

**REVISTA INTERNACIONAL DE DERECHO ROMANO**

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**METROLOGICAL HARMONIZATION AND COMMERCIAL  
EXCHANGE IN THE MEDITERRANEAN AT THE END OF THE  
2<sup>ND</sup> 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. North<sup>1</sup>, 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

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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*, 2<sup>nd</sup> ed., Ann Arbor 2005; I. PIES - M. LESCHKE (eds.), *Douglass Norths ökonomische Theorie der Geschichte*, Tübingen, 2009, all with extensive bibliographical notes.

come risultato della soppressione della pirateria), la diffusione di una “tecnologia della misurazione” e di sistemi metrologici comuni, la discussione di regole comuni nell’ambito di ciò che possiamo definire il diritto commerciale, nonché la diffusione della nozione romana della proprietà sono tutti fattori che hanno potentemente contribuito alla drastica riduzione dei costi di transazione”<sup>2</sup>.

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2 E. LO CASCIO, *La “New Institutional Economics” e l’economia imperiale romana*, in M. PANI, (ed.), *Storia romana e storia moderna*, Bari, 2005, p. 78 and *passim*. The theme of the effect of institutions on transaction costs is picked up repeatedly by this scholar in other contributions, cf. E. LO CASCIO, *The Roman Principate: The Impact of the Organization of the Empire on Production*, in E. LO CASCIO - D. RATHBONE (eds.), *Production and public power in antiquity. Eleventh International Economic History Congress (Milano 12-17 Sept. 1994)*, Milano, 1994, p. 93 ff. (= revised ed. in E. LO CASCIO - D. RATHBONE (eds.), *Production and Public Powers in Classical Antiquity*, Cambridge, 2000, p. 77 ff.); ID., *Il denarius e gli scambi intermediterranei*, in G. URSO (ed.), *Moneta Mercanti Banchieri. I precedenti greci e romani dell’Euro. Atti del convegno internazionale, Cividale del Friuli, 26-28 settembre 2002*, Pisa, 2003, p. 147 ff. (= ID. *Crescita e declino. Studi di storia dell’economia romana*, Roma, 2009, p. 195 ff.); ID., *Mercato libero e “commercio amministrato” in età tardo antica*, in C. ZACCAGNINI (ed.), *Mercanti e politica nel mondo antico*, Roma, 2003, p. 307 ff. (= ID. *Crescita e declino. Studi di storia dell’economia romana*. Roma, 2009, p. 273 ff.); ID., *The role of the state in the Roma economy - making use of the “New Institutions Economics”*, in P.F. BANG - M. IKEGUCHI - H. ZICHE (eds.), *Ancient Economies, Modern Methodologies: Archeology, Comparative History, Models and Institutions*. Bari, 2006, p. 215 ff.; ID. *Impero, città e relazioni commerciali nel Mediterraneo romano*, in R. BEN-GHIAT (ed.), *Gli imperi. Dall’antichità all’età contemporanea*, Bologna, 2009, p. 73 ff.; ID.

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"<sup>3</sup>.

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

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*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).

performance<sup>4</sup> can be read in a more general context, especially taking into account the importance of means to quantify weight, volume and length for the carrying out of commercial transactions.

Transaction costs, according to North "consist of the costs of measuring the valuable attributes of what is being exchanged and the costs of protecting rights and enforcing agreements. These measurement costs and enforcement costs are the sources of social, political, and economic institutions"<sup>5</sup>.

Often taken for granted in today's markets, accurate and transparent knowledge about the weight and volume/length (apart from a simple item count) of a traded good can probably be considered as the most basic information to assess its "valuable attributes". Consequently, North emphasizes "the

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4 Quoting once more the words of E. LO CASCIO, *La "New Institutional Economics"*, op. cit., p. 74.

5 D.C. NORTH, *Institutions, Institutional Change*, op. cit., p. 27. On the - often overlooked - differences between this approach and the concept of social cost developed by R.H. COASE, *The Nature of the Firm*, in *Economica*, 4 (1937), p. 386 ff. and R.H. COASE, *The Problem of Social Cost*, in *Journal of Law and Economics*, 3 (1960), p. 1 ff., cf. G. SCHRÖDER, *Approach matters - Die ambivalente Bedeutung von Rationalität und Transaktionskosten in Douglass Norths entwicklungsökonomischem Ansatz*, in I. PIES - M. LESCHKE (eds.), *Douglass Norths ökonomische Theorie*, op. cit., p. 44 ff.

development of standardized weights and measures"<sup>6</sup> and "units of account" among the typical necessities of an ancient society in which trade begins to expand beyond a single village and long-distance commerce, often through lengthy ship voyages is being established<sup>7</sup>.

This importance can be observed in commercial operations on a local as well as an inter-regional level and also, of course, between provinces. The various means to combat metrological fraud, the existence of authorities appointed to supervise weights and measures and to provide access to officially gauged instruments, and in particular the presence of *sekomata* and *mensae ponderariae* where markets took place, can all be interpreted in this direction<sup>8</sup>.

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6 The problem of units by which goods are measured often differing from attributes for which those goods really are desired, i.e. the use of proxy measures which might indicate the desired attributes, but neither necessarily nor accurately (e.g. the weight of an orange in relation to its freshness, ripeness or the amount of juice it will give) does not diminish their importance but rather emphasize it. Without the ability to determine weight and/or volume/length accurately, all the problems mentioned by Y. BARZEL, *Cost and the Organization of Markets*, in *Journal of Law and Economics*, 25 (1982), p. 42 ff would be even more severe.

7 D. NORTH, *Institutions*, op. cit., p.99 f.

8 For an analysis of these kinds of interventions cf. M. RIZZI, *Ex iniquitatibus mensurarum et ponderum. Appunti intorno alle frodi metrologiche nell'antichità greca e romana*, in *Ridrom*, 11 (2013), p. 288 ff.; EAD., *Misure come attributo del potere. Il ruolo del potere pubblico in materia di pondera e*

In the context of trade relations between provinces, there are some specific interventions during the age of roman dominance in the Mediterranean which are especially worthy of attention.

2. The central role of an attic decree the end of the second century B.C. (IG II<sup>2</sup> 1013), which has been cited frequently but rarely analyzed in more depth, has to be recognized in this regard<sup>9</sup>.

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*mensurae nell'ambito delle relazioni giuridico-economiche nel mondo greco e romano tra il III secolo a.C. e il III secolo d.C.*, in *AIIN*, 59 (2013) [2014], p. 143 ff.

9 IG II<sup>2</sup> 1013. Other editions of the decree: CIG I 123; IG II<sup>1</sup> 476; E.S. ROBERTS - E.A. GARDNER, *An introduction to Greek Epigraphy. II. The Inscriptions of Attica*, Cambridge 1905, p. 170 ff., n. 64; C. MICHEL, *Recueil d'inscriptions grecques, Supplément*, Hildesheim - New York, 1912 (1976), p. 64, n. 1501; O. VIEDEBANTT, O. *Der athenische Volksbeschuß über Maß und Gewicht*, in *Hermes*, 51 (1916), p. 121 ff.; R.E. WYCHERLEY, *The Athenian Agora. III. Literary and Epigraphical Testimonia*, Princeton, 1957, p. 182 f.; H.W. PLEKET, *Epigraphica. I. Texts on the Economic History of the Greek World*, Leiden, 1964, p. 22 ff, n. 14; L. CLINTON, *Eleusis. The inscriptions on Stone. Documents of the Sanctuary of the Two Goddesses and Public Documents of the Deme. I*, Athens, 2005, p. 261 ff., n. 237. M.M. AUSTIN, *The Hellenistic World from Alexander to the Roman Conquest. A selection of ancient sources in translation*, 2<sup>nd</sup> ed., Cambridge, 2006, p. 238 ff., n. 129. Specific studies dedicated to this source are scarce. Only two such works have been published as of now, cited above article by O. VIEDEBANTT, *Der athenische*

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

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*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 II<sup>2</sup> 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 decree<sup>10</sup>, as well as against those who alter sample weights and measures which were kept in places defined by the decree<sup>11</sup>.

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)<sup>12</sup>.

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 bank<sup>13</sup>.

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10 IG II<sup>2</sup> 1013, l. 1-7.

11 IG II<sup>2</sup> 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 II<sup>2</sup> 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 Doria<sup>14</sup>, 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*.<sup>15</sup> The relevance of this correlation, which was first noted by Viedebant, is a further indication of the intention to simplify and facilitate the

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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.

metrological aspects of commercial operations in the Mediterranean<sup>16</sup>.

3. But of perhaps even greater importance is the provision in § 4 which contains a reform of the commonly used market weight, the *mna emporike*, ordering it to be incremented from 138 to 150 drachmas<sup>17</sup>. This resulted in the new mina corresponding approximately to two roman pounds of ca. 327,5 g<sup>18</sup> each.

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<sup>16</sup> A measure perfectly in line with the requirements of the decree has been excavated in the athenian Agora; for a detailed analysis cf. M. CROSBY, *An Athenian Fruit Measure*, in *Hesperia*, 18 (1949), p. 108 ff.

<sup>17</sup> IG II<sup>2</sup> 1013. ll. 29-37: The commercial mina shall weigh 138 [drachmas of wreath-bearing (silver) according to the weights at the mint and a make-weight] of twelve drachmas of wreath-bearing (silver), and everybody shall sell all other goods with this mina except for those expressly specified to be sold according to the silver coin standard, and they shall place the beam of the scales level at a weight of 150 drachmas of [wreath] bearing (silver); [the] commercial weight of five minas shall have a [make-weight] of one commercial mina, so that when the beam of the scales is level it shall weigh six commercial minas; the commercial talent [shall have] a make-weight of five commercial [minas], so that when the beam of the scales is level it shall weigh one commercial [talent and] five commercial minas; they must all correspond to the [measures] and [weights] in the mint (translation by Austin).

<sup>18</sup> One mina of 150 drachmas in fact is 654,9 g which corresponds to two roman pounds at 327,45 g. On this, cf. for all F. HUTSCH, *Griechische und*

Furthermore, the commercial talent was increased five commercial minas<sup>19</sup>, 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 units<sup>20</sup>, 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

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*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.

<sup>19</sup> 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.

<sup>20</sup> 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.

inter-mediterranean scale, trading large amounts of goods based on the former conversion of the athenian talent to the roman with a relation of 1:1,1 (a difference of 10%) should not have been too problematic for the businessmen experienced in such trades. Still, the new relation based on the new mina (and slightly rounded up) was more consistent at 1:1,2 reflecting the two systems - duodecimal as opposed to decimal - more precisely. But the convertibility of the smaller units, mina and *libra* was much less convenient before the reform with a relation of 1:1,84 and obviously became much easier at 1:2. However, the § 4 of the decree had an even more interesting and convenient effect, since after the reform, a roman talent was to be understood easily as equaling 50 athenian minas and an athenian talent as 120 roman pound. Thus, a simple and elegant way of interoperability between the duodecimal greek and the decimal roman notation of weight was achieved on all levels - among big units, among small units and even between big and small units of both systems, back and forth.

So if on one hand we can identify the combating of fraud as an aim of the decree, and the provisions in §§ 3 and 4 as contributing to that goal by reducing uncertainties regarding the amount of traded goods, it also seems plausible that it helped to improve economic performance throughout the Mediterranean by facilitating commerce on a geographically (among territories who used either the greek or the roman system), personally (more people were able to participate in

commercial activities) and quantitatively (more goods being traded) larger scale. Indeed, during the era in which the attic decree on weights and measures was enacted, Rome's influence throughout the Mediterranean was constantly increasing. The use of units easily convertible to those used by Romans, like the new *mna emporike* is not only likely to have enabled more trade between Rome and Athens themselves, but also among communities familiar with either one of those systems, thereby "closing a gap" not only among two important cities of the times, but also between territories familiar with either of the two unit systems<sup>21</sup>.

4. The possible reasons and political intentions leading to the decree are a somewhat controversial subject among some scholars. In particular the question is raised if the reforms of the decree were due to an initiative by Athens itself or rather inducted by roman pressure and, in relation to that, if there was the intention to further the relationship among Athens and Rome for the benefit of the latter or if the decree was mainly a

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<sup>21</sup> For other possible examples of metrological harmonization cf. M. RIZZI, *Le misure come attributo del potere*, op. cit., 169 ff.

defensive measure by the former to defend itself against the fraudulent practice of roman merchants<sup>22</sup>.

The considerations above regarding the levels of compatibility achieved by the decree and their potential effects on inter-

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22 As one of the few scholars to examine the decree more closely, O. VIEDEBANTT, *Der athenische Volksbeschluss*, op. cit., p. 141 ff. dedicated greater attention to these aspects, emphasizing in particular the *de facto* political dependency of Athens which, although formally a free ally of Rome, found itself increasingly dominated by the latter. Furthermore he noted the influence of roman merchants, mainly interested in their own profit, on roman politics. On the other hand, he also presents a series of arguments that could be made in the opposite direction, i.e. that the reform was adopted by Athens voluntarily and perhaps even at the possible disfavor of Romans. If it was indeed Romans that had pressed for the decree, he notes, it would have given Athenians powerful instruments to control weights and measures used by Romans. He also takes into account the hypothesis by B. KEIL, *Zur Victoriatusrechnung auf griechischen Inschriften*, in *ZfN*, 32 (1914-20), p. 46 ff. regarding the decree of the Delphic Amphictyony CID IV 127 ll. 2-3 quite probably datable between the end of the second and the beginning of the first century B.C. which ordered the acceptance of the attic tetradrachm in exchange for four drachmas of silver as compulsory in the whole territory of Amphictyony. Based on this decree, the use of the tetradrachm as an "international" currency, already in widespread use, was ordered. According to Keil, this was done to protect Athenian assets and Viedebantt asks, if the decree on weights and measures might be based on similar motives. The comparison of the two decrees is resumed by L. BREGLIA PULCI DORIA, *Per la storia di Atene*, op. cit., p. 426 ff. and, more recently among others by J.D. SOISIN, *Alexanders and Stephanephoroi at Delphi*, in *CP*, 99 (2004), p. 201 ff.

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 from<sup>23</sup>?

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 institutionalization<sup>24</sup> often

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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 economy<sup>25</sup>. 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 Europe<sup>26</sup>, 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

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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.

publications<sup>27</sup> recently, analyzing aspects of ancient history in relation to the New institutional economics. Although such attempts are also criticized, and any research in this direction has to be conducted cautiously, we should keep in mind that the rise, bloom and demise of the roman empire is an opportunity to observe the continuous evolution of an institutional apparatus, including its effectiveness as well as failures.

Transaction costs, according to North, are reduced and economic performance improved by incrementally establishing

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<sup>27</sup> To give just a few examples, cf. W. SCHEIDEL – S. VON REDEN (eds.), *The Ancient Economy*, Edinburgh, 2002; A. BRESSON, *L'économie de la Grèce des cités. I. Les structures et la production*, Paris, 2007, p. 16 ff.; D.P. KEHOE, *Law and the Rural Economy in the Roman Empire*, Ann Arbor, 2007; W. SCHEIDEL - I. MORRIS - R. SALLER, *The Cambridge Economic History of the Greco-Roman World*, Cambridge, 2007; C. MÜLLER, *Évergétisme et pratiques financières dans les cités de la Grèce hellénistique*, in *REA*, 113.2 (2011), p. 359 ff.; M. SILVER, *In Dubious Battle: An Economic Analysis of Emperor Hadrian's Fish and Olive Oil Laws*, in *Roman Legal Tradition*, 7 (2011), p. 1 ff.; K. VERBOVEN, *Cité et réciprocité: le rôle de croyances culturelles dans l'économie romaine (c. 200 a.C. – c. 250 p.C.)*, in *Annales: Histoire, sciences sociales*, 67.4 (2012), p. 913 ff. For a critical view of a – according to this critique, superficial - use of such contemporary economic theories in researching phenomena of ancient history cf. L. CAPOGROSSI COLOGNESI, *Una "new conjectural economic history"?*, in E. CHEVREAU – D. KREMER - A. LAQUERRIÈRE-LACROIX, (eds.), *Carmina iuris. Mélanges en l'honneur de M. Humbert*, Paris, 2012, p. 57 ff.

"institutions and enforcement"<sup>28</sup> 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 markets<sup>29</sup> 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.

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

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

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