VASA FICTILIA ET VASA USUS COMMUNIS. THEORETICAL APPROACHES ON THE CIRCUIT OF PRODUCTION AND CONSUMPTION OF ROMAN COMMON POTTERY WITH A SPECIAL VIEW OF *MOESIA INFERIOR*

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Abstract: *The present paper is a contribution to a better knowledge of the circuit of production and consumption on the market for common Roman pottery in Roman province Moesia Inferior. Considering that pottery making was in many cases an industrial activity in the Roman Empire, the present study represents a contribution to the understanding of the mechanisms of Roman economy. Therefore, the basic elements and rules of the Roman economy and Roman market are necessary to be known by the specialists in the study of pottery, especially because pottery is the most common element found in the archaeological excavations and a symptom of the economic life.*

Rezumat: *Articolul reprezintă o contribuţie la o mai bună cunoaştere a circuitului producerii şi consumului pe piaţă a ceramicii romane din pastă comună în provincia romană Moesia Inferior. Având în vedere că fabricarea ceramicii era în multe cazuri o activitate industrială în Imperiul Roman, prezentul studiu asupra ceramicii reprezintă o contribuţie la înţelegerea mecanismelor economiei romane. De asemenea, este necesar ca elementele de bază şi regulile economiei romane să fie cunoscute de specialiştii în studiul ceramicii, deoarece ceramica este cel mai comun element descoperit pe şantierele arheologice şi un simptom al vieţii economice.*

If the economic processes of production and commercialization of fine pottery or amphorae are well known enough, the economic circuit for coarse or common Roman pottery at provincial level is less clarified. Generally speaking, the common utilitarian Roman pottery has a limited circulation area, local or

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regional, though some recent studies prove that there are specific circumstances for the limits of circulation.[1]

Considering the relative uniformity inside the Roman borders of some specific shapes and the standardization of functional categories like pots, pitchers, jugs, it remains to be seen if we can speak about a *koinè*[2] of the common pottery production, with some local variations. These variations are to be seen even inside the local or regional circuit because of the great number of production centers and ways of making pottery shapes by the craftsman. This aspect could be observed even in the serial production, like Roman lamps, which were shaped using moulds in workshops that turned out large numbers of standardized products, because even if they are standardized, every mould is made by the hand of the potter, with various specific details.

According to G. Pucci[3] pottery cannot be strictly the evidence to indicate Roman economy or even the essence, structure and articulations of commerce, but more a symptom of a much more complex reality in which pottery is only one of the sources of reconstructing economic history.

Attempting to classify the Roman ceramic production, Peacock mentioned the household production, household industry, nucleated workshops, the manufactory, the factory, estate production, military and other official production.[4] There are distinct modes for the manufacture of pottery in the Roman world, ranging from individual potters working both for domestic consumption and for sale on the market, to small urban, suburban, and rural workshops manufacturing for local markets, to giant urban and suburban workshops having up to a few highly specialized workers engaged in pottery manufacture for a mass market.[5]

The fabrication dynamics and the common pottery commercialization inside Moesia Inferior can not be properly understood if it is not integrated in an ensemble of economic mechanisms which had governed this province for hundreds of years. The study of the Roman pottery is certainly often regarded as a source for dating the archaeological contexts, ignoring essential issues as when and how the pottery product was made, the modalities of distribution and consumption, how the production techniques evolved in time[6] and what the contribution of the industrial pottery fabrication in the Roman economy was.

Some of these questions simply still don't have answers, but at least we can analyze some aspects of the common pottery industry contribution to communities economy from Roman province Moesia Inferior during the first three centuries AD.

Considering the industrial production of common Roman pottery, it is necessary from the beginning to distinguish between the process of pottery

[1] LEITCH 2010, p. 16.

[2] BES & POBLOME 2007, p. 4 concerning the term in the context of Roman tableware distribution.

[3] PUCCI 1983, p. 106.

[4] PEACOCK 1982, p. 8-11.

[5] PENA 2007, p. 32.

[6] ORTON 2002, p. 18.

fabrication, which is classified into the industrial sector of the Roman economy, and the commercialization of the pottery, also classified in the commercial sector. If ceramic products were made by specialized potters, subsequently they were commercialized by merchants as *negotiatores*, *propulos*, *ἔμπορος* or *κάπηλος*[7] inside or outside the province or Roman state borders.

Concerning the production of common pottery, this must be reported to the industrial production processes in the Roman state. It is notorious that the production of the pottery was, in the majority of cases, an industrial activity in the Roman Empire, given that the Roman economy is now accepted as a free market economy[8] and subsequently a variation of the capitalist economy.[9]

The price of common utilitarian pottery was very small during the first centuries in the Roman Empire. In the 1st century AD, there is a series of data about the ridiculously low price of common earthenware. If the price of a *terra sigillata* vessel was HS 5,[10] the kitchen vessels made from common paste cost about one *as* (1/4 *sestertius* and 1/16 *denarius*). A passage from Martial (1st – 2nd century AD) refers to two vessels (*calices)* for one *as* (*asse duo calices emit)*[11] and a graffiti from Pompeii refers to the price of 1 *as* for one *patella*.[12] In comparison, the price of one wheat *modius* (8.73 l[13] = 16 *sextarii*) was HS 3 - 4 in the late Republic, but because the inflation reached HS 6 during the Principality, considering that a free laborer may earn generally HS 3-4 for a day labor.

Iuvenal (1st – 2nd c. AD) was ashamed to take the meal from earthenware "*fictilibus cenare pudet*"[14] because those kinds of vessels were used by the poor[15] and it seems that in that period the rich Romans used vessels from precious metals[16].

According to Plutarch, in the Republican period even the soldiers used vessels made of precious metals (alongside earthenware) during the campaigns. It seems that Scipio Aemilianus eliminated the luxury from Roman army in Hispania, allowing soldiers to use only a pot, a spit and a drinking vessel; he

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[7] BUZOIANU & BĂRBULESCU 2012, p. 60.

[8] FINLEY 1999, denies the characteristics of capitalistic Roman economy as a system when the resources and the productions are held by privateers, the investiments are decided mostly by private hands than the Roman State control and the prices, production and distribution of goods are determined mostly by ompetition on the free market.

[9] On the oposite side against „the privitivists", TEMIN 2004, p. 515 explains that the Roman economic system had a functional and free labour market: „Workers must be free to change their economic activity and/or their location, and they must be paid something commensurate with their labor productivity to indicate to them which kind of work to choose."

[10] GUDEA 1994, p. 95. Also, BIDDULPH 2010, about "Samian" fine wares manufactured on industrial scale and the estimations of 15 millions vessels per year, fired in kilns that could take massive loads up to 30,000 vessels in a single firing.

[11] Martial, 9, 60; HENRIKSÉN 2012, p. 255 about the cheap version of a *calix*.

[12] CIL IV 5380 (Pompei).

[13] DE SENA 2005, p. 7 mentions that one *modius* of olives= 8.62 kg.

[14] Iuvenal III, 168.

[15] Iuvenal XI, 155 *plebeios calices et paucis assibus emptos*; MADAN 1807, p. 77.

[16] DUNCAN - JONES 1994, p. 9, note 64 concerning Octavian Augustus using a gold plate. Petronius, *Satyricon*, LXXIII *calicesque circa fictiles inauratos*.

exceptionally made a concession to the soldiers to use a maximum 2 *libra* weight silver goblet: *et omnia iussit amovere vasa, demptis olla, veru et figlino poculo; argenteorum poculorum nullium duabus libris maius permisit habere volentibus* and for the Greek version of the text Πλήν χύτρας ὀβελίσκου καί ποτηρίου κεραμέου τῶν δὲ ἀργυρέων ἔκπωμα οὐ μεῖζον δύο λίτρων we find the same χύτρας, ποτηρίου κεραμέου and ἀργυρέων[17].

The price of the common earthenware evolved in time, being adjusted to the general prices from the Empire. There are still differences of price, i.e. in Early Empire Italy a lamp was HS 0.25[18] (0.25 *sestertius* = 1 *as*), but later, at the beginning of the 4th century AD the price was lower than half of a *denarius communis*.

Because of the acceleration of the inflationist crisis at the end of the 3rd century AD, there were few attempts[19] of setting the prices in the Empire, from which we distinguish *Edictum Diocletiani et collegarum de pretiis rerum venalium* from 301 AD. According to the Edict, there were maximal prices for products and services, including the earthenware, in *denarii communes*, a monetary unit for which the bronze coin was probably used[20]: *doleum Italicorum s(ex)t(arii) mill[e ---] |(denariis) mille / vasum fictile Italicor(um) s(ex)t(arii) duo[rum] |(denariis) duobus / lucernas fictilibus de[cem] |(denariis) quattuor / lagoenam s(ex)t(arii) vi[ginti ---] |(denariis) duodecim / cetera vascula pro ratione [---] /* [21].

According to the Edict a *dolium* with the capacity of 1000 of *sextarii* (1 *sextarius* = 525 mg) was priced at 1.000 *denarii communes*, the earthenware with the capacity of 2 *sextarii* was worth 2 *denarii communes* (in that case the price varied depending on the capacity of the vessel: 1 *sextarius* = 1 *denarius communis*), a lot of 10 lamps was worth 4 *denarii communes*, and one *lagoena* with the capacity of 24 *sextarii* was 12 *denarii communes* (2 *sextarii* = 1 *denarius communis*, possibly because the assimilation with the amphorae - as recipients for transportation – and the price of amphorae recipients was deducted at 0.5 - 1.3% from the price of the transported product).[22] In comparison with other prices and services, according to the same Edict, a rural laborer earned a daily salary of 25 *denarii communes*, (*operariis rusticis pastis diurni denariis viginti quinque*) a stonemason or carpenter earned 50 *denarii communes* and a painter artist earned 150 *denarii communes* for one day. These prices were practiced in the circumstances of one wheat or lentil *modius* costing 100 *denarii communes* on the market.

In order to calculate the real cost of the common earthenware production we take in account some elements like raw materials, workers and taxes. There is one more element of common pottery production which must be included: the marketable approximation of consumption. This element is variable, because

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[17] Plutarh, *Moralia*, 16; DÜBNER 1868. The same text at Appian, *Roman History*, XIV, 85.

[18] GUDEA 1994, p. 95.

[19] SUCEVEANU & BARNEA 1991, p. 89.

[20] MICHELL 1947, p. 4-5: "It may be said that Diocletian demonetized the coin known as the *valentinianus*, which was tariffed at 25,000 to the pound of gold, and substituted the *follis*, or what was officially called the common penny or *denarius communis* at 50,000 to the gold pound".

[21] CIL III, p. 2208-2209 (Epigraphik Datenbank Clauss/Slaby).

[22] PENA 2007, p. 27-28.

there were major variations and there are no comparisons between provinces of the Empire. In an attempt to approximate the magnitude of the consumption, J. Poblome estimates the theoretical pottery consumption rates for an average urban Roman Imperial community of 300-700 households, a household generation considered to have lasted about 30 years. Some of the markers taken into account were the use life of 0.5 year for cooking vessels, as for oil lamps, mortality rates, household fragmentation and reconstitution, resulting i.e. only for cooking wares, a consumption of 10-18 vessels / year / household; 3.000-12.600 vessels / year / household = 90.000 – 378.000 vessels / 30 years.[23]

The price of pottery circulating into a free market economy is determined by the amount of suppliers and the demand of customers. When there is one supplier and many customers it is monopoly, but when there are many suppliers and many customers we deal with a competition between suppliers, and the competition demands a lower or a more competitive price, based on amounts of wares traded and the relation of quality and price.

In theory, the low price of common pottery as *olla* or *patella* means a large quantity of traded objects into a free market, but in practice the shortage of suppliers raises the prices by other mechanisms of the intermediaries. One example of real mechanism of the Roman market may be found in the late period, when Emperor Julian refusing to believe that inflation was due to debasement of the currency, in order to prove his point, sent his own grain reserves into the market at Antioch. The result was that the Imperial wheat was purchased by the rich merchants; the proprietors of land or of corn withheld the accustomed supply from the city, and the small quantities that appeared in the market were secretly sold at an advanced and illegal price[24]. Even if this is not the case of the common utilitarian pottery, some examples can be taken into account by comparing the specific mechanisms of market competition between different *sigillata* type centers of production in the Mediterranean and other areas. For Moesia province, at Tomis a few market magistrates such as *agoranomoi*[25] are attested from epigraphic sources especially for the seaport, considering that some of their duties were setting the prices for certain goods.

As Hayes explained, the economy of space helps to explain the wide maritime distribution of *Eastern Sigillata* B2 (a poor quality product compared with ESB1) in the 2nd century AD presumably shipped in nested stacks. Contrary, Italian *sigillata* with its high feet takes up a lot of space diminishing the economy in terms of space[26]. In fact ESB1 was deliberately copied including the stamps, in the competitive spirit of the Eastern potters[27].

Pliny the Elder discussed several uses of ceramics, in the context of their popularity and production throughout Asia and Europe: "*Indeed, many even prefer to be buried in pottery tubs after death like Marcus Varro (...). The greatest part of the human race uses pottery vessels. Among table wares, the Samian is praised even now.*

[23] POBLOME 2013, p. 83.
[24] BARTLETT 1994, p. 300.
[25] SUCEVEANU & BARNEA 1991 p. 89-90.
[26] HAYES 1994, p. 114.
[27] HAYES 2008, p. 31.

Arretium in Italy also holds high rank, and – for cups alone – Surrentum, Hasta, Pollentia, and in Spain, Saguntum, and in Asia Minor, Pergamum. In Asia Minor, Tralles has its special products, and Mutina in Italy. Since even nations become famous in this way, these products too are carried this way and that across the land and sea from workshops renowned for the potter's wheel"[28].

It is generally accepted by the specialists that Roman common pottery used for utilitarian aspects of daily life was not traded on long distances, being locally produced, and if it was the object of a maritime trade, the earthenware was never the main cargo. The tableware principally, travelled along with agricultural products and other foodstuffs in the Mediterranean[29]. But the example of the African cooking ware demonstrates that in fact some of the common vessels were actually traded from great distances at sea, being marketed in Hispania or Italy. As a matter of fact, the maritime transportation on long distances was cheaper than land transportation.

Diocletian's Price Edict fixed river transport prices at five times the level of sea transport.[30] From sea to river to road the transportation costs increased, with road transport being the most expensive and difficult[31].

The taxes upon tradesmen were levied by the Roman *fiscus* on persons engaged in any industry, including pottery trade. Since the potters were organized in trade-guilds, it was administratively quite easy for the officials to collect the tax *per capita* and the rates were determined on the basis of the expected revenue for each trade individually.

The customs taxes were also added, in case of transport of the pottery. *Ripa Thraciae* was in the area of *portorium Ripae Thraciae*, but during Emperor Hadrian, both *portorium Ripae Thraciae* and *portorium publicum Illyricum* were unified in *portorium Illyrici utriusque et Ripae Thraciae*[32]. The custom tax in this area was 2.5% of the the merchandise value on the input and 5% on the output, constantly maintained until the end of the 3rd century AD[33]. Customs offices are also known or presumed in Moesia at Troesmis, Cius, Carsium, Capidava, Noviodunum, Barboşi, Histria, Tomis, and possibly others[34].

According to some specialists, the level of taxation did not prevent the Romans from purchasing pottery, as long as the adjustable system of taxation was

[28] Plinius, *NatHist*, 35, 160-161: 160. *quin et defunctos sese multi fictilibus soliis condi maluere, sicut M. Varro, Pythagorio modo in myrti et oleae atque populi nigrae foliis. maior pars hominum terrenis utitur vasis. Samia etiam nunc in esculentis laudantur. retinent hanc nobilitatem et Arretium in Italia et calicum tantum Surrentum, Hasta, Pollentia, in Hispania Saguntum, in Asia Pergamum. 161. habent et Trallis ibi opera sua et in Italia Mutina, quoniam et sic gentes nobilitantur et haec quoque per maria, terras ultro citro portantur, insignibus rotae officinis*. For further details, see also HAYES 1972, p. 9-10.

[29] BES & POBLOME 2007, p. 8.

[30] TEMIN 2013, p. 39.

[31] LEITCH 2010, p. 16.

[32] BOUNEGRU 2006, p. 117-120; PÂRVAN 1916, p. 593-200.

[33] GUDEA 1994, p. 92.

[34] SUCEVEANU & BARNEA 1991, p. 94-100.

no more than 1% of the land value and no more than 10% of the annual revenue level[35].

In the Early Roman Empire, various forms of long-term labor contracts existed, and the workers were paid via monetary means. In *locatio conductio operarum* the workman was the *locator*, and the *merces* was his wage for one or more *operae*, each *opera* being a full day's service; the *operarius* was essentially a day-labourer, even though he might be engaged for a long period or even indefinitely.

Free urban workers in the early Roman Empire were paid for their work and were able to change their economic activities. Workers in large enterprises, like mines and galleys, were paid wages and workers engaged in more skilled and complex tasks received more elaborate compensation, probably for longer units of time than those doing wage labor. Hereditary barriers were nonexistent[36], at least for the early period, until the third century AD, when individuals were forced to work at their given place of employment and remained in the same occupation, with little freedom to move or change jobs[37].

As Pliny mentioned in *Naturalis Historia*, "... the earth produces so much clay that the pottery-workshops will never have to be without; besides the artifacts made on a potters-wheel, jars invented for our wine, drainage-pipes, tiles and bricks are made of earthenware and accordingly King Numa established as the seventh guild, the guild of the potters"[38].

Wherever more pottery workshops were concentrated, a *collegia* have been founded. It is clear enough that potters' *collegia* are rarely attested in inscriptions[39], maybe because the potters belonged to *collegia fabrorum*[40]. The *collegia* consisted of three persons[41] called *collegae* or *sodales* and in later times they were said to be *corporati*, and the body was called a corporation. The *collegium* or *universitas* was governed by its own regulations, and still subsisted, though all the original members were changed. More suitable for the economic activity of the potters were partnerships for gaining called *societas* formed either for the sake of gain to arise from the dealings or labor of the *socii*. When several persons unite for a common purpose, such a union is *societas*, and the persons are *socii*. Unless it was for a limited period, *societas* could be ended at the pleasure of any one of the *socii*: any member of the body could give notice of dissolution when he pleased (*renuntiare societati*), and therefore the *societas* was dissolved (*solvitur*)[42]. While the *societates* were actually partnerships with a share of profit and liability

[35] POBLOME 2013, p. 88.

[36] TEMIN 2004, p. 518.

[37] BARTLETT 1994, p. 296.

[38] Plinius, *NatHist* 35, 159: *neque adsiduitate satiant figlinarum opera, doliis ad vina excogitatis, ad aquas tubulis, ad balineas mammatis, ad tecta imbricibus, coctilibus laterculis fundamentisque aut quae rota fiunt, propter quae Numa rex septimum collegium figulorum instituit.*

[39] i.e. CIL XIII 8729 *Vestae sacrum. Iul(ius) Vic(tor) mag(ister) fig(ulorum) pr(o) se.*

[40] PUCCI 1983, p. 117.

[41] Dig. 50.16.85 *Marcellus libro primo digestorum. Neratius Priscus tres facere existimat "collegium", et hoc magis sequendum est.*

[42] Dig. 17 tit. 2 s. 57.

for each member in the enterprise, the *collegia* provided mutual assistance as voluntarily associations of professionals, offering opportunities for religious celebrations and visibility in the local community.

An interesting 3rd century papyrus from Oxyrhynchus[43] offers an example where the potters can lease the pottery or equipment for one or two years, in the context that the traders and craftsman may have leased collective premises to produce, and perhaps, sell their wares. The associations of craftsman and traders could have in the mid-third century Roman Egypt even *thesaurus* or storehouses used for produced or purchased for resale goods [44].

Some interesting points are to be found extrapolating the economic means of the *terra sigillata* production in Italy. The theory is generally accepted that the Arezzo production of *terra sigillata* ceased, because of increasing regional markets importance of other production centers and the relation between the price and the transport costs from Italy to other locations in the Empire. Also, the nomenclature on Italian *sigillata* contains free men names, (using either all *tria nomina*, or the *praenomen* and gentile name, or only the gentile and *cognomen*), slave names, freedman, women potters or owners, *figlinae* and factory organization, partnerships of two or three or industrial centers[45].

But as Pucci indicates the Arretine pottery factories crisis originated in the structure of the industry itself, because the initial situation (when a large number of the medium size and small workshops using skilled slaves labor force worked together, having a high level of cooperation) changed in the late period of Italian potters. The concentration of the pottery workshops into larger enterprises coincided with the poorer quality of the products, betraying a much lower level of cooperation within the labor force and revealing a problem of supervision and the difficulty of overseeing slave workers on large estates. On the provincial production systems, the slaves were employed only for secondary tasks and were never the prevailing labor force[46].

Roman slaves were able to participate in the labor market in almost the same way as free laborers. Frequent manumission was a characteristic of Roman slavery in which slaves could anticipate freedom if they worked hard and demonstrated skill or accumulated a *peculium* with which to purchase it. Once freed, they were accepted into Roman society and the promise of manumission was mostly apparent for urban, skilled, literate slaves, but it pervaded Roman society[47].

It is reasonable to consider that the agriculture and other seasonal sectors of Roman industries needed large quantities of unskilled labor and varied in intensity during a year, and the demand for labor fluctuated heavily. Slaves constituted both a significant initial investment and a regular expenditure in food, clothes and housing. Hired labor, on the other hand, produced a cost only for the duration of the particular work at hand. In that logic, slaves were used for

[43] P. Ox. L3596.
[44] GIBBS 2012, p. 42.
[45] *Corpus Vasorum Arretinorum*, 1968, p. XXVII-XXXI; AUBERT 1994, p. 296.
[46] PUCCI 1983, p. 115-116.
[47] TEMIN 2004, p. 523.

continuous and constant work (e.g. pottery production and maintenance of aqueducts)[48].

This could be true for southern provinces, Italy and Rome itself, but not necessarily for Northern provinces as Moesia or Dacia, where the pottery production ceased during winter months, when at least 3 months of the year the clay is frozen. From this point of view, the pottery production here will be sustained mainly by free workers and secondarily by slaves, employed mainly for additional works as the maintenance of the temperature during firing vessels or preparation and gathering raw materials.

An example of estate production for utilitarian pottery in the 4th century AD may be found at Valea Morilor *officina* in the rural territory of *municipium* Noviodunum, situated in the northern part of Moesia Inferior – Scythia Minor[49]. This *officina* was specialized in utilitarian vessel fabrication, producing, along with other economic activities, common pottery for rural communities from the administrative territory of Noviodunum. From a sample of 190 pottery vessels (fragments or complete objects) 39.94% are cooking wares (pots, lids, bowls), 34.73% are table wares (big bowls, bakers or mugs, pitchers) and a percentage of 26.3% are *varia* (amphorae, lamps, supports). This picture is not only representative for the potters' typical activity on rural estates in the province, but also offers a clear image about the amphorae production of *officina*, in this case amphorae with main circulation in this area. Such production centers tend to take over the demand of the market for cheap common pottery for the rural Roman population, and to continue the traditional Roman pottery shapes in the rural provincial areas.

Another example of consumption of pottery products in a rural Roman settlement can be found in 2nd – 4th centuries AD settlement Fântânele, situated in Histria *regio*. The analysis of pottery material[50] revealed a statistic distribution of the functional categories as follows: table wares 23.7% (bowls, big bowls and plates), cooking wares 25.26% (pots and jars) drinking wares 21.41% (cups, pitchers and jugs), amphorae 15.38% and unidentified forms 14.88%.

Of a total of 1st – 3rd centuries AD pottery discovered at Halmyris, 61% is fabricated in the west Pontic area[51] and it is not uncommon to observe that a large majority of them is represented by cooking wares. The statistics show that 35% of the total pottery from Halmyris (1st – 6th centuries AD) is produced in provincial centers of the region[52].

The percentage repartition on functional categories of the pottery discovered in a waste pit from *Durostorum*, dated at the end of the 2nd – beginning of the 3rd century AD reveals that the local pottery is by far the most numerous and the table wares are placed on the first place, followed by cooking wares and transport wares[53]. This fact is natural considering that *Durostorum* was an important Early

[48] GERDING, 2014, p. 1.
[49] BAUMANN 1997, p. 31-53.
[50] ANGELESCU 1998, p. 218.
[51] TOPOLEANU 2000, p. 256, table XXXIX.
[52] TOPOLEANU 2000, p. 258, Graphic 18.
[53] MUȘEȚEANU & ELEFTERESCU 1992, p. 238.

Roman center for pottery production. Also *Durostorum* is known for military *figlinae*, where the building material production was a priority. 19 kilns have been discovered here until now, both circular and rectangular in shape[54]. The discovery at *Durostorum* of a rectangular kiln used for common and rough pottery firing, with some special particularities as technological deficiencies and other elements (the structure of the forms, similar to the ceramic collections from Pannonia Inferior and Moesia Superior) functioning at the beginning of the settlement (the first half of the 2nd century) leads to the idea that the owner or the employee came from one of the Danubian areas of Panonnia and Moesia and were probably influenced by the traditions from that region[55].

A similar situation of a possibly foreign potter can be presumed for Lucius, son of Euaristos, member of a potters family from Salona, mentioned in a 2nd - 3rd centuries Tomis funerary inscription[56].

Probably the most important pottery production centers in Moesia[57] were situated in Nicopolis ad Istrum territory at Butovo, Pavlikeni, Hotnica and the archaeological excavation revealed not only the production specialization, but also different types of production organizing, by independent potters workshops and workshops situated in the potters lodgings. The independent potters workshops consisted of two or three rooms (at Hotnica the earthenware was molded in one room and the final processing of the clay was done in another room), also the firing of the ceramic products was done outside the workshop but sometimes the kiln was built inside[58]. Potters workshops incorporated in the potters lodgings were also discovered at Butovo and Pavlikeni. If the most difficult operations were performed by the master potter and his assistants, other less qualified workers were employed for primary processing of clay, applying the glaze or transferring the vessels to the kiln. The discovery of fingerprints on the vessels revealed that not only the potters worked but also women and children, also participating at the process. The conclusion was that the makers of pottery products were free people, owners of one family-house[59].

It is not our aim here to review all the pottery centers from Moesia Inferior. For now, the more or less randomly few examples of production centers and consumption of local pottery products demonstrate that the local potters were able to produce and sale directly or by intermediary means their own goods, by individual, estate production or nucleated workshops, some of the same patterns being attested also for the late Roman period[60].

At least theoretically, by his occupation, any potter needs to ensure a minimum gain for a living for his family, for himself and his employers or slaves.

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[54] MUȘEȚEANU 2003, p. 21, 132. It seems that the circular kilns were used for pottery firing and the rectangular ones were used for building material firing but this is not a strict rule. The rectangular C19 kiln was also used for pottery firing.

[55] MUȘEȚEANU & ELEFTERESCU 2004, p. 95-142.

[56] ISM II 337 (173): Λούκιος Εὐαρίστου.

[57] BOTEVA 1996, p. 173-176. At the end of the 2nd century Nicopolis ad Istrum was part of Lower Moesia.

[58] SULTOV 1985, p. 34-35.

[59] SULTOV 1985, p. 45.

[60] OPAIȚ 1996, p. 29-35.

There are situations when making common pottery is certainly not the only source of income, as it happens on the larger estates, where the pottery production is only one of the many agricultural and industrial occupations. Considering that there are though other modes for the manufacture of pottery in the Roman world, as nucleated workshops, when the pottery production may be the main source of income, we cannot estimate a smaller income for the potter than minimum required for the everyday basket of wheat, because the wheat was the main Roman food. From this point we must add the average price of vegetables, olive oil, wine or meat and other expenditures as housing, clothes and taxes, which are all included in the price of marketable pottery production.

The examples of the cases of monthly wheat rations and living allowances give us an idea about the limit of wages representing the minimum necessary for living in the first three centuries of the Roman world[61]. This can be the start for calculating the necessary amount of pottery production in a workshop per year.

The estimations on expenditures and income per head in 14 AD were HS 380 in conditions of *modii* wheat consumption per year at HS 3 wheat price per *modius*[62]. In fact, Goldsmith's estimation of *per capita* national expenditure of HS 380 is twice over Hopkins's estimation of HS 153, stated as a minimum estimation of subsistence[63]. Also Hopkins` estimation for an average family needs was 150 *modii* of wheat equivalent per year[64].

For instance, the wheat ration (*frumentum*) of a Roman soldier was 2 *sextarii* daily = 546 ml x 2 = 1.092 ml, and this ration is the equivalent of 4 wheat *modii* monthly, therefore 48 wheat *modii* annually for every soldier. In addition to this the ration of other food like vegetables, olive oil or row meat (*cibaria*) ensured with the *frumentum* a minimum necessary of 3.000 calories daily[65]. It is also true that Roman soldiers received a sensible larger ration - in comparison with average civilians - not only because of the considerable higher stature, but also because of their condition and of the almost permanent effort they were subjected to.

The range of the civilian consumption of wheat *per capita* is established between 30 *modii* and 40 *modii* per year[66].

The price of wheat in Rome was between 3 and 4 HS per *modius* in the late republic, rising to five to six HS in the early empire, and it was a small inflation at this time[67]. At least for the Mediterranean area, the price of wheat was interconnected for the local markets considering the prices in Rome. If there was a unified wheat market, the price of wheat would have decreased as one moved farther and farther from Rome. If there was not a unified market, if there were only independent local markets, then there would not be any relationship between local and Roman prices. There would be prices in local markets that

[61] RATHBONE 2009, p. 314.
[62] GOLDSMITH 1984, p. 273.
[63] TEMIN 2013, p. 248.
[64] HOPKINS 1980, p. 39, note 52.
[65] ROTH 1999, p. 19, 48.
[66] TEMIN 2013, p. 31.
[67] RICHMAN 1980, p. 154; TEMIN 2013 p. 40.

would be determined by local conditions[68].

The normal price for wheat in Rome was between minimum 8 or 9 *asses* (4 *asses* equaled 1 *sestertius*) per *modius* and the acceptable limit price of one *denarius* per *modius*[69].

In Egipt the wheat price was the equivalent of HS 1.78 per *modius* in the Principat. As Rostovtzeff pointed out before, the case of Egypt may be an example of how prices rise in time: the price of wheat in Egypt was surprisingly steady in the first two centuries, meaning 7 or 8 drachmas for one *artaba* (c. 29.5 kg = 55 *sextarii* = c. 3 *modii*). At the end of the 2nd century it was 17-18 drachmas, and in the first half of the 3rd it varied between 12 and 20 drachmas. The depreciation of the money and the rises of prices continued and in the time of Diocletian one *artaba* cost 20 *talents* or 120.000 drachmas[70].

The compulsory purchase price in Egypt of 24 drachmas per *artaba* of wheat in 246 AD will be compared with a standard compulsory purchase price of 8 drachmas in the 2nd century, the last attested in 162. The compound increase per year is 0.61%[71].

Considering these examples of prices in the Roman Empire, we must emphasize that there is no data about the prices of wheat in Moesia Inferior. It should also be considered that according to some assessments, in the year 14 AD free laborers worked maximum 225 days a year, and the minimum salary was HS 3.5 by day, therefore HS 790 per year (65 *sestertii* monthly)[72]. One of the *Alburnus Maior* waxed tables (from Roman Dacia province) is a contract in which one laborer will be paid for his work in a gold mine, from May 20th to November 13th of the year 164 AD, for 70 *denarii*[73]. Between May 20th and November 30th there are 178 days, meaning 0.40 *denarii* per day, (less than de 2 *sestertii* per day), but it is probable that the board is extra included.

Under these circumstances, the price of HS 2 - 4 per *modius* of wheat in Moesia Inferior province seems to be acceptable, excepting the shortage periods, caused by low production, invasions or army requisitions. Also these prices could be accepted only for the 1st and 2nd centuries AD, and because of the inflationist trend it is hard to be calculated for the 3rd century AD.

I have reasons to believe that in the earlier period, before the Edict of Diocletian from 301, the prices of common utilitarian pottery would have been

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[68] TEMIN 2013, p. 37.

[69] TEMIN 2013, p. 39.

[70] ROSTOVTZEFF 1957, p. 471.

[71] DUNCAN-JONES 1994, p. 26.

[72] GOLDSMITH 1984, p. 273.

[73] CIL III, II, 948. *[Macri]no et Celso cos XIII kal. Junius Flavius Secundinus scripsi rogatus a Mem- \ mio Asclepi, quia se lit[ter]as scire negavit, it quod dixsit se locas[se] et locavit \ operas s[ua]s opera aurario Aurelio Adiutori ex ha[c] die [in] idus Novembres \ proxsimus [*se]ptaginta liberisque. [Mercede]m per [te]mpora accipere \ debetit. S[u]as operas sanas va[le]ntes [ede]re debebit, conductor [s(upra) s(cripto)]. \ Quod si invite condu[c]tore recedre aut cessare voluer[it, da]re \ debebit in dies singulos HS V numeratos c[Quod si] \ fluor inpedierit, pro rata conputare debebi[t]. Conductor si tem[po]- \ re peracto mercedem sol[v]endi moram fecerit, ead[em] p[oena] \ tenebitur exceptis cessatis tribus. Actum Immenoso maiori Titus Beusantis Socratio Socrationis [M]emmius Asclepi qui et Bradua.*

negotiated depending on the capacity of the vessel. It is also clear that the effort and costs to make an amphora or a *dolium* is bigger than for a small ordinary cup. Exceptions to this rule should be the pottery from traditional famous centers of production and the luxury pottery as *sigillata* like.

At the maximum price of HS 4 per *modius* (1 *denarius*) of wheat, one average civilian may need 3 *modii* for monthly subsistence, and therefore 36 *modii* of wheat per year. In these conditions, a salary of 36 *denarii* per year may simply satisfy only the need for wheat and simply cannot sustain a person for one entire year. In theory, in order to obtain only the lowest profit necessary for 36 *denarii*, a potter should sell at the price of 1 *as* more than 576 vessels with the capacity of 1 *sextarius* in a year. This naïve base of calculation may be improved with the rest of the factors for daily basket life, the other foodstuffs of necessity, and all the other expenditures, making a much lower profit for the potter. In this case the necessary profits for sustaining a potter and his employees may be obtained by increasing many times the production of the pottery products. In order to obtain the HS 153 annually for one person (38.25 *denarii*), as Hopkins argued, 612 vessels with the capacity of 1 *sextarius* must be sold.

A documented example for amphorae production in Egypt provides a 5–10 % percentage of the vessels to be considered wasters during the firing,[74] pointing out to the other factors of risk.

In these conditions, how can the average price for common pottery production in Moesia Inferior be established? According to *Edictum Diocletiani et collegarum de pretiis rerum venalium*, the capacity of the vessel is the primary element, but additionally the taxations and the quality of the marketable good should be taken into account. The common utilitarian vessel varied greatly from miniature cups to storage *dolia* but the majority of casseroles, pitchers, pans and pots capacity varied under 10 *sextarii*[75].

Also a small price for the product is not necessarily the production price, but the established sellers' price on the market. It is also true that the selling price must be higher than the production cost, especially if the seller is a small retail trader, other than the potter. The low price of the final product is a symptom of low production costs, a great potential of the demand on the market or of a superior labor organizing.

For the moment of *Edictum Diocletiani* from 301 AD, the base of this calculation is clear enough. If a civilian consumed 3 *modii* of wheat per month, and therefore 36 *modii* per year, at a price of 100 *denarii communes* per *modius* of wheat (or lentils), then a potter must obtain a profit of 3.600 *denarii communes* per year only to assure his necessary provision of wheat for himself. In the circumstances when a vase with capacity of 1 *sextarius* is worth 1 *denarius communis*, the potter must produce a quantity of 3.600 vessels with the capacity of 1 *sextarius*, or 1,300 2 *sextarii* vessels, or 650 4 *sextarii* vessels per year only to ensure the necessary ration of bred. I think it is rational to double this calculation

[74] GALLIMORE 2010, p. 174.

[75] Unfortunately for Moesia Inferior province there are no studies concerning the capacity of the Roman common vessel. For the Late Roman period cooking pots, (6th century AD) OPRIȘ 2003 noted few examples of pots capacity between 1 and 8 *sextarii*.

for the rest of the necessary stuffs in order to provide a decent life for one person. The production must also be doubled for every adult member of the family or employees of the workshop.

In those conditions, it is clear enough that the necessary quantity of vessels needed to be annually sold was big enough and the production was industrial. Because the merchants could not sell the wares produced by the potter at a lower price than the price established by the Edict, risking death penalty[76], it is reasonable to believe that the real price of fabrication was smaller than 1 *denarius communis* by every *sextarius*, allowing the merchants to make profit.

Such production required a large demand and impressive pottery quantity sales on a market. Unfortunately, despite some recent studies about the demography in Moesia Inferior[77], we still cannot approximate the inhabitants' number for this province. Any fluctuation in population number or changes on the social and political structures has repercussions on economy.

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The multiple invasions during the end of the 4th - 5th centuries[78] and events like the disaster of Adrianopol in 378 AD produced major changes not only in socio-economical population structure but also in the number of inhabitants. This is the period of time when the great estates like *villa rustica*, economic systems allowing other sources of income for the potters, are disappearing as economic factor from the area[79]. If the effects of the frequent invasions in Moesia Inferior can be compared from economic perspectives with major events, as the Antoninian plague in Egypt, even a small population decrease is conducting to employees' salaries rise[80] and subsequently to prices increase of local agricultural and workshops products, including pottery. Also, the wheat prices rising conduct to salaries rise, increasing the pottery production costs. In these circumstances, the local pottery price should be higher than the price of vessels from other provinces, especially from Asia Minor. The imported pottery products not only have a superior quality, but their producers and merchants have a large sales market and a great number of customers, allowing a great quantity of traded wares at a low final product price[81]. This is the moment when a chain reaction is producing in the economy of the area, and the local pottery, more expensive because of the local instability, insecurity of the roads and bigger production costs cannot compete with some massive imports as Phocaean pottery. A revival may happen later, but in order to face the competition, and therefore to drop the production costs and to make the final product cheaper, the potter must decrease

[76] BARNEA 1968, p. 378. According to the author, the Edict was respected only for a short time.

[77] MIHĂILESCU-BÎRLIBA & CURCĂ 2010; MIHĂILESCU-BÎRLIBA & PIFTOR 2011.

[78] MADJEARU 2010. Between the beginning of 4th century and the end of 5th century, the author lists over 20 attacks, some of them causing much destruction, of the Goths, Huns and other tribes affecting the Roman territory South of Danube.

[79] SUCEVEANU & BARNEA 1991, p. 222

[80] TEMIN 2004, p. 519

[81] As judiciously observed A. Opaiț (OPAIȚ 1991, p. 169), the Pontic production of drinking pottery sharply drops in the second half of the 5th century because of the cheaper and higher quality microasiatic imports

the vessel quality. This phenomenon is also encountered in an earlier period[82]. Another aspect is given by the disappearance from the local pottery picture of the attractive artistic products from which specialized potters special techniques were required and therefore higher handicraft production costs. This way only a useful, but visually unattractive vessel like kitchenware resist on the market[83].

According to a recent study[84] based on the material published until 2009, and according to the place of origin, from the entire Late Roman pottery discovered in Scythia Minor over 9% of the pottery is provincial and local. From these 9%, the main important functional category belongs to *vasa coquinatoria*.

Is the end of the 4th century the decline beginning of the local pottery production?

Certainly the pottery production of Scythia Minor did not cease at the end of the 4th – beginning of the 5th century AD,[85] but this economic activity will decline massively and will never have the amplitude of the first three centuries of Roman rule. The disappearing of the great industrial pottery production centers as Butovo, Pavlikeni or Durostorum will open the market for the potters who found additional sources of subsistence, beside pottery production, selling directly their own vessels, or itinerant artisans producing on demand *dolia* on the place. It is clear that the great metropolis Tomis will continue to have a prosperous economic life until the end of the 6th century, possibly including pottery production in the extramural area. But the pottery production is an economic life symptom for a province which, despite the military units stationed on the *limes*, as sustaining stability factor[86], will never return to its entire economic potential.

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[82] SUCEVEANU & BARNEA 1991, p. 84 comparing the local products with imported pottery from 1st - 3rd centuries AD in Moesia Inferior: *"la production manufacturière romaine est à la fois rudimentaire et uniforme (en revanche elle se prête mieux à des études de nature typologique), en frappant contraste avec la variété et l'élégance des produits artisanaux grecs et même hellénistiques. Une telle variété n'a subsisté que dans certains centres spécialisés de l'Empire."*

[83] TOPOLEANU 2000, p. 256, table XXXIX reveals for the 1st – 3rd centuries AD a higher level of provincial West - Pontic vessels than the imported ones. Contrary, in the 4th-6th centuries AD, there are more imports than provincial pottery products. See also Graphic 18, p. 258 for Oriental (56%), West-Pontic (35%) and Halmyris (3%) pottery production.

[84] BĂDESCU 2010, p. 555-556.

[85] OPAIŢ 1996, p. 145-147.

[86] MAAS 2005, p. 120. During Justinian`s reign, the *Roman provinces Moesia Inferior, Scythia Minor, Cyprus, Caria and the Aegean Islands* were placed under the authority of a *quaestor exercitus*. The purpose of the *quaestura exercitus* was to help support the troops that were stationed there, relieving both the destitute populations and ravaged countryside of the poor Danubian provinces from sustaining any stationed troops.

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