price and mint equivalent of silver from 1715 to 1726).

France between 1715 and 1726 was in a period of turmoil. The major event of that decade was John Law's System, an attempt at radical reform of French public finance, including the introduction of fiat money (Velde 2003). The System collapsed in inflation in 1720, and the period from 1721 to 1723 was devoted to reconstructing the fiscal system, salvaging Law's Indies Company as a commercial concern, and liquidating the public debt.

From December 1715 the ME rose again, to peak at 120L in July 1720. The decree of July 30, 1720 had programmed a gradual fall to 60 livres; this was postponed in September when a reformation was launched, but resumed by decree of October 24 "for the benefit of trade and to reduce the price of foodstuffs." The new (reformed) coins were reduced from 9L to 7.5L on December 1, and were to fall to 6L on January 1, 1721, but this last diminution was postponed at the last minute on December 26, ostensibly to allow taxpayers to continue to pay their obligations in coin at the existing

Date	MP	ME	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	11 Feb 1724	60.5	63
1 Jan 1717	31.5	40	29 May 1720	82.5	82.5	4 Apr 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	26 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	27 May 1726	44	49.8
23 Jan 1720	60	60	1 Oct 1720	78	90	18 Jun 1726	46.9	49.8

Table 1: Mint prices and mint equivalents of the silver coinage, in livres per mark of silver 11/12 fine. Sources: original decrees at http://www.ordonnances.org/.

rate. The unreformed coins, originally scheduled to be demonetized on February 1, 1721, remained legal tender for taxes and at the mint at 6.3L until such time as a new diminution were announced (AC March 4, 1721).

For several years, monetary reform was off the table as the government faced far more pressing issues, like the liquidation of the debt. By 1723, most of the issues had been resolved. The Indies Company had been taken out of the business of government finances and it had emerged from receivership as a going commercial concern in March. The Visa operation, which reconstituted the national debt in the form of nominal bonds, was completed. The government turned its attention back to the currency.

Monetary policy from 1723 to 1726

The policy that concerns us here consists in a sequence of diminutions which, in contrast with earlier episodes, were not announced in advance. A recoinage in September 1724 followed, for purely technical reasons. Then, in early 1726, a recoinage was launched for fiscal purposes, but keeping the ME at the same level. Then, in May 1726, an augmentation took place.

The first measure, published on July 21, 1723, was only a minor reduction in the face value of the gold coinage (from 45 livres to 44L), to align the French gold-silver ratio with the rest of Europe. Of course, the adjustment could have been made by raising silver coins rather than lowering gold coins, but the government chose the latter because it was already thinking that the price of coins was too high, and was already

planning a deflation.[7]

Soon after, on August 23, the government took a number of measures jointly. It decreed a mandatory recoinage of gold coins. This was not for fiscal reasons, because at the same time it lowered the seigniorage rate on both gold and silver, from 14% and 16% to 1.6% and 1.5% respectively, just enough to cover production costs. The final measure concerned the silver coinage. The reformation of September 1720 had allowed both reformed and unreformed coins to circulate concurrently at different rates. Henceforth, no distinction would be made between the two coins, and both were to circulate at the average of the former values, 6.9L. This was a diminution for reformed coins but an augmentation for unreformed coins.

Why a deflationary policy?

The reasons for the policy of deflation are difficult to ascertain. Monetary policy, like all policy at the time, was decided by the king, who reigned as absolute monarch, and his cabinet.[8] The cabinet was composed of the principal ministers, including the finance minister (named Dodun), and met in private without any written minutes. The archives contain scant documents that shed light on the motivations for policy, and we have to rely on the preambles of decrees and the writings of advisers, many of them anonymous.[9]

The pattern in Figure 1 shows that, when the government engaged in currency manipulations, it was customary to return to what was seen as a normal level of ME.[10]

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[7]letter of the prime minister, Affaires étrangères, Mémoires et Documents, France 1256, f. 20.; Archives Nationales (hereafter AN) E3564, fol. 56, fol. 517. See also Paris-Duverney (1740, 2:323). A list of policy priorities written by the incoming prime minister in August 1722 mentions: "settle the project on currency to restore order in trade, put the troops in a position where they can be paid in peacetime or wartime without affecting the king's current revenues or commerce"; he further noted that "the morale of the troops is poor today, nor is it as it should be [...] because of the excessive value of the coinage which makes subsistence difficult" (Affaires étrangères, Mémoires et Documents, France 1252, fol. 78v, 80v).

[8]The king at the time was Louis XV, who was born in 1710. He had come legally of age in February 1723 but had, until June 1726, a prime minister, the duke of Orléans (who died in December 1723) and then another royal prince, the duke of Bourbon.

[9]The clearest contemporary explanation for the deflationary policy can be found in a memorandum, commonly attributed to the adviser Paris-Duverney, widely circulated at the time and published in August 1725 in the *Gazette d'Amsterdam*. Copies of the memorandum can be found in various archives, including Affaires étrangères Mémoires & Documents, France 1258, f. 61-67, where it is dated June 1725 and attributed to Paris-Duverney, one of the influential Paris brothers (Velde 2006), and a close adviser of the duke of Bourbon. During the later controversy with Melon and Dutot, Paris-Duverney (1740, 1:72–109, 2:326–400) contained a retrospective apology of the deflationary policy.

[10]See a memorandum of 1692 (AN G/7/1392, n. 25) and one of 1705 (AN G/7/1468, reg. 1, fol. 240) discussing the pros and cons of such a policy.

This norm, medieval in origin (Sargent and Velde 2002, ch. 5), had been applied throughout the last decades of the reign of Louis XIV, and the nation "expected to see coins return to the point from which they had been removed, and in practice they had always been brought back or at least very close" (Paris-Duverney 1740, 1:76).

Paris-Duverney's 1725 memorandum argued in addition that the diminutions were "necessary to remedy the ills that the high value of specie had long been causing through the excessive cost of wares, foodstuffs and labor; to allow the troops to feed and clothe themselves with their salaries, which they couldn't do so that one could not find soldiers in a realm so plentiful in men; and to be just to the creditors of the State who, by virtue of the reduction of annuities and offices from 4 and 5% to 2 and 2.5% did not truly receive 1% on the loans they had made at 30L to the mark to support the late king in the long and difficult wars he had to endure. Determined by such compelling reasons, the government therefore reduced the coined mark of silver to 41.5L."

The concern for creditors of the State (and, to the degree that soldiers' wages were fixed in nominal terms, they were part of the broad category of nominal creditors of the State) is rather surprising, given France's poor reputation as a debtor in the eighteenth century. The policy of deflation amounted to an "anti-default." This may have been prompted by political considerations, although, given that the creditors of the State after the collapse of John Law's system numbered half a million (out of a population of four million households) it is not easy to identify the creditors of the State with any well-defined interest group or social category. A more likely concern was the State's reputation as a lender, particularly in light of a looming European war. In the same document, Paris-Duverney justified the creation of a sinking fund to reimburse the debt, financed by a new tax, in the following words: "The more one has behaved in ways that deter trust, the more painstaking and punctual the government must be in discharging its promises, so as to rekindle and make moderate use of this precious trust on behalf of the State when its conservation requires it."

The government was not unaware of the costs of a deflation, although it may have underestimated them. The experience of the business contraction of 1715–16, which was widely attributed to the similar (but pre-announced) deflation of 1713–15, was recent enough; and the government knew that fiscal revenues would suffer in a recession. A budget plan drawn in August 1724 expected the largest loss among indirect taxes on tariffs: because of lower exports, revenues from tariffs were expected to fall by a quarter.[11] But there were more direct costs to the government, namely capital losses

[11] BN Fr 7771, fol. 87v, 92r.

on the balances held by tax collectors and treasurers at the time of the diminution, for which the king was responsible. In 1724, they amounted to 34.8 millions, reducing revenues from 222 millions to 187 millions.[12]

During the controversy of the 1730s that Hume cited, Paris-Duverney justified again the policies of the cabinet, albeit retrospectively (Paris-Duverney 1740, 2:326–400). He admitted that, as a matter of principle, the value of currency once established should not be altered. But he claimed that it was not well established in 1723, because of the disruptions of the System. Law himself, he recalled, had begun a policy to reduce the mark to 30L in March 1720. The government in 1723 did not intend to go as far, but only to follow what had always been the practice before. It had been forced to wait until France remonetized itself after the collapse of the paper currency in 1720. The economy had recovered, but in the process the prices of foodstuffs, merchandise and labor had risen too far. He conceded that diminutions had undesirable effects (he mentioned scarcity of currency, falling tax revenues, and slowing trade), but they were in his opinion transitory.

The diminutions of the 1710s had been pre-announced. Why did the government do otherwise in 1724? During the last series of diminutions from 1713 to 1715, the loss to the government had totalled 100 millions, due to the fact that the treasurers' obligations to the government were in units of account. If no distinction was made between the coins they had received before the reduction and those received after, it was very tempting for them to claim that the coins received after (at the lower value) had been received before (at the higher value), allowing them to discharge their obligations at a profit. This may have been a motivation for not announcing the diminutions.[13] The major motivation, however, was clearly to avoid what had happened in 1713 and 1714, when a pre-announced program of eleven diminutions brought the ME from 40 to 28L. On that occasion, it was believed, prices rose as merchants compensated themselves for the losses they would incur on money balances, while foreigners waited for prices to drop and stopped buying French goods. The reason for pre-announcing the diminutions, to give debtors a chance to pay off their debts and to spread the nominal losses across many individuals, was deemed to be inapplicable after John Law's paper money had given everyone a chance to wipe out their debts.[14]

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[12] BN NAF 22245, fol. 365.

[13] Furthermore, measures were taken to prevent the fraud: on the morning of each diminution, on orders of the finance minister, government officials throughout France immediately visited all the treasurers and tax collectors to inventory their cash holdings and close their accounts (AN G/7/31/104).

[14] Paris-Duverney (1740, 1:97-98, 2:336).

date	écu's value	diminution	cumulative diminution
	7.5		
Aug 1723	6.9	-8.0%	-8.0%
Feb 1724	6.3	-8.7%	-16.0%
Apr 1724	5	-20.6%	-33.3%
Sep 1724	4	-20.0%	-46.7%
recoinage			-44.7%

Table 2: Changes in the legal tender value of the main silver coin (the écu) in 1723–24, with the percentage diminution and cumulative diminution.

Diminutions in 1724

The deflationary policy took place through a sequence of three more reductions: on February 11 (dated February 4), April 4 (dated March 27), and September 22.[15] They brought the silver coin from 6.9 livres to 6.3 livres, 5 livres, and 4 livres successively (see Table 2). The gold coin was similarly lowered from 27 livres to 24, 20, and 16 livres. Since the reductions were not quite proportional for gold and silver, the gold-silver ratio was thus changed from 14.67 to 14.28, 15, and finally 14.46 (the ratio that would prevail in France until 1785).

The reduction of September 1724 was followed a few days later (on September 26)

[15]The date of the arrêt du conseil differs from the date of publication because of the delays in sending the information to the various provinces (it took ten days for a letter to reach Perpignan from Paris). At each diminution, the government carefully calculated, given the postal schedules, when to send the letters to the intendants so that the announcement would appear within a window of two or three days everywhere in France. Although the text of the decrees explicitly stated that they entered in force from the day of publication, the difference between the date of the decree and the date of publication gave rise to some disputes. For the September diminution, therefore, the government post-dated the decree to September 22 and started mailing copies to the most remote provinces on September 14. This confused some intendants who hesitated to accept as valid a document dated in the future. Finally, for the May 1726 augmentation the government resorted to specially hired couriers. To ensure secrecy, each time the minutes of the decree were sent to the royal press at night and the typesetters were kept locked up inside the shop until the text had been issued to the street-hawkers the following morning (AN G/7/1472). In each case, utmost secrecy was maintained until the moment of publication. For example, the day before the publication of the April reduction, the finance minister wrote to the director of the Royal printing press: "I send you a copy of an arrêt du conseil for a reduction of coin value which you must typeset tonight and print during the night so that it may be distributed by the hawkers tomorrow morning at eight exactly. You shall take the measures necessary to ensure not only that a sufficient number of copies is available for distribution tomorrow, but also that the arrêt remains secret until the time of publication which must not be delayed even if the arrêt is not yet registered in the cour des monnaies, as the King's service demands it" (AN G/7/32, letter of Apr 3, 1724 to Anisson; G/7/33, letter of Sep 21, 1724 to Anisson).

by an edict announcing a recoinage. The purpose here was not to change anything to the nominal value of money. The recoinage had two stated objectives. One was to adjust again the gold-silver ratio slightly to 14.5, in response to the market ratio in England and the Netherlands, and to the growing quantity of gold in circulation in Europe. To do this without altering the recently reminted gold coinage required a corresponding slight increase in the mint equivalent of silver, from 40L per mark to 41.5L per mark. The other objective was to remedy a side effect of the diminutions, namely the inconvenient denomination structure. When the écu was at 6L, it was natural to coin lower denominations of ⅓, ⅙ and 1/12 of an écu. With the écu at 4L, these fractions were unsuitable, and the new coinage took the form of ½, ¼, ⅛, and 1/16 of an écu. The very fact that the government was bothering with such details suggested that the new face value of the écu was meant to be permanent.[16] To allay suspicions that the recoinage was driven by fiscal considerations, it was announced that henceforth seigniorage on silver will be only high enough to cover production costs and in any case never exceed 2%. The slight increase in the ME of silver allowed to cover production costs and still leave a slight nominal inducement for recoinage.[17]

Policy to 1726

After September 1724, the government was committed to making no further changes in the currency. All it could do was wait for prices and wages to fall. But two crises developed in 1725, one international and one domestic.

The risk of a European war increased considerably in April 1725 when the Franco-Spanish alliance broke down. It was decided to increase troop levels and begin furnishing warehouses on the borders in preparation for a possible conflict. The expenses of a potential war would likely require borrowing, and the government was convinced that punctual servicing of the debt was insufficient, and that a program to begin reimbursing it was required.[18] To this end a new tax imitated from the Dutch, the Fiftieth, was levied in June 1725 for twelve years. Its expected income of 10 to 12 millions was to be devoted to reimbursing the debt; every year, the funds assigned to service debt that had been reimbursed would be devoted to further reimbursements, a sinking fund

[16] This point made by the intendant of Caen to the merchants of his district (AN G/7/220, n. 177).

[17] See a memo from September 1724, along with drafts of the decree, in AN G/7/1876.

[18] See Paris-Duverney's memoir in the *Gazette d'Amsterdam*; also a commentary on a budget plan of December 1725: "when the State's credit is restored, everything is easy and everyone is satisfied, the realm is feared and peace is reinforced … to restore one's credit is the best way to peace, *si vis pacem para bellum*" (Affaires étrangères, Mémoires et Documents, France 1258, fol. 54v).

formula sixty years before Dr. Price and Pitt. But tax increases are never popular, and the government was blamed for having needlessly provoked an international crisis.

The domestic crisis was a harvest shortfall in northern France, due to continual rains from April to September 1725 and following a mediocre harvest in the three previous years. A riot just outside Paris on July 9 alerted the government to the dangers of the situation,and much effort was made in the summer and fall to supply Paris with grains bought in the provinces or abroad, at the expense if need be of the provinces. The price of wheat and bread spiked sharply in that period but returned to normal by the winter. The public mood, however, remained sour; the government was blamed for the dearth of bread and accused of having conspired it in order to profit from the people's misery. Evidence of government agents engaging in grain purchases only seemed to confirm these rumors (Kaplan 1985).

At this point, the budget was still not in balance and unpaid arrears from previous years were accumulating, particularly on the debt. The fiscal pressure became enough to push the government into the kinds of operations it had foresworn. In emergencies, taxing the money supply was usually a relatively rapid way to raise funds; it was also reasonably equitable (compared to the available alternatives), taxing as it did cash holdings proportionally. The normal process, a recoinage, involved raising the mint equivalent, so that individuals would receive no less in nominal value than they turned in when exchanging old for new coins, but the government could collect seigniorage. But the government did not wish to lose the hard-won fall in prices it had (partially) achieved, so it proceeded to lower the value of coins even further, before recoining back to the same ME.[19]

On December 4, 1725, it was announced that gold coins would fall from 16L to 14L on January 1 and to 12L on February 1; and silver écus from 4L to 3.5L and 3L on the same dates. This diminution was, therefore, pre-announced. By January, however, rumors of an impending recoinage were rife, particularly after the government ordered all tax receivers and treasurers to turn over all their spare cash to the mints.[20] The government was fully aware that the impending recoinage could not be kept secret, but it instructed the intendants to let the public guess without confirming anything except a firm promise that, should any recoinage take place, it would not raise the ME higher

[19] As early as October 1724, rumors of war had led some to believe that the true purpose of the deflationary policy was to allow for such an operation in time of need (letter of the intendant in Bourges, AN G/7/188, n. 488).

[20] BN Fr 8364, fol. 323; Fr 8365, fol. 35; Fr 8384, fol. 12.

than it had been until December 1725.[21] Individuals started buying foreign exchange to hedge against the feared recoinage; the government secretly intervened on the market to keep up the price of foreign currencies high, so as to make the hedge unprofitable.[22] On February 1, the diminution took place as scheduled, but three days later an edict appeared ordering a general recoinage of silver and gold. New, lighter écus were to be minted and circulate at 5L (with fractions at 2,5L, 1L, 0.5L and 0.25L), the existing écus would circulate for another six months before demonetization. The seigniorage tax was raised to 18%.

The credibility of the government's monetary policy was, of course, in ruins. There was growing dissatisfaction at the court with the duke of Bourbon's ministry, and the king was approached. He was by now sixteen years old, and felt ready to take matters into his own hands. The ministry, meanwhile, took a final, desperate measure, and on May 27 a decree raised the value of the newly minted gold and silver coinage by 20%, without any tax. There is no direct evidence on the motivation for this move, but it is likely that the same arguments were made by the business community as in 1715 and 1716 for the need to increase the nominal value of coins so as to stimulate economic activity. The measure came too late to save the ministry; Louis XV had arranged in utmost secrecy for the dismissal of his prime minister, which took place on June 11, 1726. The new finance minister, Le Peletier des Forts, immediately announced that he would return to the sound practices of the time of the great Colbert.[23] The last monetary measure of the previous government had been to lower the seigniorage rate to 5.8% (it was promulgated after its fall, on June 18). Thereafter, the French currency was not altered (except for an adjustment to the gold-silver ratio) until the French Revolution.

Quantitative evidence

In 1724, the French government engaged in a deflationary policy. It did so with a succession of reductions in the face value of coins that were not announced in advance but were broadly publicized. How did prices and quantities react?

What allows me to answer is a striking aspect of the deflation of the 1720s, namely

[21] BN Fr 8365, fol. 27-28.

[22] The Paris brothers, who did not approve of the policy, were charged with carrying out this market intervention, and they were quite successful. They explained the details of the intervention in a manuscript(AN KK959).

[23] BN, NAF 2560, fol. 7. See Velde (2006) for the other far-reaching changes in fiscal policy.

the government's eagerness to follow the economy closely, at least once it became clear that prices were not reacting as expected. During 1724 and 1725, great efforts were made to collect data on prices and wages in addition to those collected through the existing mechanisms to monitor industrial activity, particularly in textiles. The information that has survived in the archives is very fragmentary, but can serve to provide an unusually good quantitative picture.

In this section, I first document the reaction of prices on various markets, then turn to the textile industry to describe prices, wages and output. Before the data, however, a brief description of the statistical method used is in order.

Statistical method

The data I use are not ideal. Changing sampling and reporting methods, archival randomness and other factors make for unbalanced panels and time series with many missing observations. Furthermore, my main interest is in the evolution of a common factor: either the general price level common to a collection of price series, or the nationwide activity level common to a collection of regional output series.

The features of the data and the objects of interest suggest the use of a state-space model. For each collection of series (prices or quantities), a general index is modeled as a common factor with local linear trend. The model, which allows for seasonality, and includes the Hodrick-Prescott filter as a special case, is described in appendix B. The purpose of the exercise is to represent the data in a parsimonious way, rather than fit a statistical model. Hence, and given the small amount of data, I keep the number of parameters small, and estimate them by maximum likelihood. This statistical model underlies the various indices that follow, unless otherwise noted.

Prices

Bullion

Coins were made of gold and silver; this is the essential difference between the regime of the time and modern systems, and has implications for the behavior of the price of silver and gold bullion during the period under study.

Elementary logic suggests that the market price of either metal must have immediately fallen between the mint price and the mint equivalent: had it been lower than the former, minting would have occurred, increasing the money supply; had it been higher than the latter, melting would have occurred.

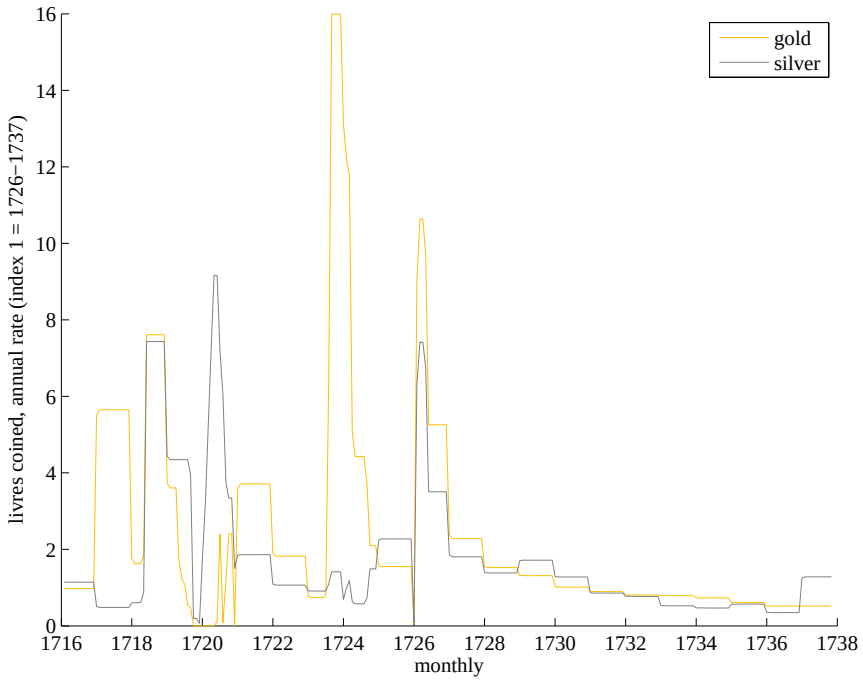

Figure 2: Minting in the 19 mints under the jurisdiction of the Paris Court of Moneys. Source: AN Z/1b/298, Z/1b/421.

I do not have any evidence on market prices of bullion, but available minting data plotted in Figure 2 shows that minting levels (outside of the periods of recoinage, for gold in 1723 and both metals in 1726) were normal.

Foreign exchange

Foreign exchange markets traded claims on foreign (gold or silver) currency delivered in a foreign city at a future date (typically one or two months forward). Give or take the costs of arbitrage (shipping, insurance, and the time cost), the mint prices and mint equivalents should have placed the same bounds on the price of foreign currency as on bullion.

The foreign exchange market turns out to be the one market that immediately and completely adjusted to the diminutions. We do not have very good direct evidence on the market in Paris, but we do have series of quotations from two foreign markets, London and Hamburg, which traded bills of exchange denominated in French livres, and which I present first. Figure 3 shows bi-weekly quotations in London. For comparison, I also plot the parities for gold and silver. Each metal has two parities,

depending on whether one is minting or melting French coins: the difference between the two lines reflects the seigniorage charge levied by the French mints (in other words, the mint price was always lower than the mint equivalent; Britain did not charge any seigniorage). These parities do not reflect costs of physically shipping gold or silver from London to Paris, so they are narrower than true gold (silver) points. Figure 4 shows the same thing for Hamburg, with only one pair of parities since Hamburg used only silver currency.

The one source for foreign exchange quotations in Paris is Dutot ([1738] 1935), but he usually provides a range within which the London quotations varied over a certain period of time. I have represented these time-value ranges as rectangles in Figure 5. The parity is the one calculated by Dutot himself.

Up to the few days' delay in transmitting information,[24] we see that the foreign exchange quotations adjust immediately and fully to the diminutions and augmentations.[25]

The effect of the exchange rates on the trade balance is clear from the available annual data on merchandise exports and imports (Figure 6). Exports, which had grown over 30% in 1722 and over 50% in 1723, fell by 37% in 1724. Imports continued to grow in 1724, albeit more slowly, but fell 28% in the following year. The trade balance turned negative, a rare event in this period. The collapsed in foreign demand for French textiles was noted by the intendants in Poitiers and in Lille in October 1724.[26] One might have expected imports to respond more than they did to the diminutions, but imports were partly restricted by quotas, and in 1725 and 1726 the recession to be discussed later played also a role.[27]

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[24]There was a time lag before the news reached foreign cities. For Hamburg, the regular post took nine days; for Amsterdam, five days. The time to reach London depended on the winds over the Channel: reaching Calais alone took three days (Affaires étrangères, Mémoires & Documents France 1252, fol. 128).

[25]Foreign bills of exchange were payable at a usance of two months. This, one might expect, ought to introduce expectations of further diminutions into their pricing. But an AC of May 27, 1719 decided that, henceforth, foreign bills drawn on France would be payable in coin at the rate known in the place of origin when they were drawn, making them immune to posterior diminutions or augmentations.

[26]G/7/266, n. 301; G/7/456, n. 223.

[27]Some tariffs, notably on imports of cattle and dairy products, had been lifted or reduced to encourage foreign competition and drive down prices.

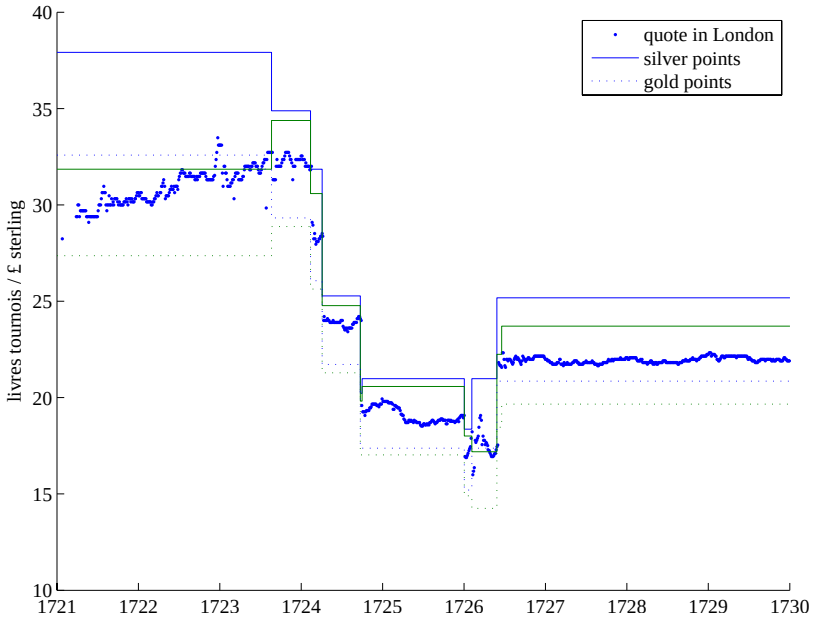

Figure 3: Exchange rates on Paris in London, 1721–29. The lines indicate the silver and gold MP and ME. Source: *Course of the Exchange*.

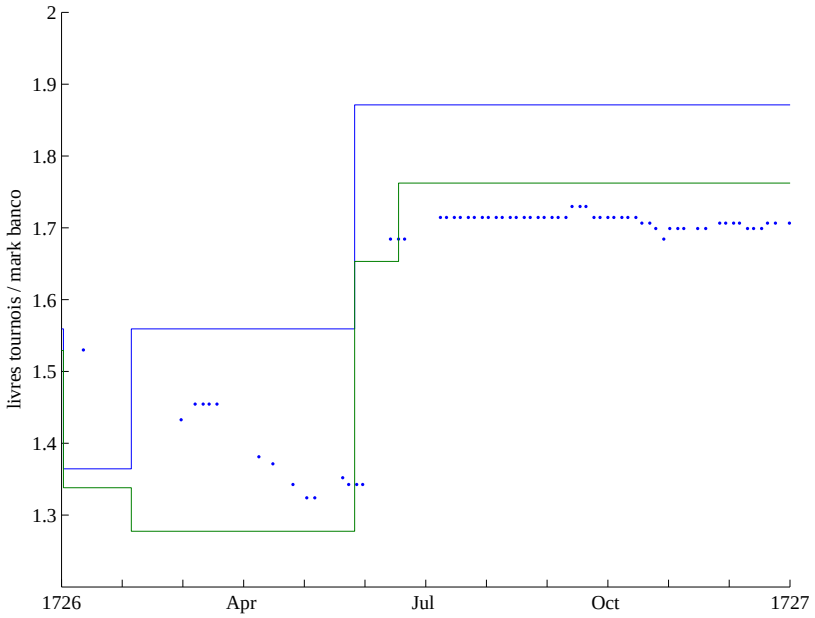

Figure 4: Exchange rates on Paris in Hamburg, 1726. The lines indicate the silver MP and ME. Source: *Geld-Cours*, Staatsarchiv, Hamburg.

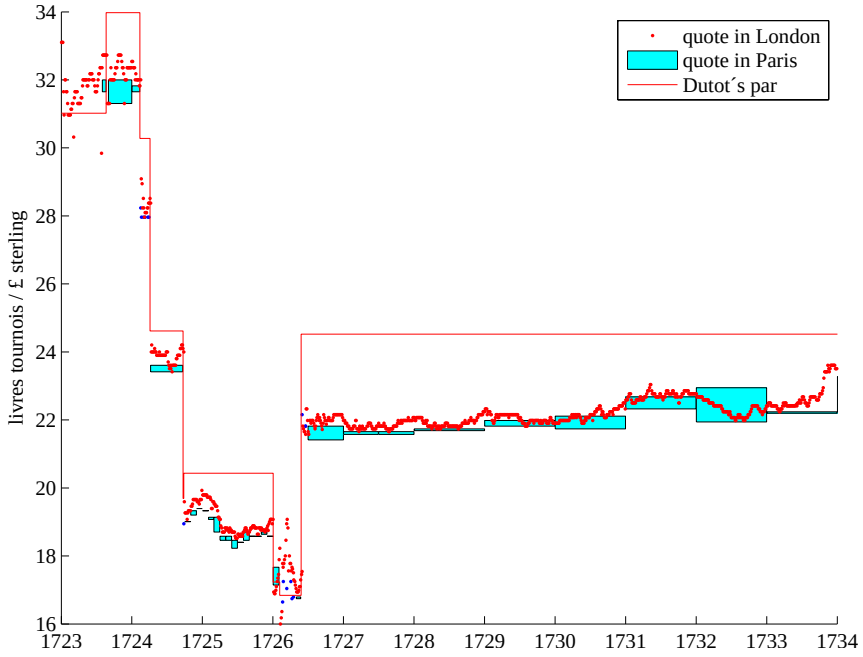

Figure 5: Exchange rate on London in Paris, 1723–34. Source: Dutot ([1738] 1935).

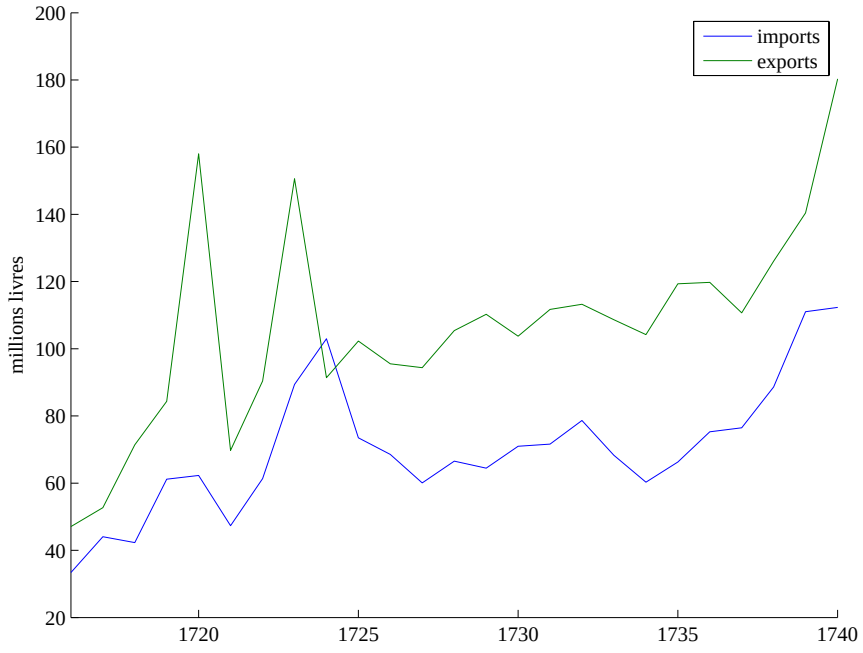

Figure 6: Exports and imports, 1716 to 1740. Source: Romano (1957), AN F/12/534A.

Commodity markets

The foreign exchange market in Paris was located, along with the bond and equity market,[28] in what is now the National Library. It's a short ten-minute walk from there to the market for grains and other foodstuffs, located in the Halles. But the picture in this market is very different.

Markets in the Halles were held twice a week. From a contemporary compilation of the high, low and modal prices of foodstuffs for every market day, begun in 1724, Dutot ([1738] 1935) selected data on wheat, bread, eggs, pork, candles and butter, for the months in which diminutions or augmentations occurred. I reproduce Dutot's daily data in Table 3.

Dutot also computed monthly averages for the same six foodstuffs for the years 1724 to 1726. The source he used has survived, although the volume for year 1724 has disappeared.[29] This original source is much more detailed, but since the 1724 volume is now missing, I can only extend the monthly averages for the six commodities chosen by Dutot to cover the full period of diminutions. Figure 7 plots an index of these six commodities, as well as an index excluding wheat. The stepwise graph represents the index of the livre's ME. The graph confirms what Table 3 indicates, that the market prices of commodities did not react instantaneously to the diminutions; it also shows that they did not react fully, even over a one or two-year horizon.

The markets we observe here are competitive and free from manipulation and interference. The government was extremely weary of interfering with market mechanisms when it came to grains, and did so only in periods of emergencies: and even then, it tried to do so (as in 1725) by shipping large quantities of grains from other provinces or abroad, rather than by controlling prices directly. In normal times, the marketplace saw hundreds of buyers and sellers meet twice a week and carry out their business unfettered, except for a regulation requiring them to use the offices of official measurers when the trade was concluded.[30]

Data from other sources confirm that there is nothing special about Paris. We know that local officials throughout France were required to submit price reports on grains and other commodities twice a month, although the zeal they deployed in fulfilling this

[28]The only stock for which prices are available is the Indies Company, not shown here. They show no impact of the diminutions.

[29]The manuscript is Bibliothèque de l'Institut, Paris, mss. 513-521, and covers the years 1725 to 1733.

[30]The measurers provided a third-party verification of the quantity and quality of the grain purchased. They reported prices (highs, lows, and modes) and total quantities every market day to the market authorities, and are the original source for the price and quantity data I now have.

		wheat			bread		eggs	pork	candles	butter
		high	low	mode	high	low	avg	avg	avg	avg
Feb 1724	1	25.5			3.75		52.5	6.75	14.5	95
	5	25.5			3.75		52	7.75	14.5	75
	9	25			3.5		57.5	7.75	14.5	80
*	12	24.25			3.5		65	7.75	14.5	85
	16	24.5			3.5		70	6.75	14.5	85
Apr 1724	1	27.5			3.25				14.5	85
*	5	23.5			3.25				14.5	85
	8	25			3.25				14.5	92
	12	24.5			3.25				14.5	90
Sep 1724	6	25			3		29	6.75	10.5	60
	9	25.25			3		29.5	6.75	10.5	63
	13	26.5			3.25		30	6.75	10.5	60
	16	27.25			3.25		34	6.75	10.5	72
	20	26.75			3.25		34	6.75	10.5	66
*	23	25			3.25		35	6.75	10.5	65
	27	25.75			3.25		32	6.75	10.5	63
	30	26			3.25		36.5	6.75	10.5	65
May-Jun 1726	15	24.5	12	20	2.75	2.5	24	5.75	9.75	46
	18	24	12.5	18.25	2.75	2.5	23	5.75	9.75	46
	22	24	12	19	2.75	2.5	25	5.75	9.75	46
	25	23.25	12	18.5	2.75	2.5	23.5	5.75	9.75	46
*	29	23.25	12	20.5	2.75	2.5	23.5	5.75	9	43
	1	23.25	12.5	19.9	2.75	2.5	23.5	6	9	42
	5	23.25	13	21	2.75	2.5	25	6.25	9	
	8	23.25	13	22	2.75	2.5	24.5	7.25	9	42
	12	23	13	21	2.75	2.5	23.5	6.75	9	40

Table 3: Prices of various commodities at the Halles market, each market date, February, April and September 1724. The asterisk marks the first market date after each diminution. The units are sous per pound for bread, pork and candles; livres per bushel (*septier*) of wheat, per hundred pounds of butter, and per thousand eggs. Source: Dutot ([1738] 1935, 76), Institut mss. 514.

duty varied. Fortunately, the surviving archives of one official, in the city of Nantes, on the Atlantic coast, bear witness to his zeal. Reports for grains (wheat and rye) twice a month and reports for other foodstuffs (other grains, pulses, wine, meat, oil, cheese) and other commodities (wool, linen, silk, animal fodder, fat, wax, burning wood) each month exist from April 1720 into the 1730s.[31] Figure 8 plots an index of these prices, separating grains from other goods. The general price levels behaved remarkably closely in Paris and in Nantes.

[31]Nantes, Archives Municipales, HH2 and 4 (grains), HH3 and 5 (other commodities). Internal evidence indicates that these series are averages of observations for each market day.

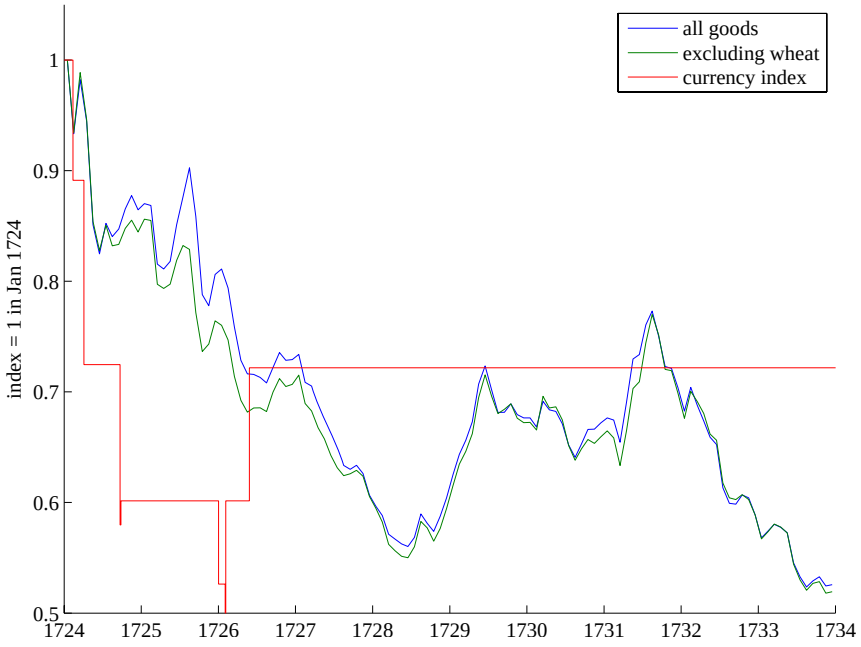

Figure 7: Seasonally adjusted index of six commodities sold on the Paris *Halles* market, monthly data, 1724–1733.

From the wholesale markets

I collect under the label of "wholesale markets" two sets of data. The first come from regional fairs, which were held in various towns throughout France at regular intervals. Government officials reported on the state of business at the fairs, often with detailed statistics on the volume of sales, prices, and also the volume of goods brought and the volume sold, and sometimes the rate of interest at which bills were discounted.

Data from the fairs of Pézenas and Montagnac, held in the south of France near Montpellier, in a major textile-producing area, allow me to compute a quantity-weighted index of up to 70 types of cloths produced locally.[32] The second set of data comes from the cloth-hall of Rouen (*halle foraine*), where cloths were brought from outside to be sold to retailers and craftsmen. This survey of the prices of all cloths brought to be sold each month has the advantage of coverage at high frequency over all types of cloth (there are 58 different types of cloths, and the average ratio of dearest to cheapest is 40). Unfortunately, it only starts in January 1725, when the deflation was already underway,

[32]The fairs of Pézenas and Montagnac were held five times a year after the holidays of St. Hilary (Jan. 13), mid-Lent, Whitsunday, Holy Cross (Sep. 14) and St. Martin (Nov. 11).

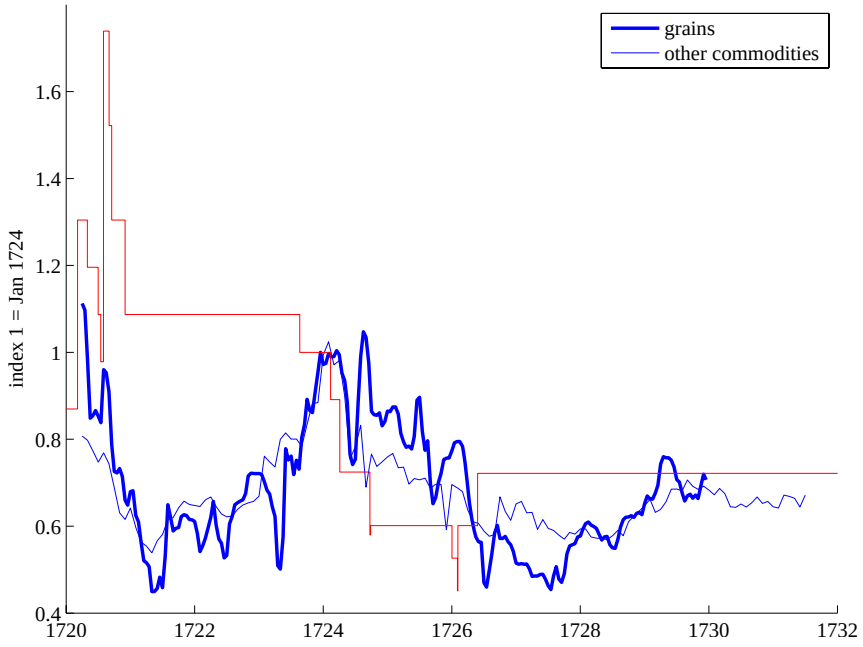

Figure 8: Seasonally adjusted index of grains (bi-monthly) and other commodities (monthly) in Nantes, 1720–1731.

and there are no quantities, so the index cannot be weighted. I normalize all series by their sample mean, and compute an index based on the median of the normalized values each month.

The indices for the southern fairs and for Rouen are shown together in Figure 9. The pattern is similar to that found in markets: prices fell, but slowly and not by the full extent. They also show a strong rebound in the month that followed the augmentation of May 1726.

Finally, comparisons of prices for a broad range of cloths, from low to high quality, can be found for certain fairs and for the period of deflationary policy of 1724 (Table 4). Prices fall on average by around 30%, less than the value of coins; there is even a rebound in prices in mid-1724, as noted by some inspectors.

The textile industry: prices, output and wages

The French archives contain quantitative information on the textile industry, particularly woollens, which represented somewhere between 15 and 20% of all French industry in the 18th century. Industry itself accounted for a third of total output (Daudin 2005,

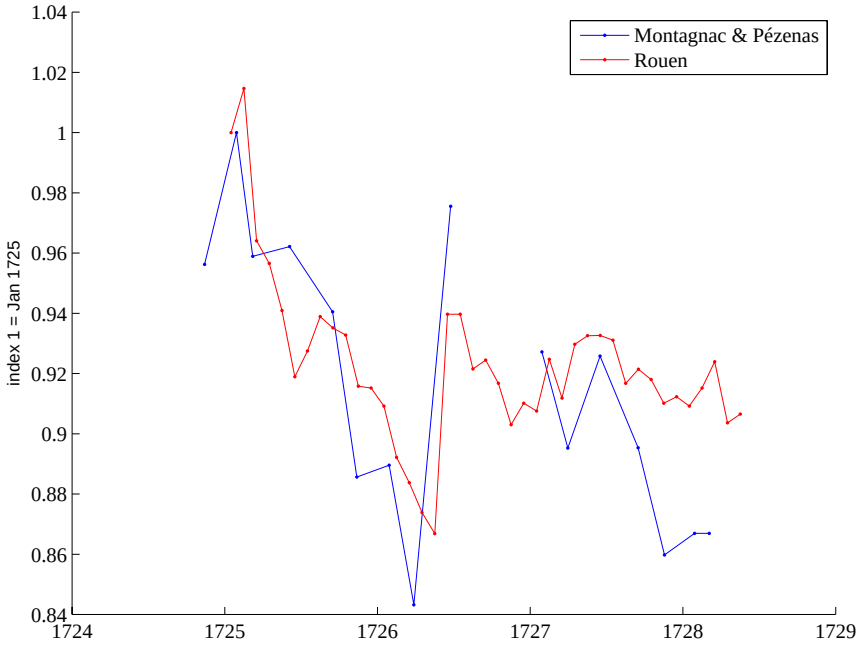

Figure 9: Price indices of cloth brought to the fairs of Pézenas and Montagnac (chain-weighted, 1724–28) and to the cloth-hall of Rouen (median, monthly from May 1725 to May 1728). Sources: AN F/12/1237, F/12/1380, AD Hérault C.2345; AN F/12/1367.

	ME	Price changes (%)		
		mean	median	std dev
Amiens cloth-hall (107 cloths)				
Jan 1724 to Oct 1724	-40	-25	-25	6.5
Clermont fair (42 cloths)				
May 1724 to Aug 1724	0	7	5	6.7
St. Germain fair (22 cloths)				
Feb 1724 to Feb 1725	-40	-33	-33	6.0

Table 4: Percentage changes in cloth prices, compared with the percentage change in ME over the same period. Sources: G/7/97 n. 242–44 (Amiens); F/12/1376 (Clermont); F/12/1234B (Saint-Germain).

32, 39). The industrial organization of the manufactures was relatively simple. The weavers, or *fabricants*, owned and operated the looms. Either they or a merchant-entrepreneur bought the raw materials, the weavers hired labor to process the raw materials (mainly wool), spin it, and weave it. The weaver returned or sold the finished cloth to the merchant who sold it either directly to retailers (*marchands-drapiers*), at cloth markets in the main cities, or else at the regional fairs that took place annually in various parts of France.[33]

The price data that I present was collected at all stages: "factory gate," fair, cloth market and retail shops. The output data was collected at the production stage, in the following manner.

Since the time of the finance minister Colbert (1661 to 1683), French manufactures, specifically woolens and linens, were closely regulated, not to control output or prices but to enforce quality standards. Each type of cloth produced in each distinct location had to meet certain standards. Bolts of cloths were inspected at various stages, first at the local level by the producer guilds or corporations under the supervision of government-appointed inspectors. There were roughly as many inspectors as there were intendances, or administrative districts, about thirty (see Minard 1998 and 2000 on the inspectors). The inspectors also visited all the looms in their district and inspected cloths sold at markets and fairs. They reported to the government on the state of manufacturing in their area and, beginning in January 1714, were required to provide semi-annual reports on prices and output in their districts (Gille 1980, 92–93). Some of these reports have survived in the national or in local archives and form the basis for my quantitative study (see Appendix A).

The reports listed each production location, the types of cloth produced (length and width), the type of wool used and its price, prices of cloth per bolt or per ell,[34] the number of producers, number of working and idle looms, and number of bolts produced. I compute price and quantity indices on a semi-annual basis. But many reports are missing (three out of four on average for the period 1716–1732). But each report provides some information on the previous semester, namely the total of looms working and bolts of cloth produced.[35] Thus, for these two particular variables, I have

[33] See Thompson (1982), Gayot (1998) on the textile industry.

[34] The ell, a unit of length for cloth, is 45 inches, very close to the French *aune* of 118cm.

[35] By the late 1720s, as the government realized that there was a seasonal pattern in the data due to agriculture's competing use of labor during the summer, numbers from the same semester in the previous year also appear.

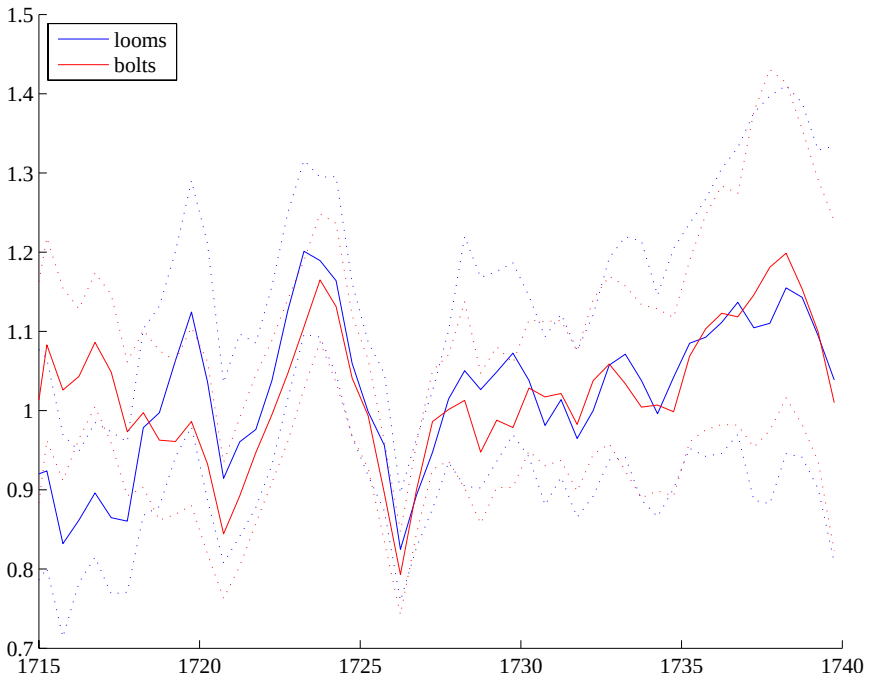

Figure 10: Index of working looms and index of bolts produced.

twice as many observations.[36]

Results

Indices looms working and bolts produced are shown, with standard error bands, on the same graph in Figure 10. They are remarkably close, particularly for the period of interest for which there is a lot of available data. The uncertainty is greater at the beginning and at the end of the period, where fewer reports have survived.The series show little or no trend over the 25 years covered. Some (possibly insignificant) fluctuations appear throughout the period, but two sharp recessions are very noticeable, one in 1720 during the collapse of John Law's system, the second during the period under study. The magnitude of the decline from mid-1723 to mid-1726 is almost the same for both indices and quite substantial, about 32%.

It is also interesting to note that the sharp rebound from the 1720 crisis seemed to peak in either the first (for looms) or the second half (for bolts) of 1723. This confirms

[36]Of the thirty districts for which some reports survive, twenty-five (representing 78% of national output according to the figures in (Markovitch 1976, 492–95)) provide usable data for looms and bolts, and nineteen (72% of output) provide enough data for chain-weighted price and quantity indices.

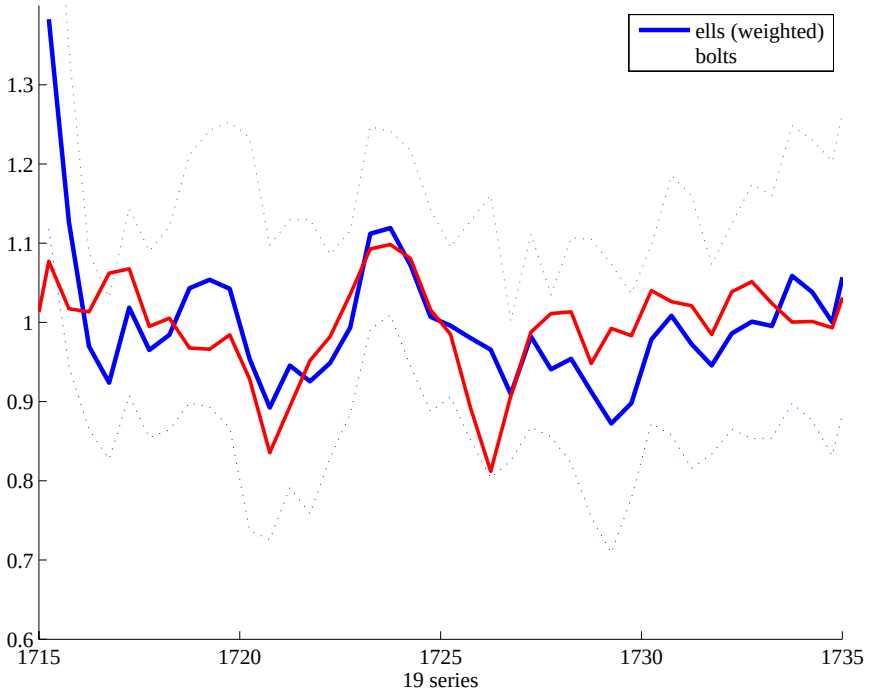

Figure 11: Indices of price-weighted lengths and bolts produced.

the qualitative picture given above of very strong activity up to 1723, but it suggests that the peak of activity may have preceded the deflationary policy.

I have also computed a common index for nineteen price-weighted series of ells produced, as well as for the corresponding number of bolts. The comparison is shown in Figure 11. There is more uncertainty on the ells series (for example, I have only one full report for the first half of 1726, while I have nineteen observations on bolts and looms working for that same semester). The index is nevertheless broadly consistent with the bolts index.

Producer prices

For the same nineteen series, I have computed a common index of quantity-weighted prices, in units of account per ell. The result is shown in Figure 12. I also plot an index of the diminutions, set to coincide with the price index in 1723:s2. Textile prices are more tightly estimated than quantities, and follow the same pattern as other prices:

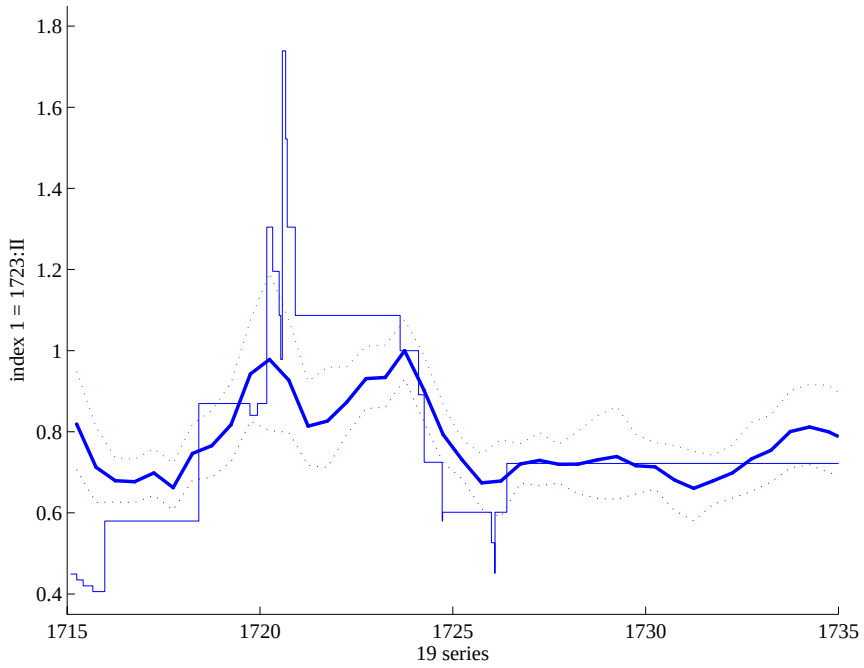

Figure 12: Weighted price index of bolts for a sub-sample of districts.

they fell for two years, but did not fully adjust to the diminution.[37]

Other industries

During the period under study, only the linen industry was the object of systematic reporting by inspectors as with woollens. The surviving reports are scarce, but the picture one can draw for two adjacent districts in Normandy (Figure 13) indicates a similar pattern.

A few reports on the price of silks in Lyon (the capital of the silk industry) suggest that prices adjusted rather more than in the woollen industry (Table 5).

Wages

Although Dodun had sent detailed instructions for wages to be collected, I have found very little data in the surviving archives. Only one report, for the district of Carcassonne, contains abundant data not only on wages, but also on the costs of all other inputs,

[37] See also the factory-gate prices collected by the government for sixteen cloths (F/12/681, n. 139, F/12/551-553), showing a median increase in price of 67% from 1716–17 to January 1724, in line with the 72% increase in ME; but only a fall of 14% from January to April 1724, and 13% from April to October 1724.

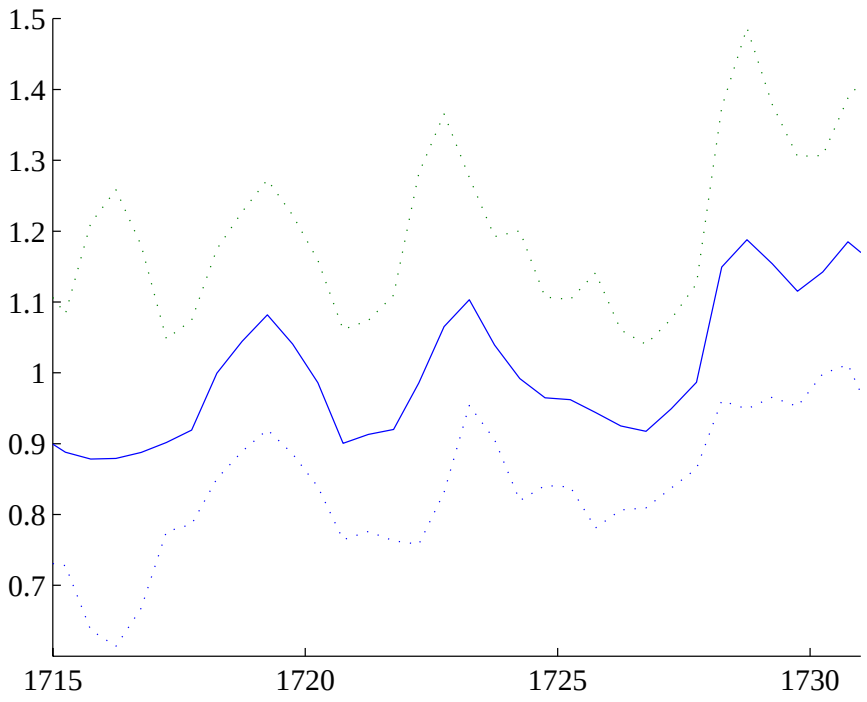

Figure 13: Index of linen output in Rouen and Caen, 1714:II to 1731:I. Sources: F/12/560, F/12/1423, AD Rouen C160 (Rouen); F/12/561, F/12/1420 (Caen).

	ME	Prices		
		mean	median	std dev
prices in Lyon for 11 silks Dec 1723 to May 1724	-26	-32	-43	5.7
prices in Lyon for 44 silks before Sep 1724 to Nov 1724	-20	-16	-16	6.5

Table 5: Percentage changes in cloth prices, compared with the percentage change in ME over the same period. Sources: G/7/1707 n. 142, G/7/368–373 (Lyon).

	1712	1716	1719	1723	July 1724	Dec 1724	1726:s1	1726:s2
wages								
Carcassonne	1.00	0.87	1.24	1.27	1.26	0.84	0.85	0.97
Montagne	1.00	0.86	1.03	1.23	1.24	0.91		
Mazamet	1.00	1.02	1.03	1.48	1.49	1.04		
Dourgne	1.00	1.05	1.08	2.07	1.79	1.43		
all	1.00	0.88	1.12	1.26	1.26	0.88		
output prices								
Carcassonne	1.00	0.87	1.94	1.53	1.31	0.91	0.84	1.10
w/p	1.00	1.00	0.64	0.83	0.96	0.93	1.02	0.89
ME	1.00	1.00	1.50	1.88	1.25	1.04	1.04	1.24

Table 6: Wages in the woolen industry of the Carcassonne district. Source: AN F/12/556.

and on the number of workers, for selected years.[38] Carcassonne's woolen industry was substantial, about 3 to 5% of the national industry. It produced a range of cloths, mostly of middle and high quality for export to the Near East, and lower quality for domestic consumption.

The data is provided for various districts: Carcassonne and nearby towns (where the exporters were concentrated), the Montagne of Carcassonne, Mazamet, and Dourgne. The wage rates are mostly expressed as piece rates (by weight of wool, length or bolt of cloth) although some are expressed as daily wages. The report also gives the quantity of cloth produced and the quantity of wool needed for each type of cloth. I can infer the quantity of labor provided for each type of labor; in the case of daily wages, I multiply the known number of laborers by the number of working days in a year, assumed to be 240.[39] This allows me to compute a weighted wage index, although the results are not very different if one uses an unweighted index. The results are shown in Table 6; since I also have the price of output, I compute a ratio w/p.

The data strikingly confirm the qualitative evidence on wages. In particular, from 1723 to July 1724, after the first diminutions had reduced the nominal value of currency by a third, wages had not reacted at all. After the September diminution, they fell

[38]The dates are 1712, 1716, 1719, 1723, 1724 before and after the September diminution. Another report contains wage data for the first and second semesters of 1726, although the categories of laborers and the units in which wages are expressed do not match exactly.

[39]This is based on a comment by the manufacturer Vanrobais that holidays take out a third of the week on average (AD Somme, C158).

by 30%, a substantial fall but still short of the 45% reduction in nominal values. In real terms (deflated by the price of output), they had actually increased. But, after the reversal in June 1726, when the nominal value of coins increased by 20%, wages increased by 12% and output prices by nearly the full amount.[40]

In their own words

To close this case study, I will let the voices of the past be heard. From the correspondence between the finance ministry and officials in the provinces, much can be gleaned about the perception of contemporaries, especially on the behavior of economic actors and the potential explanations for the failure of prices to respond as expected.[41]

Monetary neutrality

The government's deflationary policy was based on the idea that changing the nominal value of the medium of exchange should result in proportional changes in the price level, or, alternatively, that returning the nominal value of coins to the 1716 level should bring prices to their 1716 level. Initially, the government expected this process to take place quickly. The instructions sent with the first diminution of February 1724 asked the intendants to write immediately to report on the change in prices in their province, and to send an update a week later.[42] As late as October 1724, the intendant in Provence still expressed the belief that "since there is less money in value than before, this must make it scarcer and hence drive down the prices of all things that are bought, because there will be fewer buyers and fewer people with the means to purchase": in other words, the money market should clear.[43]

Even after evidence had accumulated that prices did not react as expected and officials admitted that prices would take time to react to diminutions, they remained

[40]Compare with the comment from the intendant in Dauphiné in October, 1724, that the main cause of high wages was the "high price of foodstuffs and the fact that workers had grown accustomed to earning too much since 1719 and 1720, a habit they could not forsake and which makes them arrogant" (BN Fr 8381, fol. 73v).

[41]The sources are essentially the correspondence between the finance minister and the intendants and inspectors of manufactures in the provinces. See Appendix A for the sources.

[42]BN Fr8928, fol. 308.

[43]BN Fr8928, fol. 273-277, 8 Oct 1724.

somewhat bewildered, as the intendant in Bourges, writing in October 1724:[44]

> It is true that, far from seeing a reduction in the prices and wages, by a barely conceivable madness it seems that everyone in concert insists on doing the opposite of what common sense and reason dictate; since by giving almost double the weight of silver that one gave twelve or fifteen months ago, one obviously ought to receive the good at half its former rate, yet everyone is so accustomed to sell dearly that no one can bring themselves to lower their prices.

What could account for this behavior of prices?

Sources of price pressures

Figure 8 suggests that the general level of prices was subject to mid-frequency swings (3 to 5 years) that were related to something else than monetary policy, and also that 1723 was a period of high prices.[45] When trying to understand why prices were not falling, contemporaries often attempted to explain why prices were high in the first place.

A large number of intendants reported that foodstuffs were particularly expensive. This was attributed to a string of two mediocre harvests in 1722 and 1723; the harvest in 1724 seemed to be going reasonably well, although the harvest of 1725 was disappointing due to heavy rains in the North of France. Many intendants thought that, as long as food remained expensive, wages and manufacturers' costs would remain high. Another source of high prices was a lack of fodder in 1723, which resulted in high transportation costs.[46] Another cost that producers and merchants invoked was that of their inventories, purchased at previous, higher prices. The intendant in Pau predicted, based on what he had seen during the augmentation of 1718, that prices of manufactured goods would

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[44]AN G/7/188, n. 488.

[45]The presence of such cycles is readily seen in the spectrum of grain price series such as Baulant and Meuvret (1960–62) or Dupâquier et al. (1968).

[46]The intendant in Alençon: "grains have risen in price more than fallen, and it is certain that this is what causes the dearness of everything else" (G/7/76, n. 364, 13 Nov 1724); in Bordeaux, "the only cause of high prices is the great dearth in this province" (G/7/147, n. 300, 28 Oct 1724); in Soissons "as far as foodstuffs are concerned grain must be considered as the prime material whose price influences everything, it is not the price of currency that sets the price of foodstuffs grown and consumed in the realm, but only the scarcity or abundance of those goods" (G/7/513, n. 251, 8 Nov 1724); in Dijon "wool and silk remain almost as expensive, as well as wages, so that unless these materials fall, I do not think we can hope to achieve so quickly a fall proportional to currency" (G/7/166-170, n. 308, 10 Oct 1724). On fodder, see G/7/368-373, n. 48, 4 Dec 1724; G/7/220, 1 Nov 1724.

start to fall only once producers had exhausted their existing stocks of materials and were using new materials bought with current money.[47]

Wages

The government was particularly concerned about the evolution of wages, which it saw as key to lowering the price of manufactured goods because high wages were a frequent pretext for keeping output prices up.[48] Many inspectors and intendants reported that wages remained high (although some, as in Alençon and Alsace, said they were reasonable), and in Provence workers were said to rebel and collude against any attempt at lowering wages. The reasons given vary. The government believed that collusion was at play in some instances.[49] Many intendants said that the high price of foodstuffs drove up the subsistence wage. Some argued that the demand for labor was higher, either in agriculture (Provence) or in manufacturing where employers were bidding up wages (Auch and Pau), particularly new entrants (Languedoc, Poitiers). The intendant in Soissons pointed to a lower supply of labor, due to two causes. One was demographic, namely an undersize age class due to the wars that occurred 15-20 years before. The other was an income effect: since 1719, workers were used to living well, and it took much higher wages than before to convince them to provide additional labor: "since day laborers earn in three days enough to feed their families for a week, they have to be bid up and will not be moved to work the rest of the week except with high wages and even then one does not always convince them."[50] The finance minister repeated the idea in his letter of September 1724, claiming that high wages were due to the fact that workers fed themselves differently, and if they returned to their consumption basket of 1710 they would find food and clothing more affordable. In a private letter he gives more examples: meat consumption had increased by 40%, wool cloth had replaced linen in garments, leather shoes had replaced wooden clogs.[51]

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[47] Dijon: G/7/166-170, n.308, 10 Oct 1724; G/7/121-123, n.181, 11 Oct 1724.

[48] AN G/7/32, Aug 30, 1724.

[49] Documents in G/7/31, G/7/1707 and Arsenal 10846 show an attempt in April 1724 by workers in the stocking industry to go on strike and organize a fund to support the strikers. The government threw a few ring-leaders in jail for a few weeks. Similar incidents were reported in the paper industry in Dauphiné.

[50] Alençon, G/7/1704, n.246; Alsace, G/7/444 20 Oct 1724; Auch-Pau, G/7/121-123, n.181; Languedoc and Provence, G/7/789, 30 Oct 1724; Soissons, G/7/513, n. 251. The intendant in Soissons even considered fiscal policy to increase the labor supply, but raising the lump-sum *taille* levied at the parish level would only fall on farmers and yeomen because they were outnumbered by the day laborers and tax collectors found it easier to collect from them. This intendant, named Orry, was finance minister from 1730 to 1745.

[51] BN Fr8362, fol. 108; G/7/33, letter to Silly, 15 Oct 1724.

This idea, sometimes expressed as a sort of habit persistence, is echoed by a senior official of the finance ministry during a meeting of the the Trade Council on Oct 19, 1724 when he complained that laborers in the textile industry had grown accustomed to living better than befits their station; the finance minister also claimed that workers had acquired expensive consumption habits.[52]

Expectations and credibility

The information summarized by Figure 1 must have been in everyone's mind throughout this period and shaped expectations. In July 1722, before the diminutions started, the inspector in Champagne noted that cloth producers had never earned so much and had the upper hand over traders who were looking to invest their funds in fear of a diminution: the latter thought there was less to lose by holding goods, and they were willing to buy any cloths they found without examining their quality. By January 1724, the same inspector found that the price of cloth had increased in part because of fear of an impending diminution.[53] The same month, when Dodun asked intendants to report on the prices of grains, several (in Châlons, Paris, and Poitiers) reported that farmers were selling only small quantities because they feared a diminution of coins, and were "keeping their inventories as an asset liable to a smaller loss" than cash balances. This suggests that farmers and grain merchants not only expected a diminution, but also expected that grain prices would not fall as much in value as currency. The intendant in Dauphiné complained that high prices were due to the high value of coins and urged the government to lower the coins "or, if it is necessary for political reasons to leave them as they are, assuage the public's fears of an impending diminution."[54]

Once the first diminution took place in February 1724, the path taken by the government became clearer. The uncertainty was now how far down it would go, and the government itself later admitted it did not know initially.[55] The effect of this

[52]AN F/12/71*/3/223; BN Fr8362, fol. 108.

[53]AN F/12/1359, 22 July 1722, 19 Jan 1724.

[54]AN G/7/1902. Not everyone expected a deflation, however. Shortly before his death in December 1723, the previous prime minister was thought to be planning a return of John Law and the introduction of a new paper currency. In January 1724, the finance minister took the unusual step of publicly denying any intent to create a paper currency as being completely opposite to the views of the new government (AM Nantes, HH890, n. 218).

[55]In the Edict of September 1724, the government admitted that it had allowed "a considerable amount of time to pass until we might be in a position to decide, knowledgeably and on the basis of our own experience, whether it was appropriate to set the price of coins at the value which they had reached after the last reduction, or to reduce them further, and if so to what extent." In the accompanying instruction,

uncertainty is sharply described by a local official in Marseille two weeks after the first diminution of February: "the diminution has suspended all business and increased the prices of foodstuffs and merchandise. We never doubted that the the first diminutions would have this effect . . . all sensible people are convinced that the third diminution will begin to have some effect and progressively things will return into balance with specie, as long as all are convinced of the King's firm and serious intention not to increase after the diminutions. It is up to the Court to see how it can persuade foreigners and the King's subjects that this intent is serious, firm and unwavering."[56] The comments presciently alluded to uncertainty both over the final target, and over the government's resolve to remain at the target once it has reached it.

With the second diminution Dodun admitted that the first had not produced the expected effect, because merchants and workers foresaw that more could come, and used this pretext to increase prices; but he believed that specie now being on a "lasting, if not perpetual footing," all things should return to the state they were in before paper money and the fear of diminutions took them to their current high level. A few days later he instructed the intendants to repress the rumors of further diminutions that were circulating in Paris and in several provinces, giving pretext to merchants and craftsmen to keep their prices high.[57]

The phrase "lasting, if not perpetual" allowed enough ambiguity for rumors to persist. Reporting on the Beaucaire fair of late July 1724, the inspector cited fears of further diminutions that led to a frenzy of purchases and a rise in prices of 12 to 15% over the course of the fair, everything being bought cash; wool had risen by 8 to 10% since the fair of Pézenas in early June. In Tours, in early September, the inspector reported that sellers were unwilling to sell, and buyers eager to buy, because of fears of further diminutions.[58] Similarly, the inspector in Troyes reporting on the fair of September 1724 attributed the high prices of wools to the belief among traders that it was better to keep one's funds in goods; those who have money prefer to lend it

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Dodun said that the prime minister wanted to leave him "enough time to inform myself fully" and wanted to "see the effect of the March 27 diminution before deciding at what level coins would be set for the future," hence the six months of inaction "which is a very long time for such a pressing matter" (BN Fr8362, fol. 100).

[56]BN Fr8928, fol. 309-10, Feb 23, 1724; a letter to the intendant from Jean-Pierre Rigord (1656-1727), a local antiquarian who served as deputy of the intendant in Marseille from 1704 to his death. The intendant wrote similar comments to the finance minister a few days later.

[57]AN G/7/31, 209, Apr. 4, 1724; G/7/32 May 2, 1724; similar letter later in BN Fr 8928, fol. 288, Jul 30, 1724. The government routinely read private letters and there are a few instances of individuals receiving visits from the police (AN G/7/32, May 22, 1724; Arsenal, 10,832, fol. 46–49; AN G/7/1707, n. 116).

[58]AD34 C2126 letter of Huré de la Chapelle, Aug 1, 1724; AN F/12/695, Sep 12, 1724, Sep 26, 1724.

to merchants without interest than lending it in annuities at 3.3% (the legal interest rate).[59]

The finance minister admitted as much in the instruction of September 1724 accompanying the third diminution: "The efforts we have made until now to reduce the prices of foodstuffs and goods have not had all the success we could expect, because the public was convinced that it would be necessary to make another diminution of the currency ... experience has shown us that the price of foodstuffs and goods is influenced less by the value of coins than by the fear of an impending diminution and uncertainty over their value in the future ... the excessive increase in the price of all things which began only in 1720 was mainly due to the fear of losing on paper balances, which was replaced by the fear of losing on coins which persists today."[60] Finally heeding the advice it had received, the government did not merely announce a permanent level for currency. It also explained the choice of level in the preamble of the edict of September 1724. It proclaimed a commitment to "certain and unchanging value of money" and blamed recent circumstances for deviations away from that principle. A long time had elapsed since the April diminution because of the need to decide how far down to go. Experience showed that trying to go down too far, after a long period where the economy had grown accustomed to a high nominal level, was too difficult and hence the government had settled on the new level as proper and final. This long preamble, accompanied as it was by an instruction the intendants that was to be made public, was a remarkable attempt at communicating with the public the goals of monetary policy.

By then, expectations about the course of the economy rather than government policy may have become more important. Already in October 1724, the finance minister predicted that prices would fall of themselves because of reduced demand, whether foreign or domestic, and also because increasing unemployment would push down labor costs. A similar belief was expressed by the deputies to the Council of Trade, who thought that increasing pressure from the creditors of merchants would sooner or later force the latter to sell their inventories and drive down prices, as had happened in 1715 (with an accompanying raft of bankruptcies).[61]

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[59]AN F/12/695, Dec 18, 1724.

[60]BN Fr8362, f. 99, 101, 104.

[61]AN G/7/33, letter of October 22, 1724 to La Tour, intendant in Poitiers; F/12/695, 18 Dec 1724. The council of trade was an advisory body composed of finance ministry officials and deputies elected by the chambers of commerce. The deputies' comment on bankruptcies led them to muse that perhaps a further fall in prices was more to be feared than desired; these perhaps too candid comments were struck

A few later reports continued to link the fact that prices did not decline enough to expectations, although not necessarily of further diminutions. In March 1725, the inspector in Troyes commented that merchants attending the last fair had been expecting that an augmentation of coinage would be conceded to stimulate trade, and most of them still expected one. Reporting on the Beaucaire fair of July 1725, the inspector said that those who had cash preferred to hold on to it or buy bills of exchange rather than buy goods, since some prices had still not bottomed out.[62]

Coordination failure

The quote of the intendant in Bourges mentions that people seemed to act "in concert." The government seemed faced with a coordination problem, with everyone along the production chain blaming upstream costs for their inability to lower prices. In a typical example, the guild of nail-makers in Moulins declared themselves "all ready to lower their prices by the same extent as the iron producers."[63] In his instructions to the intendants in April and September 1724, the finance minister outlined a strategy for reducing prices by working along the production chain, asking the intendants to talk to the main actors at each step, from producers of raw materials to manufacturers, workers, wholesalers and retailers.

The minister singled out one industry for the excessive price of its output, namely iron, which had been exporting a lot, and he was counting on reduced demand from abroad after the exchange rate appreciation to bring prices down in that sector. Conversely, French industries relying on imported raw materials should be able to pay a better price. A few other factors were expected to help bring down prices: scarce fodder had driven up transportation costs in the previous year, but that was not expected to last in the coming year. Next, wages were to fall, and to ensure this the intendants were to discourage any collusive attempts on the part of workers to maintain high wages (see below). Then manufacturers should have to lower their prices, and consequently retailers. The losses they would incur on their stocks would be compensated by the high prices they had been enjoying previously. As for domestic bills, they were mostly indexed (payable at the rate prevailing when they were issued).[64]

The intendant in Moulins wrote: "the individual sells his cattle at a high price to

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out from the final minutes of the Council's meeting.

[62]G/7/792, 11 Mar 1725; AD Hérault, C2301.

[63]G/7/411.

[64]AN G/7/31, letters to the intendants of April 4, 1724.

the butchers, the butchers sell the meat dearly and the hides to the tanners, they in turn sell the same hides prepared dearly to shoemakers, cobblers and others, this creates a cascade and no one submits to a price reduction proportional to currency."[65] The intendant in Bourges similarly reported that "all producers and retailers agree that the last diminution must result in a proportional fall in the price of their wares, they even promise to conform to the wishes of His Majesty, but when it comes to keeping their word they reply that as long as foodstuffs and wages do not fall they will be unable to cede on the price of their goods."[66] In Dijon, the intendant had learned that retailers "continue to sell their goods at the same prices as before the last diminution, claiming that at the factories, among wholesalers, and in the fairs, goods are not reduced, and some have even increased in prices."[67]

Another concern was geographical coordination: a recurrent excuse or explanation given by the intendants was that prices could not fall in their district because they weren't falling in neighboring ones.[68] Dodun refused to accept this argument because prices should depend only on the level of the currency, and "if it were accepted there isn't a province that couldn't use this excuse, and since no province can be preferred over the others they must all give the example at the same time."[69]

Nominal contracts

Several observers attributed the lack of response of prices to the existence of nominal contracts. The intendant in Amiens stated that many leases of lands and houses, and contracts to cut wood had been raised to high levels during the period of fiat money in 1720 and had not yet come down; this, combined with grain scarcity, prevented prices from falling.[70] The mayor of Nantes wrote to the intendant of Bretagne that "in vain would one ask merchants to cut the price of their wares by a third if one does not reduce by a third the leases on their shops," and he proposed that a law be passed reducing all leases passed since January 1720 by a third, citing a precedent of 1421. The intendant

[65]G/7/411, 25 Oct 1724.

[66]G/7/128, n.488, 7 Oct 1724.

[67]G/7/166-170, n. 311, 4 Nov 1724.

[68]for example Clermont, G/7/108, n. 282; Pau G/7/121-123, n. 181.

[69]BN Fr8362, fol. 109; G/7/33, 14 Dec 1724.

[70]G/7/97, n.240, 17 Nov 1724.

dismissed the proposal because it would, he thought, lead to excessive litigation.[71]

The extent to which nominal debts were a legitimate concern was a matter of debate at the time. As I showed, a motivation for not announcing the diminutions in advance was the government's belief that nominal debts were of little importance after the wave of repayments in 1720. The data in Hoffman et al. (2000, Fig. 2.4, 388) bears this out: they estimate that the stock of notarized private debt fell by 40% in Paris in 1720. As for merchants' bills and credits, the finance minister claimed in his instruction of April 1724 that the majority were payable in specie at the rate of the date of issue. This, however, was disputed: the cloth and spice merchants of Moulins, in their memorandum to the finance minister, claimed that trade credit was always payable in coin at the rate on the day of payment.[72]

Credit crunch and recession

At the same time as the recession worsened, the intendants and inspectors commented increasingly on economic activity. Having documented the recession quantitatively in the previous section, I will only dwell on the comments that touch on monetary matters, in particular the development in late 1724 and 1725 of a "credit crunch" (to use a modern phrase).

The first reports of "scarcity of money" (to use the phrase of the time) appear in early October 1724, soon after the last diminution. Initially they seem to refer to reduced cash balances (as a consequence of the diminution), but later they appear to refer to an unwillingness to spend or lend cash: in Provence, "coins are scarce because they have lower value as much as because there is less eagerness to use them", in Normandy people are trying to borrow at 12 and 15% to send to Paris. In January 1725 the intendant in Rouen reports that trade is languishing and that there is no demand for cloths, even though manufacturers have lowered their prices, whereas retailers have not lowered theirs as much. He attributed the situation to the lack of money. At the same time the inspector in Dauphiné reported that cloth output had fallen by half in three months because foreign demand had evaporated, foreigners having bought a lot before the last diminution; and also because workers were reluctant to lower their wages. In Troyes in March, merchants were still hoping for a reversal of monetary policy; same remark in Orléans. In Caen in September, the inspector reports that prices of inputs had become

[71] AM Nantes, HH59, n. 9, 10.

[72] G/7/31, n. 209, 4 avril 1724; G/7/411, mémoire des marchands drapiers et épiciers.

reasonable but manufacturers were not producing for lack of money. In Rouen in November, the high price of grain and the lack of money are blamed.[73]

By the end of 1724, the government was apparently becoming concerned with the state of the economy, not just the evolution of prices. In the deliberations of the Trade Council, increasing attention is paid to the reports of the inspectors of manufactures about the conditions of the textile industry and the volume of trade at the major fairs. The reports for the first half of 1725 were consistently gloomy. In Alençon the inspector blamed it on weak demand and high grain prices. In Caen it was said that inputs were now reasonably prices and workers more numerous, but very little cloth was sold by lack of money. In Rouen the lack of money was also being felt.[74]

In early 1725, the government heard rumors of bankruptcies among merchants, and worried about the possible repercussions on the main trading centers. On January 7, 1725 Dodun asked the intendant in Lyon to be kept informed of any bankruptcies, and two days later he wrote similarly to the intendants in Orléans, Tours, la Rochelle, Bordeaux, Rouen, Marseille, and Lille. The reports he received over the next few months apparently reassured him that the bankruptcies that were taking place would not have systemic repercussions. Either there were none to report, or they befell marginal players who had not borrowed much from other merchants. Only Bordeaux reported a significant number of bankruptcies, but all were linked to a speculative boom in the wine trade that had developped in the previous years, and saw "cobblers, craftsmen and even servants" enter into the business without knowing anything about it.[75] By the summer, a different sort of crisis, that related to grains, would take up Dodun's full attention.

Reports on the fairs of the Languedoc province also provide some information on discount rates for commercial paper, summarized in Table 7. Rates apparently rose markedly and peaked in June 1726. This corroborates the talk of "scarcity of money" from inspectors and intendants, something we would call a credit crunch.

A factor that may have exacerbated the problem was an ill-timed reduction in the usury ceiling set by the usury laws. The ceiling had been 5% since 1679; a reduction

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[73]Champagne: G/7/237, n. 184; Caen: G/7/220, Nov. 1, 1724. Provence: BN Fr8928, fol. 262-267; Normandy G/7/1707, n. 264, 9 Dec 1724. G/7/792: Rouen, 21 Jan 1725; Dauphiné, 12 Jan 1725; Troyes, 11 Mar, 1 Apr 1725. Alençon, F/12/1369A, 6 Jul. Caen, F/12/1469B, Sep 1. Rouen, F/12/1363, Nov 28.

[74]Alençon: F/12/1369A, Jul 6, 1725; Caen: F/12/1369B, Sep 1, 1725; F/12/1363, Nov 28, 1725.

[75]AN G/7/35, Jan. 1725, n. 13, 27; Feb. 1725, n. 21, 23; Mar. 1725, n. 3, 11; May 1725, n. 15. Bordeaux: G/7/147, n. 307, 313; Lille, G/7/266, n. 347; La Rochelle, G/7/344, n. 248; Lyon, G/7/368-373, n. 50, 56, 57; Orléans, G/7/422, n. 310; Marseille, G/7/792; Rouen: G/7/503, n. 226.

Date	rate	term (months)	rate (p.a.)	
Jan	1725	2%		
Mar	1725	1%	1	
Jun	1725	4.5%	2	
		1.25%	1	
Sep	1725	1%	1	12%
Nov	1725			12–15%
Jan	1726			12–15%
Apr	1726	5–5.5%	2	
		6–6.5%	3.5	
Jun	1726	2–2.5%	1	
		5.5%	2	22%
Jan	1727			12%
Mar	1727			15%
Jun	1727	2.75%	2	11%

Table 7: Interest rates on commercial bills at the fairs of Montagnac and Pézenas, 1725–27. Sources: AN F/12/1239; AD Hérault, C.2333, C.2345.

from 5% to 4% had been debated in 1715–16, and again in August 1717,[76] and Law attempted in March 1720 to reduce the legal ceiling to 2% but the edict was never registered in Parliament and did not come into force. In June 1724, the legal ceiling was lowered to 4%, with some resistance from the Parlements.[77] In June 1725, the government did an about-face and admitted that this had resulted in lenders either withholding their funds or engaging in usurious (and illicit) practices: "we have ceded against our own opinion to the general wishes of our people."

Conclusion

The peculiarities of the French monetary system allowed its government to conduct a series of unforetold reductions in the nominal money supply by a total 45% over a period of a few months. The aim of the policy was to reduce the price level to what was thought to be an appropriate level. This ruthless experiment in price level targeting was not successful. Although prices and wages did fall, they did not do so by the full

[76] AN Mar G 135; Mazarine ms. 2432, fol. 85–89.

[77] See for example the complaints of the parlement of Provence (AN G/7/792). The intendant in Rouen reported that this led to a sharp drop in lending G/7/503, n. 226, 19 Jan 1725.

45%; moreover, it took them months, if not years, to fall that far. Real wages in fact rose, at least initially. Interest rates rose. The only market that adjusted instantaneously and fully was the foreign exchange market. Even markets that were as close to fully competitive as one can imagine, such as grain markets, failed to react initially. There is also some suggestive evidence that some prices reacted more sharply to the reversal of monetary policy that took place in 1726.

At the same time, the industrial sector of the economy (or at any rate the textile industry) went into a severe contraction, by about 30%. The onset of the recession may have occurred before the deflationary policy began, but it was widely believed at the time that the severity of the contraction was due to monetary policy, in particular to a resulting "credit crunch" as holders of money stopped providing credit to trade in anticipation of further price declines (the "scarcity of money" frequently blamed by observers). Likewise, it was widely believed (on the basis of past experience) that a policy of inflation would halt the recession, and coincidentally or not, the economy rebounded once the nominal money supply was increased by 20% in May 1726.

First, some caveats. The monetary regime in place at the time was not the same as today, and it is often said that inflation under a commodity standard is substantially different, and much less persistent, than under a fiat money regime (Alogoskoufis and Smith 1991, Bordo 1995). But the experiment can still be seen as an exact and instantaneous reduction in the nominal money supply.

This real-scale experiment is not as clean as one might wish. The textbook experiment can assume away inconvenient expectations of future policy. In 1724, the timing and magnitude of the reductions in money supply was not known in advance, but it was known that governments routinely attempted such deflations (albeit foretold) after periods of monetary disturbances. Agents must have drawn on Figure 1 to form their expectations. They could also suppose that, as the economy suffered, the government would come under increased pressure to reverse course, as it ultimately did.

What is of interest here to the students of Hume and Lucas? Sluggish adjustment of prices and output effects are, of course, known features of modern data. The 1724 experiment does more than document similar features in 18th century data: its unique features make some explanations much less plausible than others.

After citing Hume, Lucas (1996) presents a model to account for Hume's empirical observation. The model is that of Lucas (1972), an overlapping generations model where the old receive a monetary injection proportional to their money holdings, and where

the young do not learn of it until after markets have cleared.[78] At 8AM on the morning of September 22, 1724, the filtering problem was trivial. An assumption of "information stickiness" (Mankiw and Reis 2002), however pervasive (Mankiw and Reis 2006), would similarly be difficult to maintain. In the weeks that followed the diminutions of April and September 1724, producers and merchants were summoned in dozens of French towns to have their information sets vigorously updated by government officials.

Much of the literature on price rigidities in recent years has focused on two families of models, using either time-dependent (e.g., Clarida, Gali, and Gertler 1999) or state-dependent pricing (e.g., Dotsey, King, and Wolman 1999). Both families have in common some (exogenous or endogenous) obstacle to price changes. One might debate whether the monopolistic competition that is typically assumed describes the fairs or cloth-halls of France. But neither model will help make sense of observations in pure market settings, such as the foreign exchange market where prices changed instantaneously and fully, and the commodities market where prices move, but not for money (a result reminiscent of the findings of Boivin, Giannoni, and Mihov 2007).

The behavior of agents in 1724 is somewhat suggestive of models of rational inattention (Sims 2003, Maćkowiak and Wiederholt 2005), because agents seem not to pay attention to monetary events. Such inattention, however, seems difficult to rationalize given the size of the events to which the agents' attention was being urgently drawn.[79]

The comments of contemporaries point to three possible avenues. One is the existence of nominal contracts. In January 1960 the nominal price level dropped by 99% in France, when the new franc replaced the old franc; but all contracts and debts were fully indexed. A second possibility is some sort of coordination failure, with private agents unable to move from one equilibrium of prices to another in spite of the government's exhortations. Third and last, the role of expectations was perceived by both government and private agents to have played a fundamental role in the behavior of prices.

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[78] Note that the assumption of proportionality rules out inflation tax effects and, in a complete information environment, restores neutrality. The assumption held exactly in 1724, but neutrality did not follow.

[79] Not only did the government publicize its actions; it also tried to persuade agents that it was in their interest to react. The intendant in Caen told merchants "that if the price of goods of this country did not fall immediately, foreigners would begin to sell by preference to Frenchmen the goods we need to export ... they had to realize the damage for the State that would follow, and even if they were not good enough citizens to be moved by this consideration their self-interest must enlighten them since their total ruin would be unavoidable if they lost sales in France and foreigners imported many goods." (G/7/220, n. 177, 3 Oct 1724.)

Appendix A: Sources and Data

Sources on woolens (reports of the inspectors):

Alençon : F/12/561, 1369A. Amiens : F/12/563, 1351; AD Somme C 153. Auch : F/12/556, F/12/1378. Auvergne : F/12/1376. Aumale : F/12/560, 1368; AD Rouen C126; AD Somme C171. Beauvais : F/12/562, 1362A, G/7/1708. Bourges : F/12/554, 649, 1373. Bretagne (basse) : F/12/555. Bretagne (haute) : F/12/555, 1370. Caen : F/12/561, 1369B. Carcassonne : F/12/556, 1381, 1382; AD Hérault C2476, 2477, 2478. Castres, St-Pons : F/12/1382; AD Hérault C2122, 2128, 2476, 2490, 2493. Champagne : F/12/1359. Dreux : F/12/649. Foix : F/12/556, 1378. Granvilliers : F/12/563, 1354. Limousin : F/12/1376, 1382. Montauban : F/12/1378. Montpellier : F/12/556, 1380; AD Hérault C2127, 2128, 2476, 2493, 2498. Moulins : F/12/554. Nîmes : F/12/556, 1382; AD Hérault C2449. Orléans : F/12/562, 649, 1374. Poitiers : F/12/564-565, 1371. Reims : F/12/555, 1360. Rouen : F/12/560, 1363, 1366. Saintonge : F/12/564-565, 1376. Sedan : F/12/1356-57. Sologne : F/12/554, 562, 649, 1373. Toulouse : F/12/556, 1382; AD Hérault C2468, 2469, 2471. Troyes : F/12/1359.

Other sources:

AN G/7/31 to 36: letters of Dodun (1723–26)
Correspondence of the intendants with Dodun: Alençon, Languedoc : G/7/1704; Alsace: G/7/444, BN NAF 2600–2601; Amiens: G/7/97; Auvergne: G/7/108; Auch-Pau: G/7/121-123; Berry: G/7/128; Bordeaux: G/7/147; Bourgogne: G/7/166-170; Caen: G/7/220; Champagne: G/7/237; Dauphiné : BN 8381; Flandres: G/7/266; Franche-Comté:G/7/285; Hainaut: G/7/290; La Rochelle: G/7/344;Lyon:G/7/368-373; Metz: G/7/789; Montauban: G/7/400; Moulins: G/7/411; Orléans: G/7/422; Poitiers:G/7/456; Provence: BN 8928–8930; Rouen: G/7/503; Roussillon: G/7/509; Soissons: G/7/513;
G/7/787 to 792: minutes of matters sent to the minister (1723–26)
G/7/1468, 1472: coinage
G/7/1704 to 1708: miscellaneous correspondence
F/12/71 to 73, 681 to 682, 695 to 696: *Bureau de commerce* (trade council)
F/12/1228 to 1243: fairs
Z/1b/298, 421: minting records
Arsenal: 10832, 10846, police files ; 3857: works of Melon
Affaires étrangères: Mémoires et documents, France 1252, 1256, 1258

Appendix B: The Model

Let Y_{it} be the original series (the units are either bolts of cloth or looms working), where i denotes the region. Let y_{it} be some transformation of the data (to be specified below). The model is

$$\begin{aligned} y_{it} &= \lambda_i \mu_t + g_t + \epsilon_{it}, \\ g_t &= -\sum_{i=1}^{s-1} g_{t-i} + \omega_t, \\ \mu_t &= \mu_{t-1} + \nu_t + \xi_t, \\ \nu_t &= \nu_{t-1} + \zeta_t \end{aligned}$$

with $\epsilon_{it} \sim (0, \sigma_\epsilon^2)$, $\omega_t \sim (0, \sigma_\omega^2)$, $\xi_t \sim (0, \sigma_\xi^2)$, $\zeta_t \sim (0, \sigma_\zeta^2)$. The variance σ_ζ^2 is normalized to 1, the others are estimated by maximum likelihood, using an exact initial Kalman filter (Durbin and Koopman 2001, Koopman 1997). The number of seasons is $s = 2$. The trend is modeled as locally linear, as in Harvey (1989). The advantage of this state-space approach is that it integrates seasonal adjustment with estimation of the trend, and allows for interpolation of missing data (Gómez 2001). Note that, when the variances σ_ξ^2 and σ_ω^2 are set (or estimated) to be 0, then the series μ_t is the trend produced by a Hodrick-Prescott filter, with a smoothing parameter chosen to fit the data.

The data is transformed as follows. Denote $\bar{y}_i$ the sample mean of $\log(Y_{it})$ and σ_{yi} the sample standard deviation. The data is transformed as

$$y_{it} = \frac{\log(Y_{it}) - \bar{y}_i}{\sigma_{yi}}.$$

The loading factors are set to 1. The resulting index is scaled by the average over i of the standard deviations of the series.

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