A recent agent-based computational modeling of the distribution of tableware (MERCURY), undertaken by T. Brughmans and J. Poblome, reveals a higher degree of integration within the Roman market than was postulated by Bang. The observed distribution of Eastern Sigillata agrees with the model that assumes there was a high proportion of inter-site connections, which suggests a high degree of integration[1]. However, tableware rarely constituted the main cargo of commercial exchanges, they might have been a piggy-back cargo on *annona* ships. Thus, although the study by Brughmans and Poblome provides an important argument for the supporters of the 'market economy ' model, it is not enough to warrant rejection of the 'bazaar model'. This is why I propose here to look at the pattern of the distribution of non-grain staples carried in amphoras and their transport costs.

The market for cash crops like olives and grapes differs considerably from the grain market - these goods can be stored longer and their quality differs more than the quality of grain[2]. The same is true regarding their derivatives, that means olive oil and wine. Thus, even if export was insufficient to absorb an extremely good harvest or vintage, the subsequent reduction in prices was not as dramatic as in the case of grain. Moreover, unlike grain, amphora borm products (wine, olive oil and garum) had no links with *annona* until the 3rd c. AD, so their price is likely to have depended on real transport costs. Still, however, low market integration had a considerable impact on these commodities, making them vulnerable to price shocks[3]. If the market was poorly integrated their prices would be volatile and little pattern could be observed between types of imports and prices/transport costs.

Amphoras, which means pottery vessels to transport predominantly wine, olive oil and garum, preserve very well in archaeological material, while their content and geographic origin are well known. This paper analyses the percentages of almost 16 thousands of amphoras discovered in Rome and Ephesus[4]. Rome provided 11085 containers dated between the 1st c. BC and the 7th c. AD. The proportions of different types of amphoras from the aforementioned contexts are set with the simulated transport costs.

It is assumed that transport costs were the most important elements of the price of consumption goods in antiquity, as long as these goods were traded in the free market environment. As has been proven, these costs depended on the distance, but not a mere mileage between the production and consumption place, but the time of the journey[5]. The price cost of transporting staples from

[1] Brughmans and Poblome 2016a.

[2] Erdkamp 2005: 167-170.

[3] Erdkamp, 2005, 259-261.

[4] To be more precise 15 934 diagnostic fragments.

[5] Already Hopkins noticed that distance was not a factor that influenced prices provided by Diocletian's Edict, or that the data in the edict was erroneous, see Hopkins 2017, 300-302. Arnaud 2007, 334 suggested that the time of the journey

different areas of the Mediterranean may be approximated thanks to ORBIS: The Stanford Geospatial Network Model of the Roman World, developed by scholars from the Stanford University[6]. The ORBIS model of the Roman world demonstrated that for example, the Po Valley, which is rather close to Rome in terms of mileage, had worse connection with it than more distant regions, such as Spanish coast and African coasts. This paper uses ORBIS simulations of the networks of goods to Rome and Ephesus, during Summer and using the cheapest route Figures 1 and 2).

might have been the key-factor, which was later proven by Scheidel 2013: „the maritime freight charges for specific routes stipulated in the Edict do, on average, very closely correlate with simulated sailing times, which indicates that they are based on extrapolation from empirical observations".

[6] ORBIS/Understanding, http://orbis.stanford.edu.