

WEIGHING COINS IN THE KINGDOM OF SARDINIA 1750/1790

Guido Zavattoni

Accademia Italiana di Studi Numismatici, Bari

I INTRODUCTION

Measuring the mass of coins is an important tool in today numismatic archaeology, but the weighing of coins is as old as the coins themselves, due to the people's need to ascertain their intrinsic value.

Coins were first weighed using weights and scales for precious or valuable items¹. In the fourth century A. D. special weights for the *solidus* were made, the first possibly by order of the emperor Julianus (361-363) in connection with the appointment in every town of a *zygostates* to judge in litigations related to the mass of the *solidi*². The obverse of Julianus' coin weights shows the usual bearded face of the emperor and the reverse a balance held by a hand³ and the inscription *EXAGIUM SOLIDI*.

From then on large quantities of coin weights were produced and used in the Byzantine Empire, the Arab states and since the XIII century in Europe, when the economic *renaissance* led to the renewed minting of gold coins. After a peak in the seventeenth and eighteenth centuries, the long career of coin weights

declined in the second half of the nineteenth century, barely survived the First World War and finally ended after the second.

Coin weights for the use of the public were usually produced with a mass corresponding to the allowed circulation mass of the coin; sometimes a tolerance could be allowed⁴. Over the time, the normal wear and tear of the coins in circulation led to the reduction of their mass: to a certain extent, the authorities could acknowledge this, and lower the circulation mass, at the same time reducing the value of the coin. When the decay of the coins reached even lower levels, they were normally withdrawn from circulation and a recoinage ensued. Coin weights followed the same path: their mass was first reduced to adjust to the new circulation mass, and, in case of withdrawal of the relevant coin, they could be melted down, recoinage, or adjusted for weighing other coins⁵.

The above can explain, at least in part, the sometimes quite remarkable divergence in the present mass of a coin weight in respect to the original circulation mass of the relevant coin. Another reason of divergence can be found in the usual wear and tear or in the condition of the weight itself, and, last but not least, in the possible manipulation by unscrupulous owners using a heavier weight for "buying" and a lighter one for "selling" coins.

¹ Detailed instructions for weighing coins are foreseen in C. Th. 12.7.1 "*Imp. Constantinus a. ad Eufrasium rationalem trium provinciarum. Aurum vero quod infertur aequa lance et libramentis paribus suscipiatur, scilicet ut duobus digitis summitas lini retineatur, tres reliqui liberi ad susceptorem emineant nec pondera deprimant ...*". *Proposita XIII kal. aug. Paulino et Iuliano cons.* (19 Jul. 325).

² C. Th. 12.7.2 *Imp. Iulianus a. ad Mamertinum praefectum praetorio. Emptio venditioque solidorum, si qui eos excidunt aut deminuunt aut, ut proprio verbo utar cupiditatis, adrodunt, tamquam leves eos vel debiles nonnullis repudiantibus impeditur. Ideoque placet quem sermo Graecus appellat per singulas civitates constitui Zygostaten, qui pro sua fide atque industria neque fallat neque fallatur, ut ad eius arbitrium atque ad eius fidem, si qua inter vendentem emptoremque in solidis exorta fuerit contentio, dirimatur. Dat. VIII kal. mai. Salonae Iuliano a. IIII et Sallustio cons.* (23 Apr. 363).

³ This image was not new, the balance (normally of Justice) is shown on the reverse of many Roman coins and the same hand, correctly holding the balance with two fingers, appears already in a *quadran*s of the emperor Claudius (41-54).

⁴ In some areas and periods, e.g. Prussia and the subsequent German empire, two sets of weights were produced since the second half of the eighteenth century: *Normalgewichte* of full weight and *Passiergewichte* of tolerance weight. In case of use of full weights, grain weights were added to the coin: if the number of grains was within the difference between the full weight and the tolerance weight, the coin was accepted, if otherwise, it was rejected. Full weights (called *poids forts* in France) were also used in the mints to check the coin production.

⁵ Coin weights were made of brass or bronze, valuable materials that could be reused. Standard weights too were frequently sold and melted down when new standards were adopted; this, together with the destructions of World War II, explains their scarcity in the archives.

II COIN WEIGHTS OF THE KINGDOM OF SICILY (1713-1720) AND THE KINGDOM OF SARDINIA (1720-1861)

Coin weights were produced and used in the domains of the House of Savoy already in the second half of the fifteenth century. The first known comprehensive regulation appears to be the *Patente* of Emanuele Filiberto of the 13th of March 1562, followed by the *Istruzione* of the Camera dei Conti of the 9th of May of the same year.

In 1612 the unification of weights and measures in Piemonte was accomplished by the duke Carlo Emanuele I through the *Riduzione, o sia tariffa delle diversità delle misure, e pesi antichi delle città, terre, e luoghi delli Stati di quà da' Monti*, stating in particular that the weights had to be linked to the *marco* of the mint⁶.

At the beginning of the XVIII century, after achieving royal status, the new king Vittorio Amedeo II had to face the long and difficult task to reorganise his kingdom after the troubles in Piemonte of the seventeenth century, the war of the Spanish succession and the following acquisition of new and until then unknown domains like Sicily and later Sardinia.

Among the many other reforms, he (or, better, his government) showed an interest in the weights and measures including the weighing of coins.

In Sicily, a *Bando* of the 8th of April 1716 issued by Count Annibale Maffei, viceroy of Sicily, stated that the only coin weights allowed were those made by Domenico Santo Mauro, royal adjuster of weights. The quality of these weights attests the technical level of the royal mint in Palermo, where the weights were coined.



⁶ 1 *marco* (245.896 g) = 8 *once* (30.737 g) = 192 *denari* (1.281 g) = 4608 *grani* (0.053 g).

Fig. 1 Weight for the Livornina of the Grand Duchy of Tuscany, 1719

After the treaty of The Hague in 1720, Vittorio Amedeo II had to exchange Sicily with Sardinia and changed his title to king of Sardinia. This was the start of a season of reforms that lasted more than fifty years and transformed old-fashioned Piemonte (the bulk of the kingdom) into a modern state.

The reform of the weighing system in Piemonte⁷ started in 1727 with a general verification of the standards⁸. First, those of the *Aggiustatori Generali* were adjusted according to the standards kept in the royal archive, then those of the *Aggiustatori Provinciali* were adjusted to the standards of the *Aggiustatori Generali*, and then those of the towns were adjusted to the standards of the *Aggiustatori Provinciali*. This procedure was to be repeated every three years.

The same *Bando* ordered a general verification of the weights used by merchants and all persons having commerce with the public, to be performed by the *Aggiustatori Generali*, the *Aggiustatori Provinciali* and the local licensed adjusters. These weights were subject to a yearly verification.

The tariff for the purchase by the local communities of the official weights was published on the 19th of November 1727. The weights were sold “by mass”, the full brass weights at 25 *lire* for each *rubbo* (9.221 kg), the same price being applied for the brass part of the cased brass weights filled with lead; the price of the lead filling was 5 *lire* each *rubbo*. The fee for each verification was three *soldi* if no additional brass or lead were needed; otherwise, the additional material had to be paid at the above prices.

It is not clear whether coin weights were regulated by the 1727 *bandi*. The preamble states that all official weights had been adjusted, including weights for gold and silver and “all others”, but this is not in line with the description of the weights to be purchased by the local communities. These weights were in a range from five *rubbi* to one ounce, well above the mass of the majority of coins then circulating.

The reforms proceeded at a faster pace under his successor, Carlo Emanuele III (1730-1773). The

⁷ The reform was coordinated in Piemonte by the *Camera dei Conti* of Turin, while in Savoy the competence was vested in the *Chambre des Comptes* of Chambéry. Sardinia kept a separate status until the *fusione perfetta* of 1847.

⁸ *Bando* of the *Regia Camera dei Conti* of the 24th of May 1727.

reform of coinage and of weights and measures was one of his priorities⁹.

On the 9th of September 1749, the *Regia Camera dei Conti* issued a *Manifesto* providing again for the periodical verification of weights, to be attested, as sometimes made in the past, by a stamp with the *millesimo* (actually only the last two digits of the year).

Coin weights were exempted, being subject only to a first verification. These provisions were restated in the *Editto* issued by Carlo Emanuele III on the 26th of September 1749, adding the obligation for the scales and weights makers to put their mark on their products, so that they could be identified. This makers' mark had to be deposited with the *Vicario*¹⁰ in order to allow the authorities to make the necessary verifications.

Following the above *Editto*, on the 20th of February 1750 an *Istruzione per li Fabbricatori ed Aggiustatori delle Bilance, Stadere e Misure* was published, a text of forty pages of technical content, drawn - with the help of a committee - by *Signor Matthey Primo Preposto alle opere di Meccanica e Macchinista Regio*¹¹. This *Istruzione* is particularly relevant for its precise and detailed description of all parts of equal arms scales, steelyards and measures and for the precise instructions for their construction. Four engraved plates complete the description.

For the purpose of this study, the *Istruzione* is important in that it foresees the specifications for the scales for gold and silver coins as well as for precious items (*Bilancette destinate per le monete d'oro, d'argento, e gemme preziose*).

Their beam had to be made of steel, with special attention to the gravity center, in order to ensure the

⁹ Weights and measures were at that time particularly relevant in the kingdom of Sardinia, ruled by a strong-willed king and a bureaucracy selected from the military caste. Artillery and the relevant studies were particularly fostered by the king; this needed precise measuring devices, including scales for weighing the chemical components of the gunpowder and complex machineries for measuring its power, a field in which excelled Francesco Mattei, (see note 10).

¹⁰ The *Vicario* was a local officer. The *Editto* of the 21st of February 1755 transferred the competence to the *Sovrintendenza di polizia*.

¹¹ Francesco Matthey was a prominent authority in the technical field. Born in Geneva (his original name was François Matthey or Mathey), he entered into Carlo Emanuele III service and in his capacity of *Regio Macchinista* invented and produced machines for the silk production process, a machine for the production of cannons and various measuring instruments. His instructions for the fabrication of scales are of fundamental importance and were in use well into the nineteenth century.

highest precision. The shears had to be of steel or brass, with bronze eyes. For the weights, any hard metal not subject to alteration could be used¹². Fractional weights had to be of the same metal; their set included the 1, 2, 3, 6 and 12 *grani* pieces, so that their combination could allow the weighing of any mass up to the *denaro*.

The scales had to be sensitive to the lightest fractional weight, i.e. for gold and coin scales, the *grano* (0.053 g), corresponding to the allowed tolerance for some coins in respect of the official circulation mass¹³.

Subsequently the *Manifesto Camerale* of the 30th of September 1752 published detailed tariffs for the sale and the adjustment of weights and scales, to be applied by the licensed makers-adjusters who enjoyed the exclusive right to make and adjust weights and measures¹⁴. As in 1727 the weights were sold "by mass", starting from the two *rubbi* weight at one *lira*, five *soldi* per pound down to the one pound six ounces weight at one *lira* ten *soldi* per pound¹⁵. Smaller weights were priced by piece, the *denari* weights at two *soldi* six *denari* each, and the *grani* weights at one *denaro* each. No mention was made of coin weights.

The 1755 coinage reform was enacted by the "*Editto di Sua Maestà per una nuova Monetazione con provvedimenti riguardanti le monete*" issued in Turin on the 15th of February; it contained a specific heading "*Delle Bilancie e Pesi*"¹⁶, with provisions for the

¹² Coin weights of the kingdom of Sardinia were normally made of brass or similar alloy.

¹³ In a letter of the 23rd of August 1755 the then minister of the kingdom of Sardinia Bogino states that Matthey, then scale maker for the Mint, was able to make scales with an accuracy equivalent to 1/50 of a *grano* (about 1 mg). This level of accuracy was reached only by the special scales made for the mint. According to the same letter, the accuracy of the scales made by the same Matthey to be sold to the public was 1/12 of a *grano* (about 4 mg).

¹⁴ Scale makers had to be examined and approved. Not all of them had a full licence: as far as balances are concerned, some were licensed only for *bilance grosse* (heavy duty scales), requiring a lower level of accuracy.

¹⁵ These prices show an increase in respect of the 1727 tariff, providing for a single price of one *lira* per pound.

¹⁶ "*Essendosi fatte fabbricare delle Bilancie per accertamento del peso delle monete, siccome anche le Pietre adattate a ciascuna delle proprie, e Pesi facili ad essere combinati per quello delle estere ammesse in corso, dovranno provvedersene alla nostra Zecca i Postieri, e Ricevidori de' nostri Dritti e Gabelle, e le Città, Borghi, Terre, e Luoghi, ne'quali tengonsi Fiere, o Mercati, e si destinerà in ciascuna di esse dal Consiglio ordinario una persona per custodirle ad uso degli Accorrenti nella maniera, che dalla Camera verrà prescritta con un suo Manifesto; sarà però lecito a chiunque altro di valersi delle Bilancie, e Pesi, che si trovasse avere, o facesse fabbricare, purchè*

production of weights for the new coins¹⁷. According to the following “*Istruzione*” of the *Regia Camera dei Conti* of the 21st of February 1755, the weights and scales had to be provided by the royal mint to the moneychangers and the public offices. Scales and weights had to bear the verification stamp “crowned CE interlaced” (for Carlo Emanuele III)¹⁸.



Fig. 2 Verification stamp “CE interlaced”

For receiving and exchanging gold coins, the public offices had to apply the utmost care in weighing¹⁹ and the allowed mass of the coin had to be met up to the last *grano*²⁰.

The *Manifesto Camerale* of the 21st of February 1755²¹ and the *Manifesto Camerale, con cui vengono*

siano rettificate, e pria d'essere poste in uso, vengano marcate col Bollo Camerale, che si è apposto alle nuove suddette”. Coin weights were curiously called *Pietre*, literally meaning “stones”.

¹⁷ Gold *Doppie* and silver *Scudi*, with the relevant multiples and fractions. For the old and foreign coins no specific weights were foreseen, but they were weighed using the *denari* weights also present in the boxes. See the *Manifesto Camerale*, of the 21st of February 1755: “*Li Pesi per le Monete d'oro, e d'argento di nuova stampa dovranno essere tutti distinti, e divisi in tante parti, quante ne formano le dette Monete. Per le Monete poi del Paese di vecchio Stampo, e per le Forestiere basterà che si abbia l'oncia con le sue parti inferiori, cioè denari uno, due, tre, sei, e dodici, e similmente il denaro diviso in cinque parti, cioè grani uno, due, tre, sei, e dodici uniformemente agli originali di essi pesi, che si conservano, uno negli Archivj della Camera, e l'altro nella Regia Zecca...*”.

¹⁸ This verification stamp was used for coin weights and scale pans also during the reign of Vittorio Amedeo III (1773-1796).

¹⁹ The coins had to be clean, dry and without adjustments: “*Per evitare ogni pregiudizio al Cambio, prima di pesare le Monete suddette, dovranno osservare, che le medesime non siano bagnate, tinte, o con materie unite alla loro superficie*”.

²⁰ “*Per il peso delle Monete, che verranno presentate al Cambio, dovranno unicamente valersi de' Pesi, e Bilancie, che li saranno per parte della Zecca rimesse, e marcate col nuovo Bollo Camerale, ed useranno nel peso di esse Monete ogni maggior attenzione, e diligenza, in forma, che il peso sia giusto quanto alli grani intieri, mentre il peso traboccante, che non giungerà al grano, cederà a beneficio del Cambio*”.

²¹ “*Manifesto Camerale relativamente al disposto del § 22. del Regio Editto emanato per la nuova generale Monetazione, e per riguardo alle Bilancie, e Pesi delle Monete d'oro e d'argento*”.

prescritti diversi Provvedimenti a riguardo de' Pesi delle Monete of the 12th of June 1756 completed the 1755 reform. These decrees provided that the towns' head of district had to be furnished with scales and standard coin weights (these too made by the royal mint²²), to be used for the annual verification of scales and weights used by the public offices or by bankers and shopkeepers. The local communities were entitled to purchase from the *Tesorieri delle Provincie* coin weights and scales for resale to the public²³.

A new *Manifesto Camerale*, issued on the 12th of June 1756 ordered the towns and the local communities listed therein to purchase from the *Tesorieri delle Provincie* a second set of scales and coin weights, contained in a box, to be kept as reference standards. These scales and coin weights, including the weight for the Zecchino, were again made by the mint.²⁴

III COIN SCALE BOXES

The set of scales, coin weights, *denari* and fractional weights was contained in appropriate boxes. After the reform of 1755, coin scale boxes generally show common features²⁵: walnut wood, square or rectangular recesses cut out of the solid, rectangular shape, often with lobated front, and sometimes chamfered corners. The beams of the scales have a characteristic reinforcement in the middle and often bear stamps indicating the capacity (*portata*), the maker's mark and the verification stamp.

Coin weights are square or rectangular, made of brass, with on the obverse in incuse the name of the coin, while the *denari* and fractional weights bear the indication of their number. The weights in the boxes were originally fourteen (six *denari* weights and eight coin weights, of which seven for coins of the kingdom of Sardinia and one for the Zecchino). The boxes made

²² Section 24: “*Dovranno quindi li rispettivi Tesorieri delle Provincie distribuire a ciascuna di dette Città, e Comunità appiè del presente descritte la scatola colle Bilancie, e Pietre, che le verranno dalla Zecca trasmesse, fra le quali sarà compresa una pietra particolare corrispondente al peso del Zecchino ...*”.

²³ Section 25.

²⁴ “*Dovranno quindi li rispettivi Tesorieri delle Provincie distribuire a ciascuna di dette Città, e Comunità appiè del del presente descritte la scatola colle Bilancie, e Pietre, che le verranno dalla Zecca trasmesse, fra le quali sarà compresa una Pietra particolare corrispondente al peso del Zecchino...*”.

²⁵ The main production centre was Turin.

after the monetary reform of 1785²⁶ include, besides weights for the old and new Doppia, also weights for the Doppia of Genoa (of 25 *lire* and, after 1792, of 24 *lire*), the Louis *Neuf* and the Spanish and Portugal *escudos*. Additional information is stamped on the weights: on the obverse the value of the coin in *lire* of Piemonte²⁷, and on the reverse the mass in *denari* and *grani*.

A printed label, at that time provided by the royal print (*Stamperia Reale*)²⁸, was generally glued inside the lid, with the indication of the allowed mass of the coins and their value.

The following two coin scale boxes show the evolution between 1755 and about 1790.

The first box (Fig.3) is possibly an original 1755 box for official use, as attested by the year 1755 written on the lid and the letters REP D, possibly meaning “*reparto D*” (department D). It is made of walnut, its shape is rectangular with chamfered corners and its size is 208 x 109 x 31 mm and it is closed by two brass hooks on the front. The scales (a possible replacement) have a steel beam and brass round pans. Inside the lid is a printed label of the *Stamperia Reale* with the mass and value of the coins according to the royal decree of the 30th of December 1785. This label is glued over another showing the mass and value of the coins according to the royal decree of the 15th of February 1755.

This box has fourteen square or rectangular recesses cut out of the solid, with six *denari* weights (24, 12, 6, 3, 2 and 1) and eight coin weights. Seven weights are for coins of the kingdom of Sardinia: Doppia (9. 64 g), half Doppia (4. 81 g) and quarter Doppia (2. 40 g), silver *scudo* (35. 22 g), half silver *scudo* (17. 61 g), quarter silver *scudo* (8, 80 g), one eighth of the silver *scudo* (4, 41 g). The last weight is for the Zecchino (3. 47 g), and was used for weighing a wide variety of coins, including the Venetian Zecchino, the Florentine Fiorino and the Austrian Ongaro. Five fractional weights of 12, 6 (two weights), 4 and 3 *grani* are in a small recess closed by a sliding wooden lid. All

²⁶ The *Editto* of the 30th of December 1785 provided for the coinage of a new *Doppia* weighing 9. 10 g, in substitution of the old *Doppia* of 9. 60 g.

²⁷ This is a useful element for determining the production date of the weights and scales. In any case it must be considered that boxes could last for decades, their weights being sometimes substituted with new ones for the new coins (not forgetting possible manipulations by later collectors); also the labels could be subject to substitution with new ones made according to the new legislation: sometimes the new label is found glued upon the older.

²⁸ Later labels were printed also by ordinary printers.

weights, including the fractional weights (to the exception of the 4 *grani* weight), bear on the obverse the verification stamp “crowned CE interlaced” of Carlo Emanuele III.

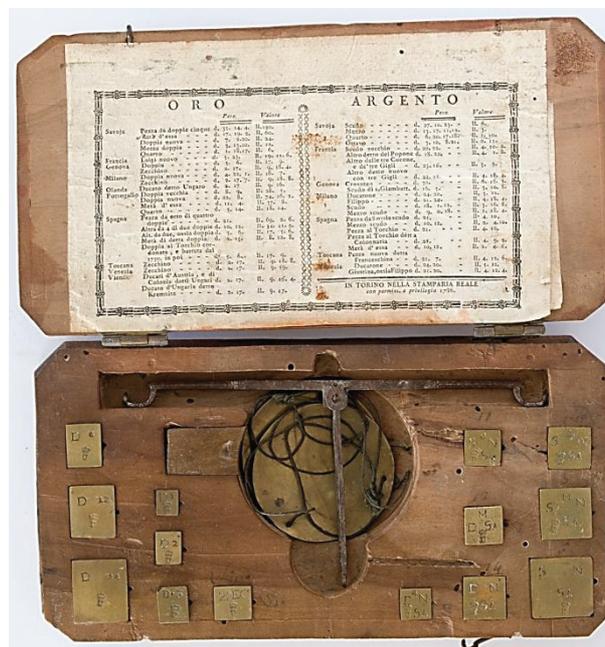


Fig. 3 Coin scale box 1755

The second box (Fig.4) was possibly made in - or slightly before - 1791 by Antonio Cometti, a renowned Turin maker. Also made of walnut, it has a vaguely rectangular shape with lobated front and sides; the closure has a spring button catch²⁹. Its size is 238 x 135 x 33 mm. The scales have a steel beam and brass round pans, one with the verification stamp “crowned CE interlaced” and the other the annual verification stamp 91 (for 1791). Inside the lid is a printed label of the *Stamperia Reale* with the mass and value of the coins according to the royal decree of the 30th of December 1785. On the label are handwritten calculations and an ownership note by a Giuseppe Renie (?); on the main body is branded the name of the maker, Antonio Cometti.

This box has twenty-three square or rectangular recesses cut out of the solid, with six *denari* weights (24, 12, 6, 3, 2 and 1) and fifteen coin weights: kingdom of Sardinia: Doppia (9. 10 g) and half Doppia (4. 55 g); Austria: ducat (3. 45 g); Florence: 3 *zecchini* (10. 39 g) and Zecchino (3. 45 g); France: Louis *Neuf* (7. 61 g); Genoa: 25 *lire* (6. 71 g); Portugal: 8 *escudos* (28. 55 g), 4 *escudos* (14. 29 g) and 2 *escudos* (7. 13 g), 4000 *reis* (10. 71 g); Spain: 8 *escudos* (26. 87 g), 4

²⁹ The spring button catch became a common feature in later boxes.

escudos (13.43 g) and 2 *escudos* (6.71 g); Venice and other states: Zecchino (3.47 g). Three fractional weights of 12, 3 and 2 *grani* are in a small recess closed by a sliding wooden lid. All weights bear on the obverse the verification stamp “crowned CE interlaced”; the weight of 24 denari bears on the reverse the annual verification stamp 91 (1791).



Fig.4 Coin scale box 1791, made by Antonio Cometti

This pattern of scale boxes, their content varying from 10 to 60 weights, was produced with little modifications until the proclamation of the kingdom of Italy in 1861.



Fig.5 Coin scale box about 1850

Remarkably also the boxes for commercial weights and for jewellers followed the same pattern.



Fig. 6 box with commercial weights 1820-1850

The unification of coinage and the accession to the Latin convention reduced greatly the types of coins circulating in the kingdom of Italy; as a consequence, the new boxes were made in different shapes and contained only ten coin weights for both gold and silver coins.