
PROBLEMS

Missing Bullion or Missing Documents: A Revision and Reappraisal of French Minting Statistics: 1385-1415

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1. Introduction

The long-run depression and the bullion "famine" in post Black Death Western Europe are still one of the major puzzles facing economic historians today. The explanations that have been brought forth to explain the depression have been traditionally classified into a) 'real' causes, such as population decline, changes in labour productivity, and b) monetary causes, namely the decline in minting activity caused by the trade deficit of the West resulting in outflow of bullion to the East.¹ The evidence, produced by the monetarists to advance their theory, was the low outputs of the English and French mints from the end of the fourteenth century to approximately 1460.

The study of the mint outputs in England was carried out by Craig (1953), that of the Low Countries by Professor Munro (1973, 1983) and that of France by Professor Miskimin (1964, 1984). Miskimin relied largely on the voluminous work of Saulcy (1888). Saulcy attempted to publish all the documents bearing any relation to the monetary affairs of France from the reign of Philippe August (1180) to the reign of Francois I (1547).

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In his work on money, prices and foreign exchange in France in the fourteenth century, Miskimin relied wholly on Saulcy's work by extracting from Saulcy all the entries containing numerical information on minting.² In his later work, on money and power in fifteenth century France, he set out to verify some of Saulcy's findings and added the fruits of his own research in the archives of the Isère.³

Miskimin compiled a seemingly authoritative statistical corpus of the minting of gold and silver in France during the periods 1300-1395, 1395-1495.⁴ The data seemed to provide hard evidence in support of the monetary explanation.

In pursuit of more minting data necessary for my research on the royal monetary policy during the Hundred Years War I noted the relative abundance of minting data for the Dauphiné region in the published sources. However I was curious about the gaps in the series, and decided to reexamine the archives of the Isère at Grenoble.

At Grenoble I found new data on the minting that took place in the Dauphiné from 1384 to 1415. Though the data pertain only to one region they nevertheless alter dramatically our previous knowledge. In brief, the new data add about 24 tons of silver to the 47.6 tons accounted for by Miskimin for all of France and 3 tons of gold to the previously accepted total of 8.2 tons.

II. The Previously Published Data

Saulcy claimed to have searched the entire array of French archives, from the Archives Nationales and the Bibliothèque Nationale in Paris to the various departmental archives. Miskimin also went to great lengths to convince us that the figures he published represent most of the French total. He argued that since mint documents were generated with so many duplicates it is almost safe to assume that at least one duplicate would survive.⁵ While this argument could be true, it nevertheless does not rule out the possibility that some of the surviving documents have not been found yet. For example, during the period 1385-1415 there were more than 20 mints operating throughout France, yet Miskimin's published data account for only a few of them and only for some years. The matrix in table 3 serves the purpose of demonstrating the extent of the coverage of the published data; the matrix is overwhelmingly blank!

² There are some discrepancies between SAULCY and MISKIMIN. For example in vol. 2 p. 37 Saulcy refers to the minting of 1920 kg. of pure silver in Tournai - this information does not appear in Miskimin (1964).

³ MISKIMIN (1984) p. 33.

⁴ MISKIMIN (1964) pp. 158-198 and Miskimin (1984) pp. 135-290, respectively.

⁵ MISKIMIN (1984) pp. 32-34. Miskimin is concerned more about the problem of double accounting, due to the existence of duplicates.

Some doubts as to the depth of Saulcy's work were already raised by Professor Rey in 1954. Rey has found an important document in the Archives Nationales which was viewed by Saulcy, yet somehow was only partially published.⁶ Professor Munro, in a recent article, has also pointed out that our knowledge about the French mints' production is far from complete.⁷

III. The Newly Found Data

a. The sources:

The data for the minting that took place in the Dauphiné during the period 1384-1415 are to be found in two registers, A.D. Isère B2817 and A.D. Isère B2818. The registers contain data collected by the Chambre des Comptes of the Dauphiné pertaining to the royal income originating in the region. One important source of royal revenue came from the royal mints in the Dauphiné. The major mints were located in Romans and Cremieu, while temporary and secondary mints were opened in Mirabel, Montelimar, Embrun, and Briançon. The documents found in the registers can be classified into two categories: 1. Records, mainly in B2817 and mostly in Latin, of the delivery of boxes containing the sample of the coins produced in each mint to Grenoble. Multiplying the number of the coins in the sample by the sample ratio (1:1000 for silver coins and 1:200 and 1:500 for gold coins) yields the number of coins struck. By using the information on the number of coins struck from a marc and the fineness of the coin one can calculate the volume of pure marcs struck.⁸ 2. Periodic accounts, mainly in B2818 and mostly in French, of the activity of the mint. The documents include not only the number of coins in the sample but also explicitly the number of pure marcs struck.

These registers, containing important data on the minting activity overlooked by Saulcy and Miskimin, were not found by some fluke or detective work; in fact they are catalogued at the archive. However, these registers were

⁶ REY (1954), examined a document listing the production of all the French mints during the years 1402-3.

⁷ MUNRO (1988) p. 338.

⁸ I take as an example the document in Isère B2817 fol. 96v. The text mentions that on 7 February 1396 a box of coins sent from the mint at Cremieu was received at Grenoble. The box contained 251 coins of 10 deniers. We know that the fineness of the coin was 11/24 of the Argent le Roi which contained 23/24 parts of pure silver. 74.25 coins were struck from one marc of 11/24 fineness. The sample for silver coins was 1:1000. Thus the coins in the box represent 251,000 coins which yield approximately 3380,5 (251,000/74.25) marcs. These yields 1485 marcs of pure silver.

not referenced in the momentous work by Bautier and Sornay on the sources of economic and social history of the middle ages.^{9,10} While the reference to register B2817 is missing altogether, the reference to B2818 is missing due to a typographical error and the researcher is referred instead to register B2828. It is possible that these errors impeded Miskimin and other researchers in their effort to extract the minting statistics for that period.

b. The Findings

Tables 1 and 2 summarize the findings for silver and gold production. The tables, and graph 1 contrast Miskimin's data, with the new data.¹¹ The comparison by mints shows that the major discrepancies concern the mint of Romans, which by 1400 emerged as the principal mint in the region. The explanation for the smaller discrepancy for the mint of Cremieu stems from the fact that Saulcy used a copy of the documents concerning Cremieu that is found in the Archives Nationales in Paris. These records were collected by the general mint masters of the kingdom in Paris. Unfortunately, for some reason Saulcy either did not examine the document carefully or did not report all his findings and consequently one is left with gaps also in the data for Cremieu.

I have added the data from all the Dauphiné mints and compared them with the total arrived at by Miskimin. The astounding result is that the total of both silver and gold coinage for the entire period is more than doubled! The next step was to subtract Miskimin's data for the Dauphiné from the French total and to add the new Dauphiné data to that number. As a result of this operation, the currently accepted French mint production for most of the years in our period is dramatically revised. Some of the ridiculously low figures such as 3.6 kg. in 1399 (adjusted to 579 kg.), 81.7 kg. in 1407 (adjusted to 1388 kg.) and so forth, appear for what they really are: the result of missing data. Clearly, the whole picture of the minting activity in France needs to be revised.

IV. Preliminary Analysis

As this is only a part of a larger project I am undertaking to re-evaluate the monetary system and policy in France in the first half of the fifteenth century, I will attempt to give in this section only a brief analysis of the findings.

⁹ BAUTIER and SORNAY (1968) pp. 240-241.

¹⁰ I am in the process of investigating the documents pertaining to the pre-1385 period.

¹¹ The pre-1413 data MISKIMIN uses is taken from Saulcy.

In the revised series I present, the share of the Dauphiné mints in relation to the French total looks to be exceedingly high. Two alternative interpretations are possible. The first is that the region was indeed extremely important for its minting activity because of its geo-economic situation. The Dauphiné was favourably situated on the important trade route linking Geneva, the most important international fair in the beginning of the fifteenth century, Languedoc, Provence, Avignon, and Spain, and on some important routes from Italy to France. Yet when all this is accounted for it still seems hardly conceivable that Romans and Cremieu should overshadow altogether Paris, the capital, or for that matter Tournai. All in all there were another 21 mints operating in France beside those of the Dauphiné. Numismatic evidence shows that the share of Dauphiné coins in hoards found in France ranges from 10% to 19% for the period 1389-1411, and 1%-9% for the period 1411-1417.¹² During 1402-1403, the single year for which we have the entire breakdown for French minting by mints, the Dauphiné boasts 25% of the French total, a far cry from some of the shares reported in table 1.¹³

This leaves us with the second hypothesis: namely that one is still missing most of the mint documents for the rest of France. One may pessimistically conclude that, indeed, most of the documents were lost and one should revise upwards the totals for France by extrapolation methods. Alternatively, one may be encouraged by the findings in the archive in Grenoble, to proceed to a careful examination of other local archives, and to re-examine the documents studied by Salucy at the Archives Nationales. At any rate, the opinion that most of the voids in the data are evidence of no minting is not acceptable.

Graphs 2 and 3 show the trend of minting of gold and silver for the mints of Romans and Cremieu and for the total of the Dauphiné. While I intend to analyze these figures in detail in a forthcoming work it may be useful to consider here the basic trends in mint output for the region: for the silver coinage one observes low minting activity from 1384 to 1389, followed by high minting levels associated with the debasement of 1389, another period of low output from 1394 to 1399 to be followed again by high levels of output from then on.

Gold coin output increases from 1384 to 1389 and then steadily declines. The trends of mint output for both silver and gold for all the Dauphiné mints combined are compared in graph 4. The picture that emerges is a similarity in the trend until 1399, when silver production picks up while that of gold continues its steady decline.

The mint output series do not present a smooth trend. With the possible ex-

¹² This estimate is calculated on the basis of hoards found in France and reported in the *Revue Numismatique* since the 1920's.

¹³ The data for the years 1402-3 taken from Rey (1954) pp. 29, 35.

Table 1
MINTING OF SILVER COINS - FRANCE 1384-1415
PURE KG

Date	Total France			Total Dauphiné			Cremieu		Romans		Mirabel + Embrun	
	Miskimin	Saulcy (1)	Sussman (2)	Miskimin	Sussman	share (3)	Miskimin	Sussman	Miskimin	Sussman	Miskimin	Sussman (4)
1384	133.6	124.8	487.8	—	363.0	74.4%		138.7		175.9		48.4
1385	149.3	853.2	709.8	710.9	566.9	79.9%	278.1	242.1	317.8	242.8	114.9	81.9
1386	87.1	78.7	410.2	—	331.4	80.8%		210.0		67.4		54.0
1387	4.7	1922.4	2247.3	—	324.9	14.5%		135.9		111.6		77.5
1388	18.8	10.2	411.0	—	400.9	97.5%		211.6		107.5		81.7
1389	616.0	810.7	1254.1	282.4	725.8	57.9%	282.4	414.5		226.6		84.8
1390	6739.5	6577.6	8285.4	1938.4	3646.2	44.0%	1938.4	1951.2		1377.0		318.0
1391	2909.4	2578.4	2918.7	488.2	828.5	28.4%	488.2	487.3		341.3		—
1392	453.3	1038.0	1551.9	408.1	922.0	59.4%	408.1	372.1		549.9		—
1393	2226.0	2261.1	3708.5	1625.0	3072.4	82.8%	1625.0	1663.5		1408.8		—
1394	663.0	481.4	842.2	257.3	618.1	73.4%	257.3	245.8		372.3		—
1395	587.7	826.4	1082.9	354.2	610.7	56.6%	354.2	354.6		256.1		—
1396		609.3	872.1	153.0	415.8	47.3%	153.0	192.3		223.5		—
1397		175.6	327.5	127.6	279.5	85.5%	127.6	94.0		185.5		—
1398		127.6	907.2	127.6	885.6	100%	127.6	338.5		568.8		—
1399		3.6	562.0	3.6	562.0	100%	3.6	211.9		350.0		—
1400		66.8	1667.7	0.6	1601.5	96.0%	0.6	473.9		1127.6		—
1401		1380.3	2132.4	1032.6	1784.7	83.7%		422.5	1032.6	1362.2		—
1402		5451.7	5541.3	1405.2	1494.8	27.0%	339.8	374.2	1065.4	1109.7		11.0
1403		1987.4	3055.6	119.2	1187.4	38.9%	30.9	149.0	88.3	968.7		69.7
1404		330.8	1501.5	86.1	1256.8	83.7%	86.1	224.9		976.9		55.0
1405		1266.7	2821.5	463.8	2018.6	71.5%	463.8	667.0		1120.9		230.8
1406		302.6	1303.2	194.8	1195.4	91.7%	194.8	202.2		824.5		168.7
1407		81.7	1388.5	55.1	1361.9	98.1%	55.1	155.5		1176.8		29.6
1408		1226.2	2646.5	1185.5	2605.8	98.5%	7.7	478.8	1177.8	2039.9		87.0
1409		420.5	2162.9	143.8	1886.2	87.2%		480.7	105.9	1345.4	37.9	60.2
1410		600.9	2082.6	13.2	1494.9	71.8%		392.4	0.6	953.3	12.6	149.1
1411		462.3	2432.1	4.9	1974.7	81.2%	4.9	695.8		942.8		336.1
1412		3259.1	4093.3	1797.6	2631.8	64.3%	986.5	1111.6		651.2	811.1	869.0
1413		4636.4	4308.1	2701.7	2373.4	55.1%	713.7	791.3	1328.5	870.2	659.5	711.9
1414		2976.1	3484.9	1801.6	2310.4	66.3%	619.5	1141.4	752.5	811.4	429.6	357.6
1415		4690.4	4872.5	2250	2432.1	49.9%	1343.6	1321.6	764.9	753.6	141.5	356.9
Totals:	44644.5	47618.8	72072.4	19731.9	44185.6		10890.4	16346.6	6634.3	23600.1	2207.1	4238.9

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(1) Miskimin's version for 1384-1395 differs from Saulcy, see text.

(2) The total for France is calculated by subtracting the totals for the Dauphiné from the total for France calculated by Miskimin and adding the new Dauphiné totals.

Date	Total France			Total Dauphiné			Cremieu		Romans		Mirabel + Embrom	
	Miskimin	Sauley (1)	Sussman (2)	Miskimin	Sussman	share (3)	Miskimin	Sussman	Miskimin	Sussman	Miskimin (4)	Sussman (5)
1384	467.5	479.9	594.0		114.5	19.3%		35.6		33.7		45.2
1385	1399.7	1363.8	1342.3	170.2	148.8	11.1%	71.3	53.6		39.5	98.5	55.6
1386	704.4	728.3	897.4	6.8	176.0	19.6%		111.5		26.3	6.8	38.1
1387	41.1		283.4		283.4	100.0%		165.7		29.4		88.3
1388			504.5		504.5	100.0%		294.5		58.5		151.5
1389	253.3	214.3	722.3	214.3	722.3	100.0%	214.3	415.4		81.6		225.3
1390	351.2	401.8	659.1	307.8	601.1	86.5%	307.8	300.1		114.8		186.2
1391	254.3	223.5	319.3	161.2	257.1	80.5%	161.2	161.6		95.5		0
1392	173.8	170.5	276.0	110.4	215.8	78.2%	110.4	112.2		103.6		0
1393	200.5	195.5	332.9	128.7	266.1	79.9%	128.7	126.5		139.6		0
1394	142.7	136.6	279.7	85.9	229.0	81.9%	85.9	85.9		143.2		0
1395	123.4	140.2	285.5	72.2	217.4	76.2%	72.2	78.3		139.1		0
1396		110.6	242.7	63.2	195.3	80.5%	63.2	65.0		130.3		0
1397		41.4	146.9	25.6	131.1	89.2%	25.6	35.4		95.7		0
1398		37.5	115.4	37.5	115.4	100.0%	37.5	45.7		69.7		0
1399		—	87.0	—	87.0	100.0%		26.8		60.2		0
1400		—	67.3	—	67.3	100.0%		20.2		47.0		0
1401		222.6	256.7	25.6	59.7	23.3%		13.9	8.0	45.8	17.6	0
1402		184.8	262.7	18.3	96.2	36.6%		18.5	0.7	53.8	17.6	23.9
1403		96.3	160.7	20.0	84.4	52.5%		18.0		39.4	20.0	27.0
1404		105.8	154.1	2.4	50.7	32.9%		13.3		33.1	2.4	4.4
1405		114.5	166.2	2.4	54.1	32.5%		10.4		38.4	2.4	5.3
1406		—	63.0	—	63.0	100.0%		9.5		40.8		12.8
1407		79.8	134.8	—	55.0	40.8%		5.8		42.6		6.6
1408		3.4	38.0	—	34.6	91.1%		9.8		3.4		21.5
1409		318.0	433.8	99.5	215.3	49.6%		15.2	99.5	184.7		15.3
1410		408.7	477.5	0	68.8	14.4%		17.3		51.4		0
1411		132.6	208.7	4.6	80.7	38.7%	4.6	9.5		64.4		6.8
1412		568.8	622.3	27.5	81.0	13.0%	27.5	28.4		31.7		20.9
1413		517.5	476.7	107.5	66.7	14.0%	14.6	18.6	55.1	27.8	37.8	20.3
1414		575.4	574.2	31.5	30.3	5.3%	6.2	5.3	13.1	13.4	12.2	11.6
1415		484.2	475.6	37.0	28.4	6.0%	22.0	10.5	10.8	10.0	4.2	8.0
Totals:		8055.9	11696.8	1760.1	5401.1		1353.0	2338.0	187.2	2088.5	219.9	974.6

Missing Bullion or Missing Documents: A Revision and Reappraisal

(1) Miskimin's version for 1384-1395 differs from Sauley, see text.

(2) The total for France is calculated by subtracting the totals for the Dauphiné from the total for France calculated by Miskimin and adding the new Dauphiné totals.

(3) Total Dauphiné as a share of total France.

(4) For 1401-1405 Miskimin reports Mirabel under Montélimar (Miskimin 1984, p. 161).

(5) Mirabel mint closed from 1391 until 1401 (see table 1).

Table 3

EXTENT OF KNOWN COVERAGE OF MINT OUTPUTS FRANCE 1385-1415

mints	year: 1385	86	87	88	89	90	91	92	93	94	95	96	97	98	99	1400	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Amiens												m						m															
Angers																																	
Cremieu	x	x	x	x	m	m	m	m	m	m	m	m	m	m	m	m	x	m	m	m	m	m	m	x	x	m	m	m	m	m	m	m	m
Dijon																m	m							m	m								m
La Rochelle													m																				
Limoges																																	
Lyon																																	
Macon																		m	m	m	m												
Mirabel	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	m	m	x	m	m	m	m	m	m	m
Montpellier	m																	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m	m
Paris																					m												
Poitiers																																	
Romans	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	m	m	m	x	x	x	x	m	m	m	x	x	m	m	m	m	m
Rouen																	m	m															
St. Andre																			m	m													m
St. Lo						m	m	m	m	m	m	m	m				m		m		m	m	m	m	m	m	m	m	m	m	m	m	m
St. Mene- hould																																	
St. Pourcain																																	
St. Quentin																																	
Toulouse	m																	m	m					m	m	m	m	m	m	m	m	m	m
Tournai												m						m	m														
Tours																																	
Troyes	m	m	m	m	m	m	m	m	m	m	m	m															m	m	m	m	m	m	m

note: m = output of mint that appears in Miskimin (1964, 1384)

x = additional data found by Sussman.

Table 4
CORRELATIONS OF ANNUAL MINT OUTPUTS. CREMIEU AND
ROMANS 1384-1415

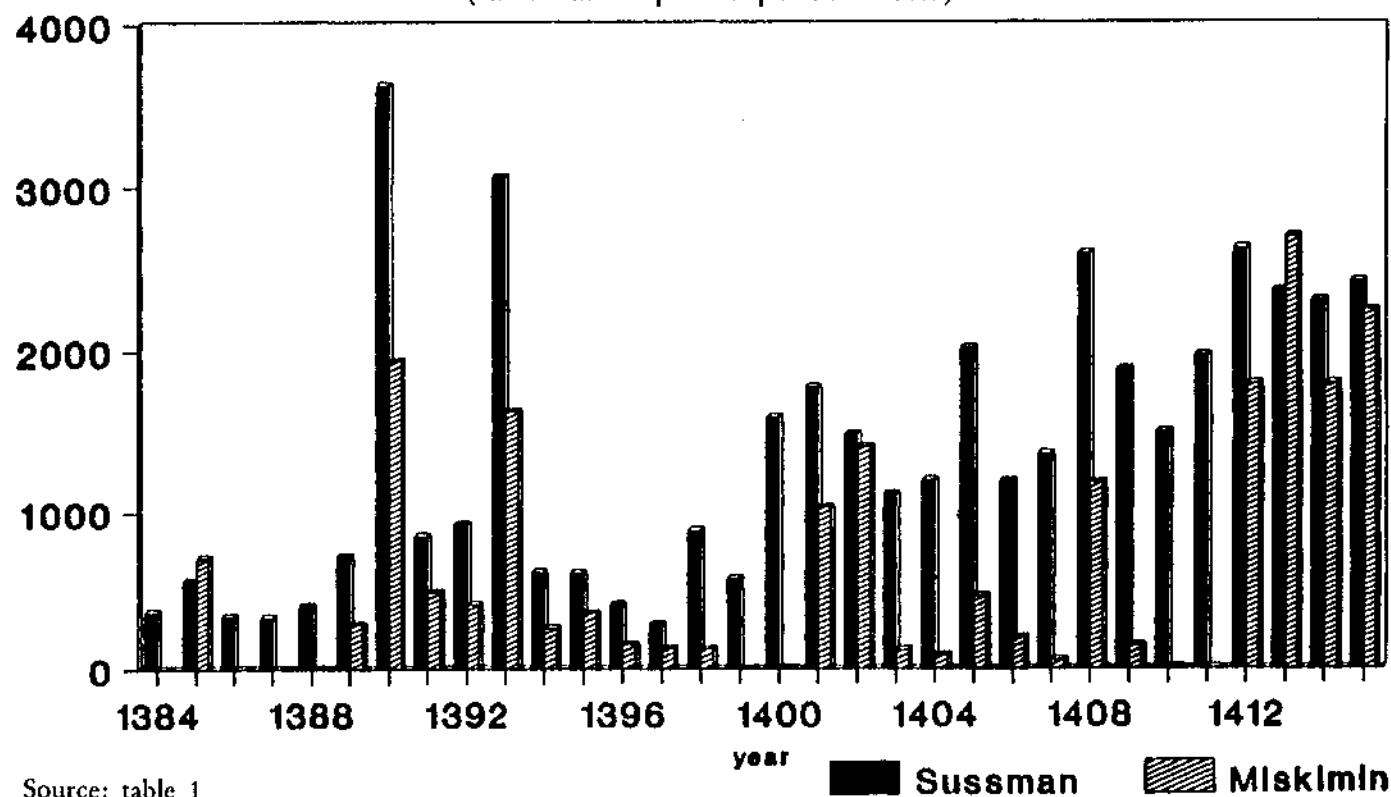
		Cremieu		Romans	
		silver	gold	silver	gold
Cremieu	silver	1.00	0.16	0.41	0.08
	gold	0.16	1.00	- 0.33	0.33
Romans	silver	0.41	- 0.33	1.00	0.01
	gold	0.08	0.33	0.01	1.00

ception of the gold output at Cremieu, the data show short cyclical fluctuations. Yet these cycles are not synchronized among the mints. Furthermore, table 4 shows that the mint outputs within the region are not strongly correlated. Thus, had we obtained only the data from the mint of Romans our estimate of the output at Cremieu would have been very inaccurate. In graph 5 the results of such an exercise can be seen.¹⁴ The correlations between outputs of silver and gold within the same mint are even less meaningful. One is therefore unable to offer solid output estimates for one mint based on the output of another mint in the same region, sharing the same basic trend. Since France was comprised of diverse regions enjoying different economic and political fortunes at different points in time extrapolation methods for estimating mint production in other regions in France on the basis of the Dauphiné mints could prove to be extremely difficult and inaccurate.

The brief analysis carried above demonstrates that mint outputs cannot be explained with a mono-causal variable. Albeit grossly similar in trends, the short run output variations of the Romans and Cremieu mints of silver, and of gold, are not correlated. The variability of mint output series is probably a result of specific local market conditions, the entrepreneurial effort and skill of the local mint master and minting and re-minting of state funds-independent of market conditions.

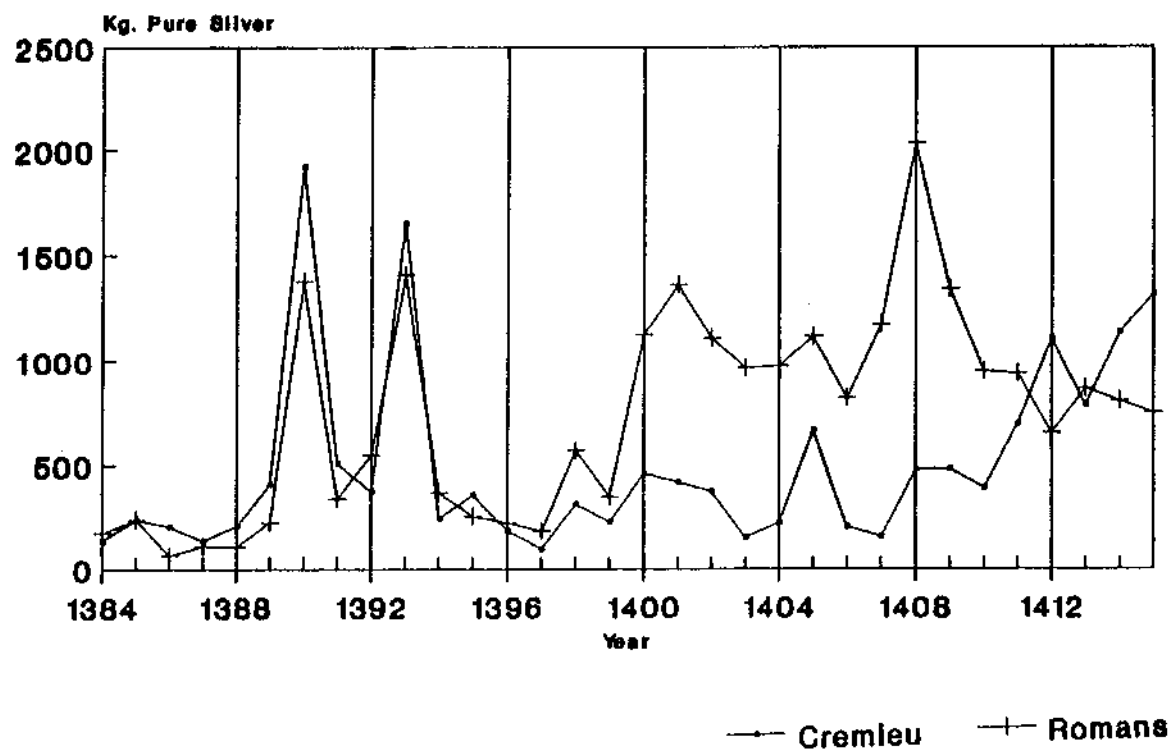
¹⁴ The graph shows the fitted values generated by a least squares regression: the dependant variables is silver output at Cremieu, the independent variable is mint output at Romans. The result of the reverse exercise, using the Cremieu output to predict that of Romans would be qualitatively the same.

Graph 1
NEW DATA VS. MISKIMIN'S DATA
(Silver Mint Output: Dauphine 1385-1415)



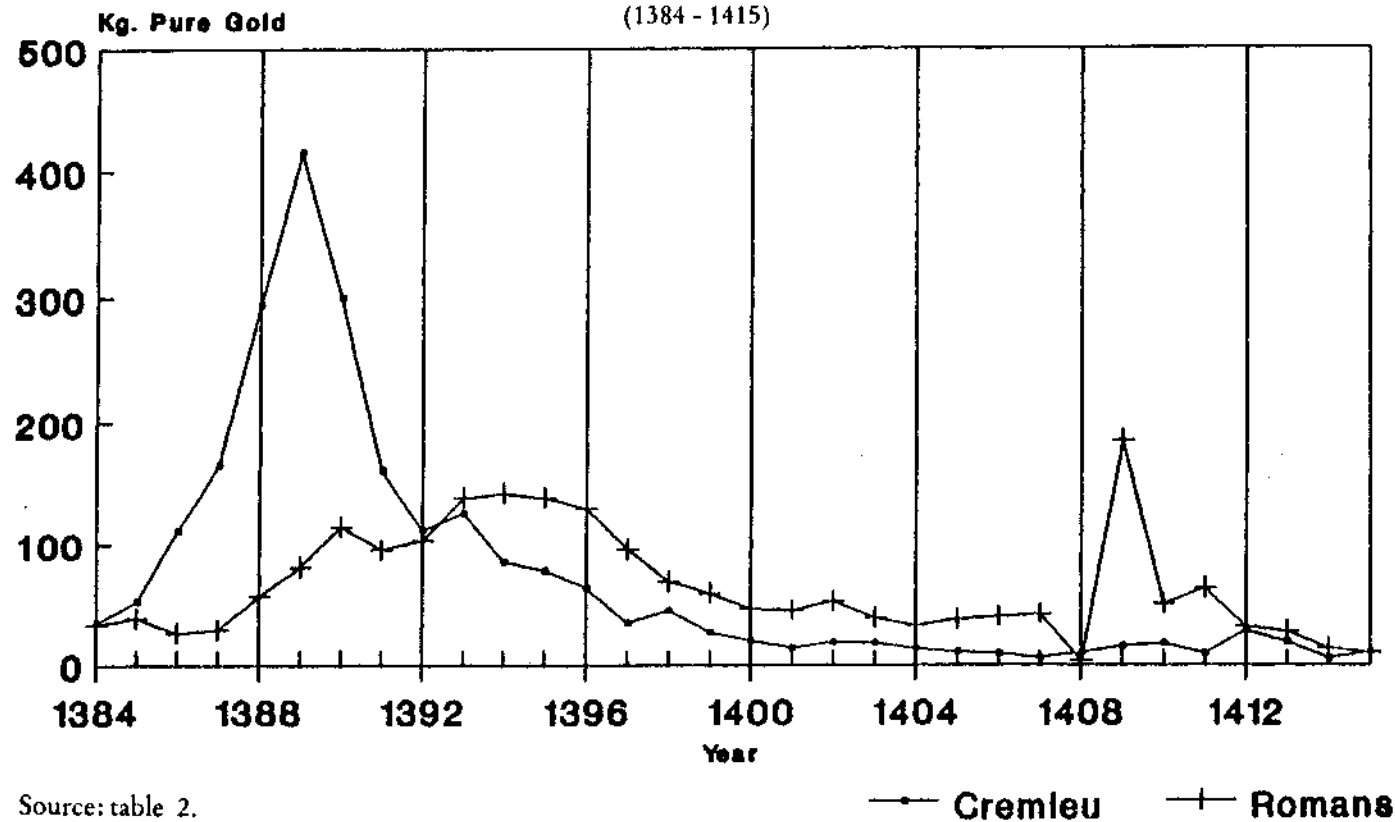
Source: table 1

Graph 2
DAUPHINÉ MINT OUTPUT - SILVER
(1384 - 1415)



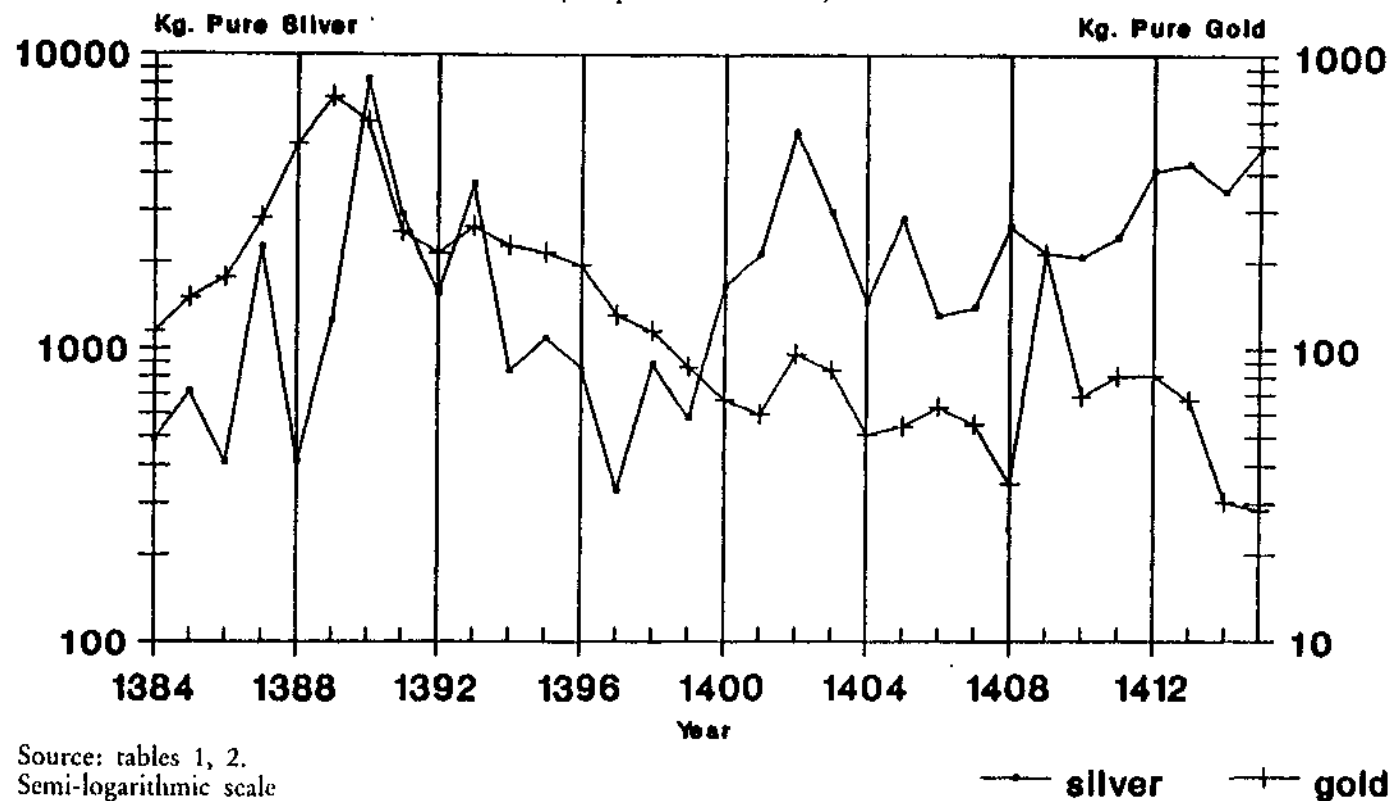
Source: table 1.

Graph 3
DAUPHINÉ MINT OUTPUT - GOLD
(1384 - 1415)



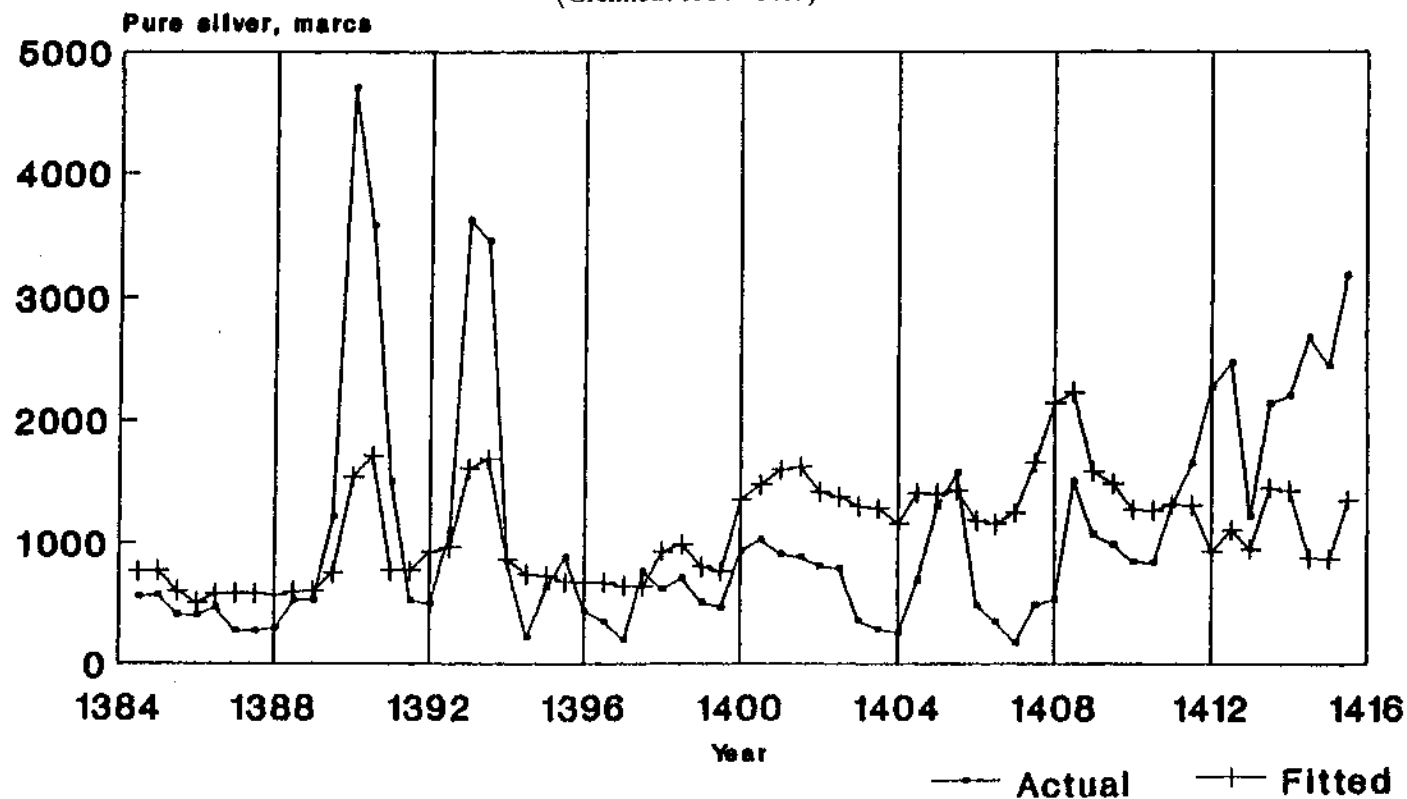
Source: table 2.

Graph 4
GOLD AND SILVER MINT OUTPUT
(Dauphiné: 1384 - 1415)



Source: tables 1, 2.
Semi-logarithmic scale

Graph 5
ACTUAL VS. FITTED MINT OUTPUT
(Cremieu: 1384 - 1415)



V. Conclusions

I have found new data in the regional archives of the Isère that provide us first of all with a continuous and accurate series of mint outputs for the Dauphiné region for the period 1384-1415.

Yet, no less important are the methodological lessons to be drawn from the findings. The first and most important conclusion is that the previous assertion about the completeness of the available series appears to be mistaken. Second, the high variability of the Dauphiné data shows the dangers in extrapolating from regional data to the aggregate French level. Third, the data used to support the "bullion famine" over-represented the Dauphiné region. It appears that the evidence used to construct far-reaching theories could have been based on incomplete regional data.

The immediate implication of the newly found data is to revise upwards, in a dramatic way, the known mint output estimates for France. Furthermore, our findings and conclusions point us in a direction of renewed archival research and suggest a reconsideration of the bullion "famine" and the monetary explanations of the depression of late-medieval Western Europe.

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