

Coin clipping and monetary crisis: the case of the Italian ducato



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The silver coins of large module in Northern Italy ***The silver écu of Milan***

1551 October 16: *Scuti, mezzi scuti e quarti scuti si sono fatti con gli argenti di Sua Maestà venuti dall'Indie per gli eserciti*



Phillip II of Habsburg (1556-1598)
mint of Milan – *silver écu* (late 1570s?)

The silver coins of large module in Northern Italy

The Milanese ducatone as a standard: the turning point of the 1580s

1551: Milan, Charles V of Habsburg → **silver écu** (37.4 gr; 909.7 ‰ Ag) (*)

1562: Venice → **ducato da 124 soldi** (32.9 gr; 947.9 ‰ Ag)

1567: Genua → **silver écu** (37.3 gr; 958.3 ‰ Ag)

1568: Florence → **silver piastra** (32.5 gr; 958.3 ‰ Ag)

1574: Piacenza, Ottavio Farnese → **silver écu** (35.5 gr; 951.4 ‰ Ag)

1575-87: Mantua, Guglielmo Gonzaga → **scudo da 120 soldi** (31.5 gr.; unknown, perhaps 958.3 ‰ Ag)

1583: Piacenza, Ottavio Farnese → **ducatone** (32.1 gr; 958.3 ‰ Ag, but corrections according to the changes in the standard applied by the mint of Milan)

1587: Savoy, Charles Emmanuel I → **ducatone** (same as Milan)

1588: Casale Monferrato → **ducatone** (same as Milan)

1589: Mantua → **ducatone** (unknown, perhaps same as Milan?)

(*) silver *quarter of écus* already documented in 1549

The first evidences of the name “ducatone”

The Republic of Venice

In Venice, the very first evidence of the term **ducatone** can be related to the silver **ducato da 124 soldi** (i.e., a **silver coin originally equivalent to the gold ducat**) a few years after its issue, when the course had been increased with respect to its initial value

1578 August 1: order to pay an amount of silver taking the **ducatoni** already available; the silver will be used for new types of coins of large modules



Gerolamo Priuli (1559-1567)
mint of Venice – *ducato da 124 soldi* (post 1562)

The ducatone: a standard for Northern Italy, and beyond

- The silver *écu/ducatone* soon became an **‘international’ standard**
- Its theoretical **fineness of 11.12 den.** (= 958.3 ‰)
 - can be considered as the **purity achievable with the technology of the times**
 - corresponds to the **purity of the French *argent-le-roy***;
 - represents the **standard fineness of the silver coins of large modules in the mint of Genua**;
 - is **very close to the fineness *a peggio 60*** (= 947.9 ‰; i.e., 11.9 den.) used as a standard by the mint of Venice
- The documents of the time tend to propose the ***ducatoni* of Milan, Savoy, Mantua, Montferrat, Parma, Piacenza** (and many others – see the known *gride*) **all with the same price, or with minimum differences**



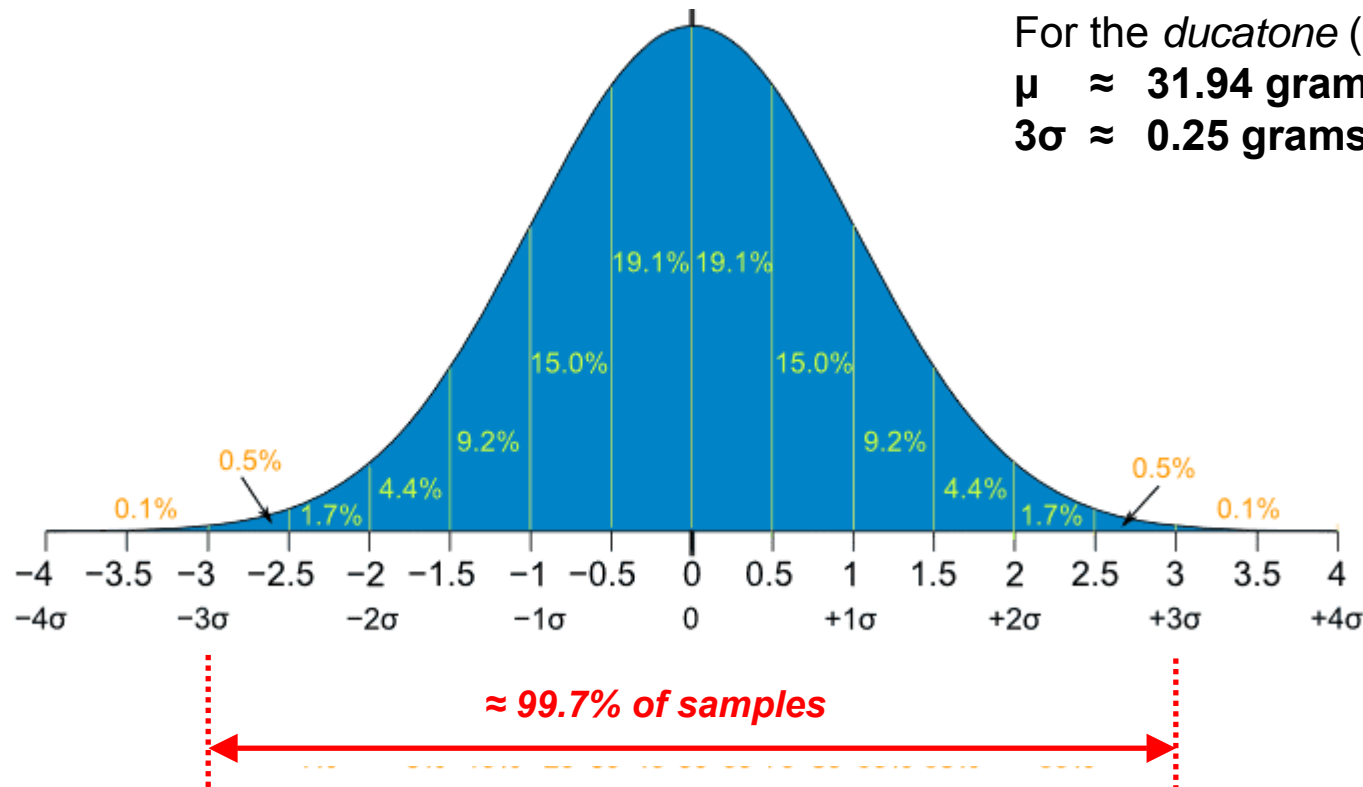
A statistical approach to the study of the ducato

The Gaussian distribution

$$N(\mu, \sigma) \rightarrow f(x) = \frac{1}{\sqrt{2\pi} \cdot \sigma} \cdot e^{-\left(\frac{x-\mu}{\sigma}\right)^2}$$

$\mu \approx$ theoretical weight
 $3\sigma \approx$ *remedium in pondere*

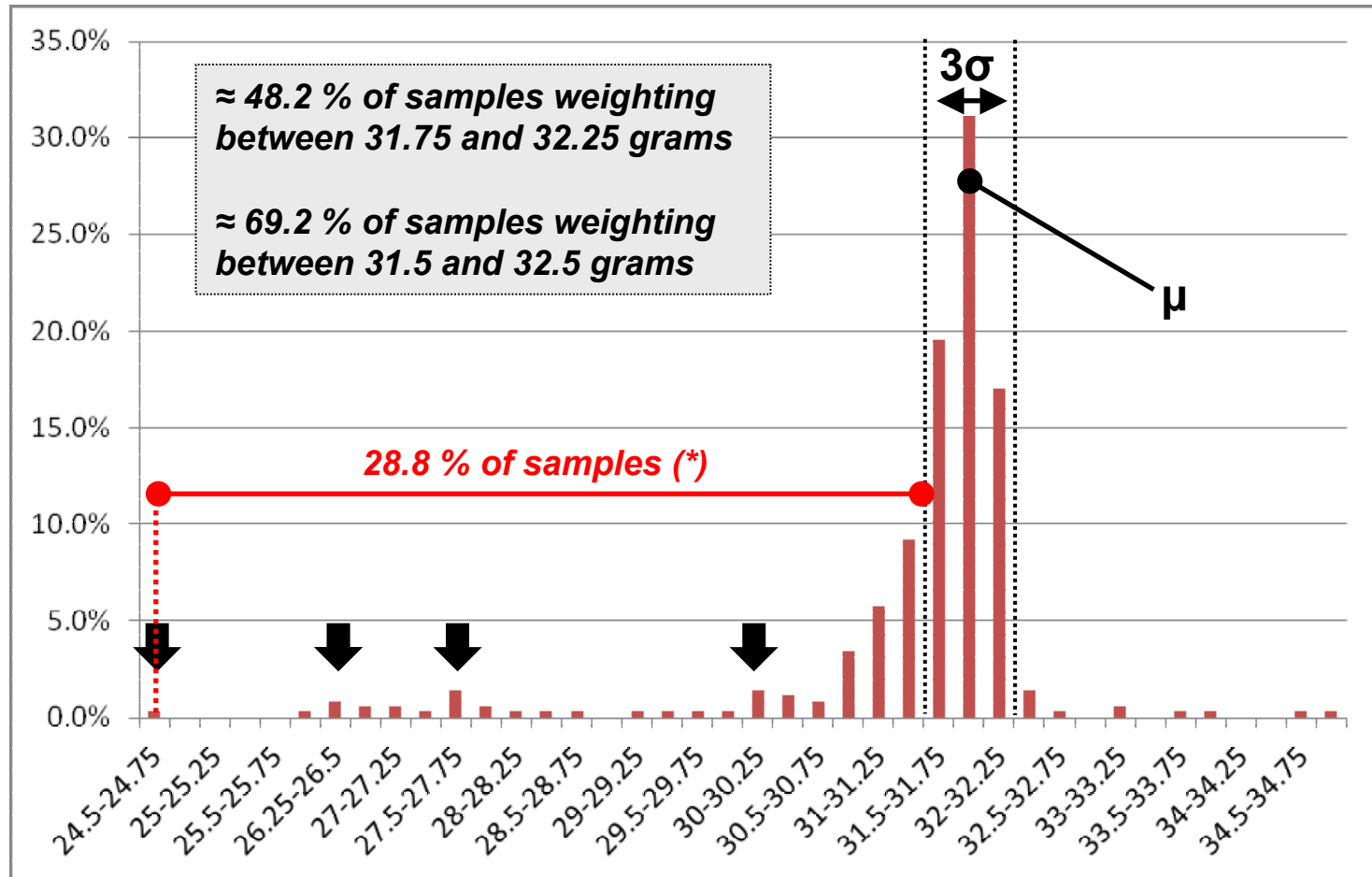
For the *ducatone* (*)
 $\mu \approx$ **31.94 grams**
 $3\sigma \approx$ **0.25 grams**



(*) impacts of consumption and errors in measurement can be modelled as two further independent Gaussian variables

A statistical approach to the study of the ducatoone

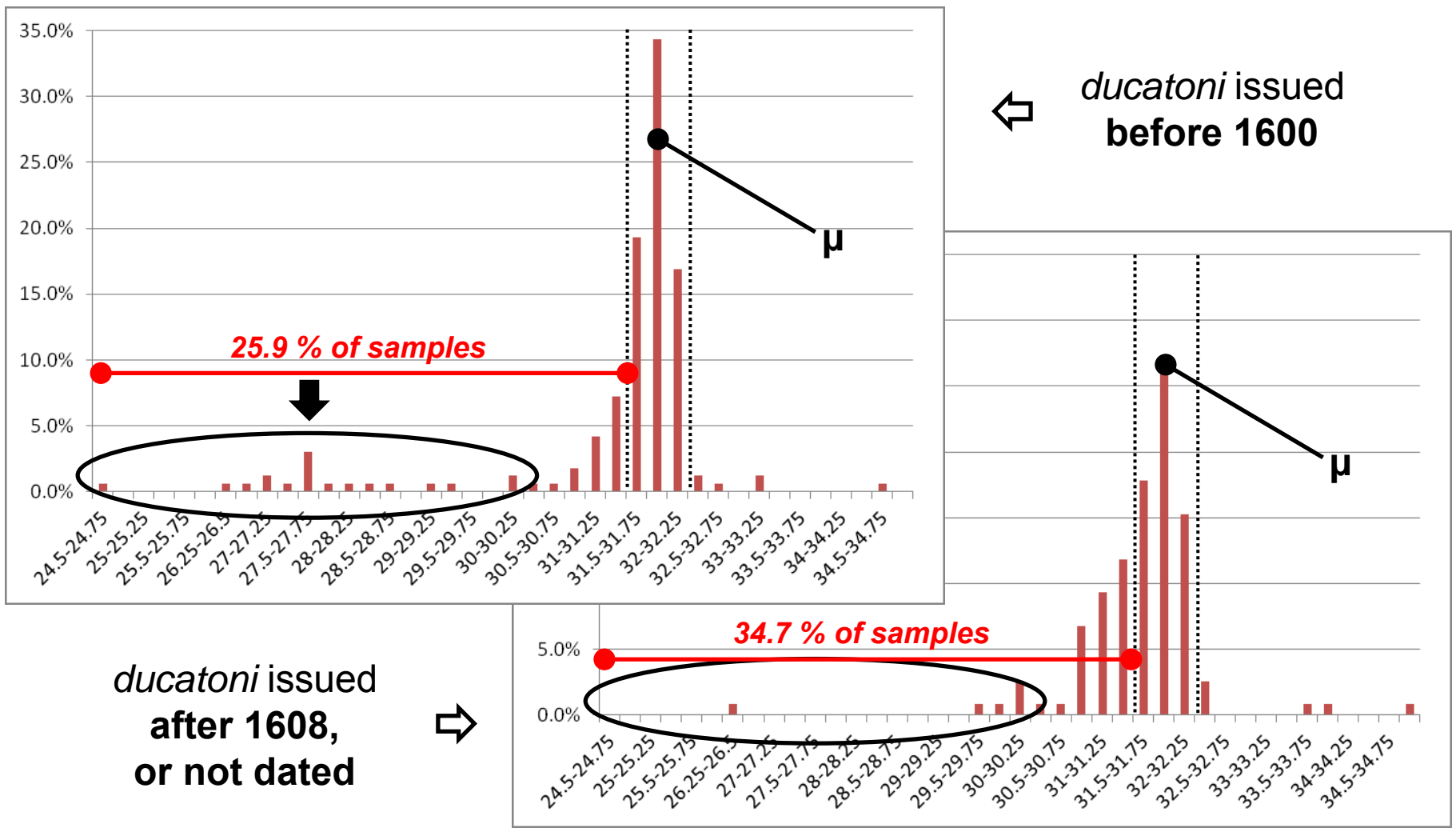
The evidence of the known coins



(*) analysis conducted on 1,200+ ducatooni of Northern Italy

A statistical approach to the study of the ducatoone

The evidence of the known coins



Coin finds including ducatonì

Coin finds usually propose *ducatoni* – both clipped, and non-clipped – associated with other clipped coins

- clipped **da 80 soldi**, mint of Venice: coins ranging from 15.5 to 16.2 grams (**expected: 18.2 gr.**)

known finds: Magno 1928 (t.p.q. 1599); Ronago (*) 1898 (t.p.q. 1611)

→ due to their finess, these coins may correspond to the **mezzo ducatone** of expected weight

- clipped **da 140 soldi**, mint of Venice: coins ranging from 27.0 to 29.5 grams (**expected: 31.8 gr.**)

known finds: Wädenswil 1918 (t.p.q. 1632); Casalmaggiore, loc. Vicomosciano 1929 (t.p.q. 1640)

→ due to their finess, these coins may correspond to the **clipped ducatonì, pezzi da 100 soldi, light ducati da 124 soldi of Venice**, and perhaps other coins more (see next slides)

- clipped **Brabant Philippstalers**: coins ranging from 29.0 to 29.5 grams (**expected: 34.0 gr.**)

known finds: Theodul-pass 1984-94 (dispersed late 1600s)

→ same weight of some clipped *ducatoni*, but their finess may be too low for a full equivalence

(*) coin find with non-clipped *ducatoni* only

The economic and political crisis of the 1590s-1600s

Several ***international events*** influencing the movements of bullion across Europe:

- **War in Flanders**
- **Increasing commercial supremacy of the United Provinces in the North**
- **Spanish royal bankruptcy in 1596-97 and in 1607**
- **Exports of silver from Spain forbidden in December 1596 and March 1597**

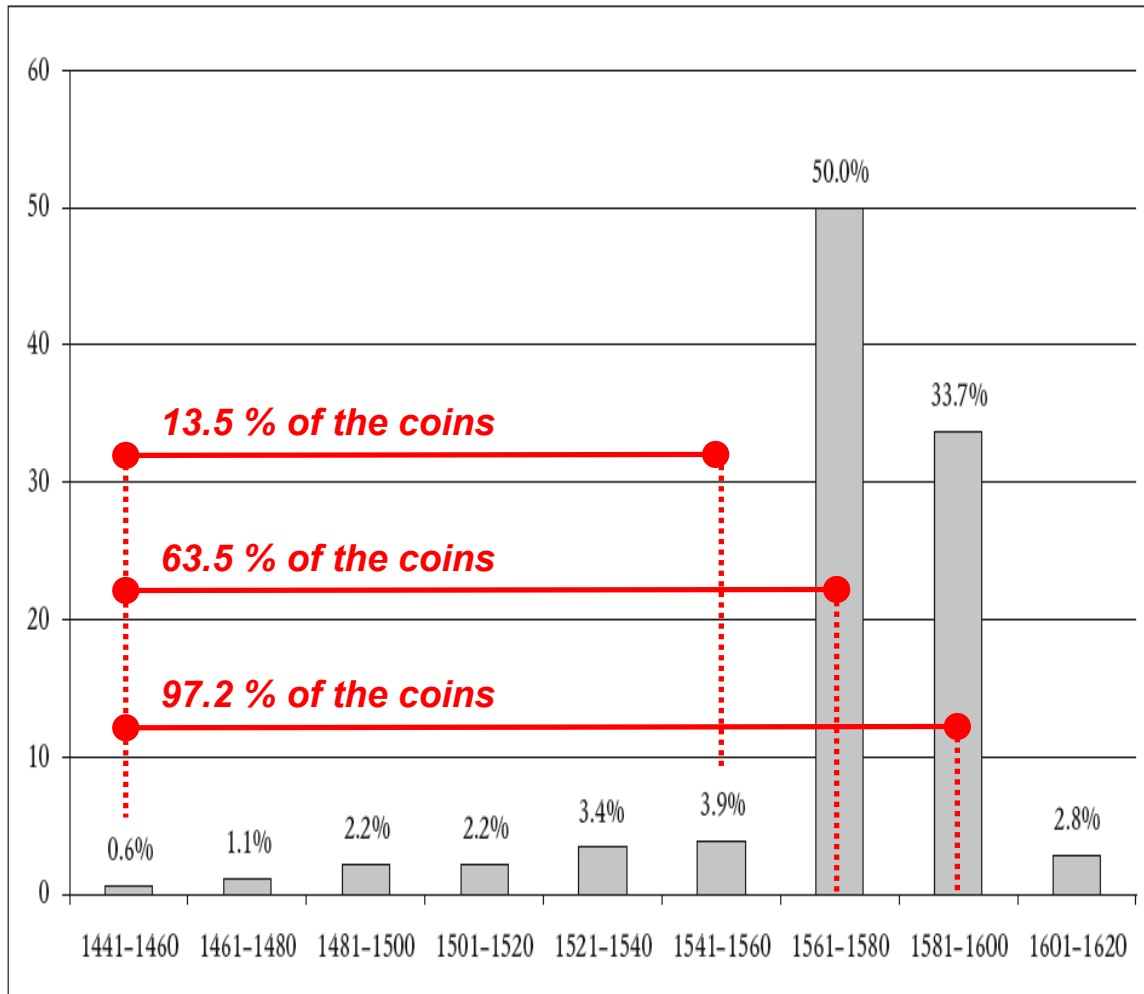
Major ***consequences***:

- **More Spanish silver *reals* driven to North, money shortage in the South**
- **Increase of the course of the coins**
- **Diffusion of over-rated coins (i.e., coins whose value exceeded the official change)**

A re-balancing in the monetary flows tends to emerge only after the sign of the **Twelve Years' Truce (1609)**

The shortage of money in the 1590s-1600s

The find of the Theodul-pass



Theodul-pass (VS, Switzerland) 1984-94, dispersed: late 1600s

184 coins: 8 *ducatoni* from Milan (7) and Turin (1); 1 *Philippstaler* from Antwerpen; 175 billion coins, mainly from Montferrat, Milan, Savoy and Southern Germany

- A **purse**, not a hoard → *more realistic witness of the coins actually circulating*

- Presence of clipped coins** (1 *ducatone*, 1 *Philippstaler*) and a forgery (*ducatone*)

- 10+ different monetary systems** represented

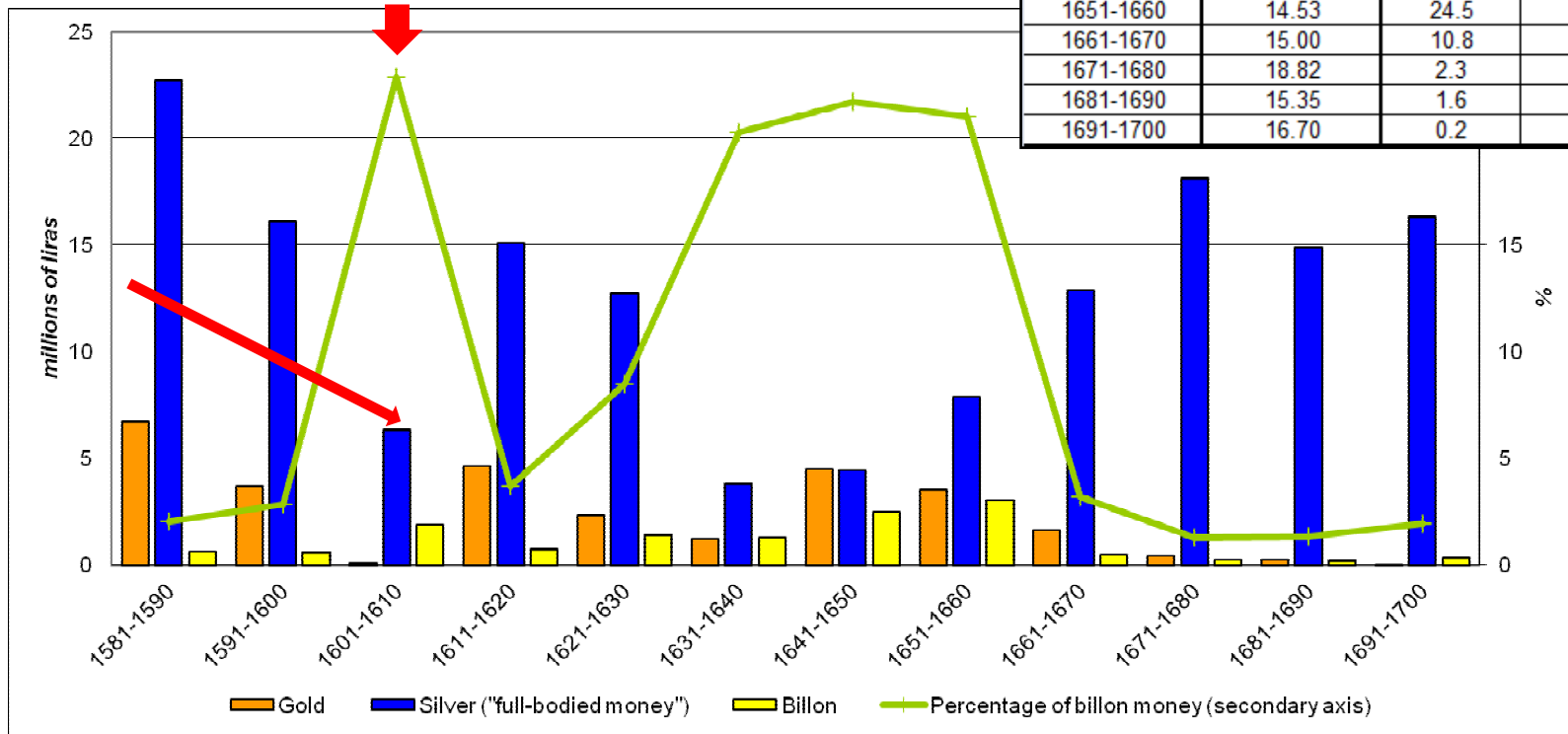
- Large presence of **coins minted several decades before the closing date of the find**

The shortage of money in the 1590s-1600s

The Duchy of Milan

Despite the relevant arrival of bullion from the Americas, with a peak for silver in 1590s, starting from that decade the Duchy of Milan saw a decrease in the number of coins issued by its mint, with a negative peak in 1603-09 (see next slide)

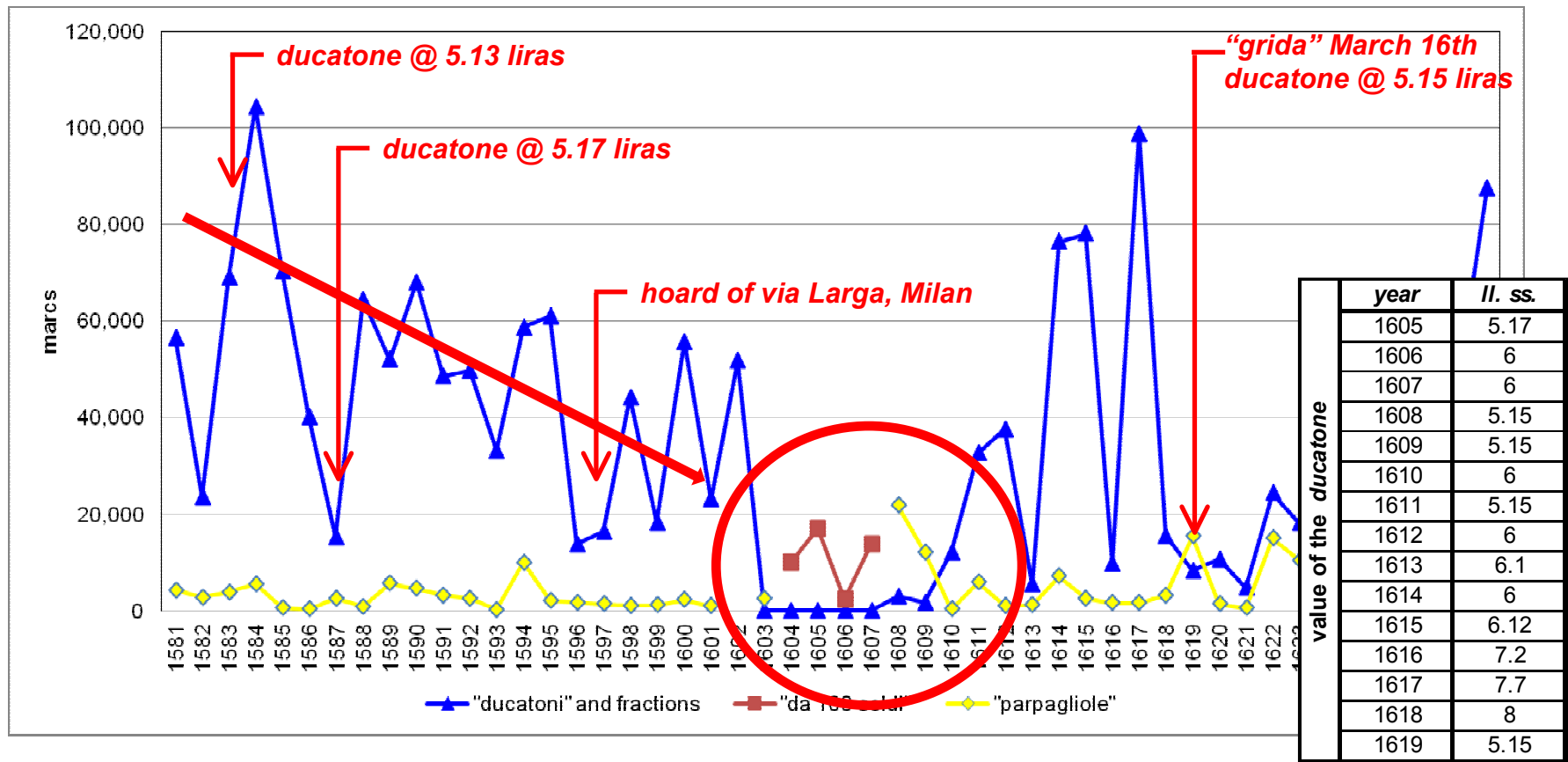
period	million of liras issued	percentage of		
		Gold	Silver	Billon
1581-1590	30.09	22.4	75.5	2.1
1591-1600	20.42	18.2	79.0	2.8
1601-1610	8.34	0.9	76.1	22.9
1611-1620	20.51	22.7	73.6	3.7
1621-1630	16.50	14.2	77.3	8.5
1631-1640	6.37	19.9	59.8	20.3
1641-1650	11.43	39.2	39.1	21.7
1651-1660	14.53	24.5	54.4	21.1
1661-1670	15.00	10.8	86.0	3.2
1671-1680	18.82	2.3	96.5	1.3
1681-1690	15.35	1.6	97.1	1.3
1691-1700	16.70	0.2	97.9	1.9



The shortage of money in the 1590s-1600s

The decline of the ducatone

Dramatic fall of the overall activity of the mint of Milan during the years 1603-09.
 The *ducatone* is replaced by a new, lighter currency: the *pezzo da 100 soldi*



Coin clipping as a search for a new standard

The price of the currencies in the Duchy of Montferrat

value in grossi (groats) of Montferrat	date	<i>crosazzo</i>	<i>ducatone</i>	<i>crosone</i>	<i>da 100 soldi</i>	<i>tallero</i>	<i>scudo di zecca</i>
	1595 June 8	-	140	112	-	-	-
	1603 June 26	-	140	112	-	-	-
	1608 August 11	-	150	120	138	-	-
	1611 October 1	189	156	126	138	123	-
	1612 May 21	189	156	126	138	120	-
	1613 January 12	189	156	126	138	120	-
	1615 November 8	195	162	129	-	126	-
	1620 February 8	240	204	168	180	-	126

expected weight (in grams) for an equivalent clipped <i>ducatone</i>	date	<i>crosazzo</i>	<i>ducatone</i>	<i>crosone</i>	<i>da 100 soldi</i>	<i>tallero</i>	<i>scudo di zecca</i>
	1595 June 8	-	32.0	25.6	-	-	-
	1603 June 26	-	32.0	25.6	-	-	-
	1608 August 11	-	32.0	25.6	29.4	-	-
	1611 October 1	38.8	32.0	25.8	28.3	25.2	-
	1612 May 21	38.8	32.0	25.8	28.3	24.6	-
	1613 January 12	38.8	32.0	25.8	28.3	24.6	-
	1615 November 8	38.5	32.0	25.5	-	24.9	-
	1620 February 8	37.6	32.0	26.4	28.2	-	19.8

Coin clipping as a search for a new standard

Reinterpreting the documentation: the case of the Duchies of Parma and Piacenza

1606 giugno 23, in Parma: *Rispetto alle doble d'oro, ducatonì, meggi ducatonì e suoi quarti, e ducati, meggi ducati e suoi quarti si batterà alla lega et bontà della zecca di Milano in tutto et per tutto [...] valutandolo ll. 6 per ducato*

The same document also mentions **ducato da ll. 5 ss. 4**, which can now be identified with a piece equivalent to the **pezzo da 100 soldi** of Milan

ducato = 6 lire = 120 soldi



assuming a weight of **32.0 grams**

“ducato” = 5 lire 4 soldi = 104 soldi



→ $32.0 \cdot 104 / 120 = 27.7$ grams

For Piacenza, no **ducato da ll. 5 ss. 4** known for 1606, or later years. **Only light ducatonì dating 1589-1603 and weighting 25.5-28.6 grams, currently classified as ducato da ll. 5 ss. 4**, but which now has to be considered purely as clipped **ducatonì**



New silver currencies: the “pezzo da 100 soldi” of Milan

1604 April 13: Per ordine dell'illustrissimo Magistrato, bontà denari 11.9, marco tenga d'argento fino onze 7.14, rimedio in peso denari $1 \frac{1}{2}$ per marco, in bontà grani 1 per $\frac{1}{4}$ d'onza, siano a n. $8 \frac{40}{187}$ per marco, cioè che detti denari pesino un marco meno 5 denari, che sono onze 7.19 [= **28.6 grams; 947.9 ‰ of finess**]



Phillip III of Habsburg (1598-1621)
mint of Milan – da 100 soldi 1605

New silver currencies: scudi and ducati of Venice

Niccolò da Ponte (1578-1585)

ducato da 124 soldi

scudo da 160 soldi

scudo della croce da 140 soldi

32.8 gr. (until 1578)

36.4 gr. (from 1578)

31.8 gr. (from 1578)

Pasquale Cicogna (1585-1595)

scudo da 160 soldi

scudo della croce da 140 soldi

ducato da 124 soldi

36.4 gr.

31.8 gr.

28.1 gr. (from 1587-88)

Marino Grimani (1595-1605)

scudo da 160 soldi

scudo da 140 soldi

ducato da 124 soldi

ducato col Redentore

ducato mozzo da 120 soldi

36.4 gr. (until 1595 ? – only fractions after)

31.8 gr.

28.1 gr.

27.3 gr. (from 1601)

26.2 gr. (from 1601)

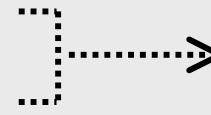
New silver currencies: the debasement of the Duchy of Savoy

- Strong debasement in early 1610s

Cavallotto da 3 grossi

1587 June 15: **2.98 grams, 253.5 ‰ of finess**

1610 December 18: **2.55 grams, 166.7 ‰ of finess**



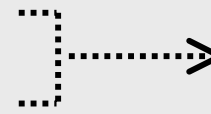
**- 43.2 %
of pure silver**

- Brand new silver piece of large module, lighter and with lower finess, furtherly debased just after its introduction

Scudo da 9 fiorini (= 108 groats/grossi)

1614 July 12: **26.6 grams, 708.3 ‰ of finess**

1618 October 10: **23.3 grams, 583.3 ‰ of finess**



**- 27.8 %
of pure silver**

Wrap up

- Coin clipping done with the precise intention **to reduce the weight of the coin to a new, lighter standard**
 - The large majority of the clipped *ducatoni* belongs to **two decades only: 1590s and 1600s**
 - *Ducaton*i dating **from 1610s** onwards tend to show a much reduced deviation from the expected weight
- Coin clipping as a quick adaptation to the **appreciation of the bullion** and – in turn – to the **depreciation of the money of account**
 - ‘Debasement’ operated by the market, not by the government
 - Only in 1610s the governments took the proper actions (debasements vs. brand new, lighter coins)
- Coin clipping to adapt the value of the coin to the price officially proposed by the decrees