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**METROLOGICAL HARMONIZATION AND COMMERCIAL
EXCHANGE IN THE MEDITERRANEAN AT THE END OF THE
2ND CENTURY B.C.: THE ATHENIAN DECREE ON WEIGHTS
AND MEASURES**

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1. In a series of works aimed at analyzing the economy of imperial Rome under the lens of a theory that has garnered recognition as New institutional economics, and which was, in its most important parts co-created by economic historian Douglass C. North¹, Elio Lo Cascio notes the potential importance of this approach to “permettere una migliore comprensione dei conseguimenti, sul piano economico dell’Impero romano come organizzazione politica unificata nel tempo e più specificamente una migliore comprensione dei fattori che determinano le modificazioni istituzionali e ancora degli effetti di queste modificazioni istituzionali sulla “performance” dell’economia romana”. Lo Cascio empathizes in particular that “la fine delle guerre civili, il successivo emergere di un regime politico stabile e l’unificazione del mondo Mediterraneo permisero la creazione di uno scenario istituzionale che poteva rendere gli scambi più facili e sicuri portando con sé una forte riduzione dei costi di transazione. Lo stabilimento di condizioni più pacifiche e sicure sul mare (già

1 D.C. NORTH, *Institutions, Institutional Change and Economic Performance*, Cambridge, 1990. It is virtually impossible to give an exhaustive panorama of the vast amount of literature that has been triggered by North's work. For an overview, see E'. BROUSSEAU - J.-M. GLACHANT (eds.), *New institutional economics*, Cambridge, 2008; E.G. FURUBOTN - R. RICHTER, *Institutions and economic theory. The contribution of the New Institutional Economics*, 2nd ed., Ann Arbor 2005; I. PIES - M. LESCHKE (eds.), *Douglass Norths ökonomische Theorie der Geschichte*, Tübingen, 2009, all with extensive bibliographical notes.

Particularly interesting seems, among others, the reference to a "reform of metrology" and the diffusion of common metrological systems which, in Lo Cascio's view, would have contributed to a diminishment of such costs, constituting in general an important kind of intervention which would have made exchange safer and therefore helped to improve economic operations significantly. Concerning this matter, Lo Cascio, in another article, states that "the diffusion of a "technology of measurement" and indeed the spread of common metrological systems, reduced the costs of measuring", citing the fact that "this diffusion of a technology of measurement (for example of land) and the reduction of measurement costs could also have affected the growing diffusion of the notion (and practice) of private property in the more backward areas of the west: "where measurement costs are very high, the good will be a common property resource"³.

Even if such an example might demonstrate the importance of metrological aspects for the economy, the role of public interventions regarding weights and measures and their impact on transaction costs and the determination of economic

Costanti e mutamenti nell'equilibrio economico imperiale, in L. CAPOGROSSI COLOGNESI - E. TASSI SCANDONE (eds.) *Vespasiano e l'impero dei Flavi. Atti del Convegno Roma, 18-20 novembre 2009*, Roma, 2012, p. 1 ff.

3 E. LO CASCIO, *The Roman Principate*, op. cit., p. 95 (= p. 79).

This document contains interesting elements under various viewpoints: First of all, this text defines a series of sanctions against those who use incorrect measuring instruments and, in

Volksbeschluss, op. cit., p. 120 ff. and another by L. BREGLIA PULCI DORIA, *Per la storia di Atene alla fine del II sec. a.C. Il decreto sui pesi e misure: IG II² 1013*, in *MEFRA*, 97 (1985), p. 411 ff. Among those contributions which examine the decree more or less closely, a series of works on economic history have to be cited. Amid the most recent contributions cf. C. KOCH, *Reformbemühungen um Münzwesen und Währungssysteme in Griechenland*, *BIDR*, 103-104 (2000-2001) [2009], p. 247 ff.; J. FOURNIER, *Entre tutelle romaine et autonomie civique. L'administration judiciaire dans les provinces hellénophones de l'Empire romain (129 av. J.-C. – 235 apr. J.-C.)*, Athènes, 2010, in particular p. 121 f., p. 150 f.; C. DOYEN, *Études de métrologie grecque. II. Étalons de l'argent et du bronze en Grèce hellénistique*. Louvain-la-Neuve, 2012, p. 148 ff. U. FANTASIA, *I magistrati dell'agora nelle città greche in età classica ed ellenistica*, in C. AMPOLO, (ed.), *Agora greca e agorai di Sicilia*, Pisa, 2012, p. 31; C. HASENOHR, *Athènes et le commerce délien: lieux d'échange et magistrats des marchés à Délos pendant la seconde domination athénienne (167-88 a.C.)*, in K. KONUK (ed.), *Stephanèphoros. De l'économie antique à l'Asie Mineure. Hommages à R. Descat*, Bordeaux, 2012, p. 106 f.; C. HASENOHR, *Ariarathès, épimélète de l'emporion et les magasins du Front de mer à Délos*, in V. CHANKOWSKI – P. KARVONIS (eds.), *Tout vendre, tout acheter. Structures et équipements des marchés antiques. Actes du colloque d'Athènes, 16-19 juin 2009*, Bordeaux - Athènes, 2012, p. 260; G. OLIVER, *The agoranomoi at Athens*, in L. CAPDETREY - C. HASENOHR (eds.), *Agoranomes et édiles: institutions des marchés antiques*, Paris, 2012, p. 85 ff.; E.M. HARRIS, *The Rule of Law in Action in Democratic Athens*, Oxford, 2013, p. 31 f.; M. RIZZI, *Per un riesame delle prime linee del decreto attico sui pesi e misure*, in *DIKE* 17 (2014), forthcoming.

general, instruments not conforming to the requirements of the decree¹⁰, as well as against those who alter sample weights and measures which were kept in places defined by the decree¹¹.

However, even more significant for our discussion are some other provisions of the decree, in particular those in § 3 (l. 18-29) and 4 (l. 29-37)¹².

In § 3 of the inscription it is ordered that only a measure of three half *choinikes* must be used for comestible goods which are specifically listed, among others Persian nuts, almonds, hazelnuts of Heraclea, pine-nuts, chestnuts, Egyptian beans, lupines, olives and similar goods. The decree also contains detailed instructions on how this measure had to be built: five fingers deep with a brim one finger wide as it had to be filled heaped. If any measure smaller than that was used selling the listed goods, the magistrate had to sell the contents at auction, destroy the measure and deposit the proceeds at the public bank¹³.

10 IG II² 1013, l. 1-7.

11 IG II² 1013, l. 56-60.

12 We owe the division of the decree into paragraphs to the first editors. Cf. *supra* fn. 9. The two paragraphs in question have been entitled *De mensura fructuum delicatorum* and *De pondere mercatoris*.

13 IG II² 1013 l. 18-29: Those who sell Persian nuts (walnuts), dried almonds, hazelnuts of Heraclea, pine-nuts, chestnuts, Egyptian beans, dates and any other dried fruits that are sold with a measure of a capacity of three half *choinikes* of grain leveled off, selling them with this *choinix*

As noted by Breglia Pulci Doria¹⁴, among the goods mentioned we find commonly used products, as well as rarer, more sporadically consumed ones. Furthermore, the list contains both goods of local origin and imported ones. This fact is of particular importance as it indicates that the decree apparently applied to any good for sale independently of its origin, whether locally produced, imported or destined for export.

Equally significant is that the *choinix* defined by the decree corresponds to two roman *sextarii*.¹⁵ The relevance of this correlation, which was first noted by Viedebant, is a further indication of the intention to simplify and facilitate the

heaped up, with a depth of five fingers and a width at the rim of one finger; similarly those who sell fresh almonds, [newly] picked [olives] and dried figs must sell them with a *choinix* heaped full, twice the size of the previously [mentioned one, with a] rim three half fingers (wide), and they must use measures *choinikes*) made of wood; if [anyone] sells fresh almonds, newly picked olives or dried figs [in another way?] or with another type of measure [he must not sell less] than a medimnus of grain; if he [sells] in a smaller type of measure, the magistrate under whose [supervision he is] in a shall immediately sell [the] contents by auction, pay the price to the [public bank] and destroy the measure (translation by Austin).

14 L. BREGLIA PULCI DORIA, *Per la storia di Atene*, op. cit., p. 417 ff.

15 The decree introduces this new 1:2 relation between greek and roman units also for weights as we will see below immediately.

Furthermore, the commercial talent was increased five commercial minas¹⁹, i.e. approximately 9,4%. It has already been recognized that one of the results of the decree was an easier conversion among athenian and roman units²⁰, but hardly acknowledged how much compatibility was probably achieved in practice. To better understand the importance of this reform, we will have to take a closer look at the units of weight used in Athens and Rome. The former used the mina, the latter the (roman) pound. Furthermore, both had an unit for considerable amounts of goods which was called the talent, which however equaled 60 minas in Athens, but 100 pounds in Rome. In Athens, a duodecimal notation was used, in Rome, at least in the range from pound to talent, a decimal one. On an

römische Metrologie, Weidmann, 1882 (Graz 1971), p. 155 ff.; K. HITZL, *Die Gewichte griechischer Zeit aus Olympia*, Berlin-New York, 1996, p. 12. In-depth research has been conducted on the changes in weight and monetary units from Solon up until the enactment of the decree. For an overview of the debate, see L. BREGLIA PULCI DORIA, *Per la storia di Atene*, op. cit., in particular p. 420 ff.

¹⁹ There is also a rather problematic provision regarding the commercial weight of five minas, which poses interpretational difficulties (probably worth a dedicated contribution of its own) which cannot be analyzed in more depth here. For an overview O. VIEDEBANTT, *Der athenische Volksbeschuß*, op. cit., p. 138.

²⁰ Cf. O. VIEDEBANTT, *Der athenische Volksbeschuß*, op. cit., p. 137 ff., who then was followed in this by most of the subsequent authors occupying themselves with the decree.

mediterranean trade might however indicate an equally conceivable third option. Maybe the new regulation was not that disadvantageous for any one party at all, but rather a sound business proposal all participants profited from²³?

On a similar note, it would also seem imaginable that the enactment of the decree was not necessarily caused by the pressure of one single political force, but more of a "hands on" solution to solve a set of practical problems pragmatically. North mentions in particular that institutionalization²⁴ often

23 This has also been mentioned by J.D. SOISIN, *Alexanders and Stephanephoroi at Delphi*, op. cit., p. 202, albeit mainly in the context of CID IV 127.

24 For details on the notion of institutions in this context see D.C. NORTH, *Institutions*, in *Journal of Economic Perspectives*, 5.1 (1991), p. 97 ff., who opens his insights with the following definition: "Institutions are the humanly devised constraints that structure political, economic and social interactions. They consist of both informal constraints (sanctions, taboos, customs, traditions, and code of conduct), and formal rules (constitutions, laws, property rights). Throughout history, institutions have been devised by human beings to create order and to reduce uncertainty in exchange. Together with the standard constraints of economics they define the choice set and therefore determine transaction and production costs and hence the profitability and feasibility of engaging in economic activity. They evolve incrementally, connecting the past with the present and the future; history in consequence is largely a story of institutional evolution in which the historical performance of economies can only be understood as a part of a sequential story. Institutions provide the incentive structure

begins in informal ways which at a certain point might evolve into mercantile custom and only later get codified by a legislator - especially in the context of an evolving and expanding economy²⁵. Perhaps some of the methods to calculate roman and athenian units in a convenient manner had been used already in one way or another by at least some merchants to conveniently calculate the amount of a freight, to better understand the quantity of an offered good in relation to the units at home or to make business negotiations a little more transparent for themselves and their respective counterparts. The decree might have codified such practice, perhaps adding useful modifications and thereby establishing it not only as legal, but mandatory business practice.

This is, of course, mere speculation at this point. North's own research centers around the institutional evolution of early modern Europe²⁶, profiting from a much vaster amount of documented sources than any research on antiquity can hope to rely on. Despite of this, there has been an increasing number of

for an economy; as that structure evolves, it shapes the direction of economic change towards growth, stagnation, or decline”.

25 D.C. NORTH, *Institutions, Institutional Change*, op. cit., p. 89.

26 D.C. NORTH, *Institutions*, op. cit., p. 105 ff. Even when analyzing primitive societies, his observations rely on contemporary examples like the Suq, cf. p. 103 f.

"institutions and enforcement"²⁸ over a significant period of time, creating a positive feedback loop of formal and informal, social, political, and economic elements. It is the sustainment of such a process which probably constitutes the most important aspect for the evolution of a society and its markets²⁹ from a relatively primitive level based primarily on local operations and personal relations, passing through growth, specialization, longer and increasingly complex chains of commercial trade to a highly specialized, industrialized, anonymized and globalized economy like the dominant contemporary one.

In this perspective, the interventions by public authorities regarding weights and measures constitute only a few among many, but nevertheless important, pebbles in a complex and articulate mosaic, which as a whole, reinforced the trust - not necessarily among the potentially involved parties themselves, but at least regarding the system surrounding them and their transactions - which is indispensable for the flourishing of commercial exchange.

Bibliography

28 D.C. NORTH, *Institutions, Institutional Change*, op. cit., p. 34 ff.

29 D.C. NORTH, *Institutions*, op. cit., p. 105 ff.

