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Archaeometrical investigations of Roman silver coinage based on materials from Bulgarian museums (Abstract)

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There is a large number of scholarly attempts to determine the inflation processes that shook the Roman Empire. Unfortunately, many of them were carried out only partially or by means of technically outdated and destructive methods. The traditional numismatic methods could be considered

mostly spent. The publications of coins discovered during archaeological investigations in the field helps clarifying the local monetary circulation, but largely becomes pure statistics for the particular site and does not contribute substantially for shedding light on the numerous questions related

to the broader interpretation of numismatic materials. X-ray fluorescence (XRF) provides new opportunities for achieving this goal by means of a nondestructive method. A research group from Varna Technical University headed by Assoc. Prof. D. Nedelchev aimed at clarifying the known aspects of this complex process. For the needs of the project, a portable Bruker S1 Sorter XRF Analyzer was purchased. For the analysis, only well-preserved coins were selected, without corroded surfaces, in order to avoid the effect of “leakage” and diffusion of the metal. For that purpose, two measurements were carried out of the superficial layer of the coin (obverse/reverse), in order to avoid the “liquation” effect, typical of ancient alloys of non-homogeneous composition. The analyzed chemical elements in the composition of the monetary alloy of Roman denarii and antoniniani could be divided in three groups: macroelements, microelements, and elements related to the contamination of the coin’s surface. For the creation of the database, coins from several museum collections were used: Veliko Tarnovo RMH, Varna RMH, and Razgrad RMH. The accent in the presentation of the results of this summarizing effort falls on key moments of upward development and devaluation of Roman silver coins, without discussing separately all Emperors. The analyses in the present article outline the correlation between silver coins production and the control on the mineral resources in the Roman Empire, and also take into account the influence of economic and political conditions on the Roman silver coinage. In the first century AD, a controlled inflation is observed. The Empire experienced an

unprecedented heyday and economic stability. Later, a new monetary unit was introduced - the antoninianus that was officially a double denarius and differed from the denarii for the radiate crown, in which the Emperor was depicted, and for the crescent moon, upon which rested the bust of his wife or mother. In fact, the antoniniani contained up to 1.6 times the silver content of a denarius. Probably, high-standard old denarii collected as taxes were melted for the production of the new “double” denarii. In the third century, the Roman economy suffered a major crisis and the military expenses were on the rise. There was a constant pressure against the Roman borders - from German tribes in the north and Persians in the east, but this time the well-paid Roman army was not backed by the strong economy from the times of Augustus or the Antonines. The barbarian invasions and the civil wars hampered the ore supply. The continuous internal strife that was stirred up by various contenders for the throne only worsened the situation and the “barbarians”, aware of the economic, financial, and military weakness of the Empire, attacked the borders ever more persistently, increasing the chaos. In conclusion, it could be said that even strong rulers permitted inflation. When possible, however, they tried to keep the content of the silver coin stable. A stabilization or even a certain improvement of the silver monetary unit followed each crisis. In general, the moderate and controlled inflation could be beneficial for the state. However, the lack of control on the process could spur a financial crisis and the stronger the inflation, the bigger the ensuing crisis.

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