

Assignment 1: hints for an answer (928 words)

The paper by Mayshar, Moav, and Neeman (MMN) focuses on the ability of a ruler to extract resources from worker-subjects. It proposes a theory in which a ruler has imperfect information about the subjects' output: in a principal-agent structure, the worker's net income is based only on output, which depends on unobservable effort and an imperfectly observable exogenous factor (e.g., weather). The ruler can use income rewards and punishments (expulsion from the land). The model is extended by introducing an additional layer of intermediaries with an information advantage over the ruler.

The models should not be taken literally for the case of ancient Egypt and Mesopotamia, but they are tools for thinking about issues of taxation and private property that depend on the geographical context. The general conclusion of the models is that the worker can only retain part of his gross income if the principal has limited information about the growing conditions of the crop. (Labor is not observable in the model).

Egypt

The conditions for the observability of agricultural output in Egypt have been presented in class. Given the immutability of these conditions, Cooper's (1976)¹ description for the Middle Ages is appropriate: "Agriculture was so well regulated in Egypt that, on the basis of the Nile flood recorded by the Nilometer, the government knew in advance what revenue to anticipate." There was no uncertainty in the sky, and the only determinant was the Nile.

The MMN article does not use the information provided long before by Jones, who distinguishes between grain and other agricultural products such as fruit. His evidence is based on taxation by the Ptolemies, the Greek dynasty after the conquest by Alexander the Great in 332 BC. The Ptolemies left an incredible amount of documentation and were particularly industrious in extracting the surplus, but the constraints were the same as in the previous two millennia and we can assume that the taxation system was similar.



Nilometer (Ptolemaic temple)

Jones reports that the central fiscal authority distributed seed and controlled the output of cereals. This output is collected in all parts of the kingdom at the same time of the year (still true for cereals today). In the case of cereals, the fiscal authority could infer from the inputs and the output, and the Nile conditions, the effort of workers. Note that in Egypt, any piece of land can be monitored from a nearby waterway. (This is true both along the Nile and in the delta).

On the other hand, the production of fruits is highly uncertain (pollination, etc...) and timing is critical. In this case, the state relied on tax farmers, who may play the role of the intermediaries in

¹ Cooper, Richard S. 1976. "The Assessment and Collection of Kharāj Tax in Medieval Egypt" *Journal of the American Oriental Society*, 96 (3), 365–82.

the MMN model. Note the incentive scheme described on p. 157 when an information issue occurred between the worker and the tax collector: “If they failed to agree, the contractor could sequester the whole crop and sell it. If the price realized exceeded the cultivator’s estimate, the contractor kept the excess for himself, if it failed to reach the estimate, he had to pay the difference to the treasury.”

Northern Mesopotamia

MMN accurately reports the important difference between this region and the other two: rain-fed agriculture (with the weather uncertainty), and unevenness of the terrain where irrigation is irrelevant. There is no monitorable surplus. The archeologist Ur (2010) (slide 15) reports that the north was settled a thousand years before the south. This time dimension seems to be missing in MMN. Changes in climate or sea level in the south may have been important factors.

Southern Mesopotamia

As mentioned in class, the land is completely flat. MMN point out interesting differences between the timing and the violence of the cycles of the two rivers-Tigris and Euphrates- and the cycles of the Nile. Irrigation could not have followed the pattern of Egypt with local capture of the water. It had to be coordinated within an area, and most importantly, given the flatness of the land, solid dikes had to be built. Output was not uniform along a mainstream (Egypt), but depended on local conditions, which depended on local observations and management. The country was wide, not narrow as in Egypt. This led to the development of cities that managed their surrounding areas. For MMN, despots could conquer the whole area by military means, but maintaining control of the economic resources is an entirely different task, and such an empire would be unstable.

MMN discuss some items in the literature. Regarding Wittfogel’s famous argument, their claim to reverse the causality seems to me excessive: irrigation required coordination, as Wittfogel argued, but at the level of a relatively small area, not for the entire basin (Wittfogel’s claim), and the irrigation system facilitated the monitoring of resources and the extraction of the surplus necessary to sustain the ruling city. Another argument, which does not seem to be clearly stated in MMN is that, unlike in Egypt, labor competition between cities may have allowed workers to keep more than a subsistence. (This is speculation on my part, to be weighted against archeological evidence).

Tilly’s discussion in MMN does not seem to be entirely appropriate and may be superficial. (It would need more discussion for the cases of Egypt/Mesopotamia, which were not considered by Tilly. MMN neglect the issue of law, but that issue was critical both for Mesopotamia and for Egypt.



Neighborhood, Ur around 2000 BC
day



Neighborhood, Ghadames (Lybia) to-