The impact of empire on market prices in Babylon

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Summary: *The impact of empire on market prices in Babylon in the Late Achaemenid and Seleucid periods, ca. 400-140 BC*

The main aim of this doctoral thesis was to provide an account of the influence of various types of historical events on commodity prices in Late Achaemenid and Seleucid Babylonia. Contrary to earlier scholarship on this topic, the focus was less on a mere statistical description of the data; rather, it was attempted to explain the general trends found in commodity prices as well as the deviations thereof. The price data – a total of more than 2,000 observations of the silver equivalents of six different commodities, among which the staple foods barley and dates – was extracted from the Astronomical Diaries (henceforth ADs) and the Late Babylonian Commodity Price Lists. In order to avoid oversimplifying monocausal attempts at explanation, a comprehensive approach was chosen and as much information as possible was integrated. To this purpose, both the Classical sources and the cuneiform evidence have been scoured for relevant historical facts. The introduction (Chpater 1) provides a concise overview of the most relevant sources considered. The timeframe of the present investigation was the period between 404 BC (the accession to the throne of Artaxerxes II, coinciding with the onset of a sufficiently dense documentation) and the Parthian conquest of Babylonia in 141 BC. The research for the thesis took place within the framework of the project "On the efficiency of markets for agricultural products in pre-industrial societies: The case of Babylonia c. 400 – c. 60 BC, funded by the Netherlands Organization for Scientific Research (NWO).

The first half of chapter 2, "The sources and their context" was dedicated to a discussion of the nature of and developments in the corpus of the ADs. It could be shown that the apparent uniformity conveyed by the standard text edition of the ADs is a potentially misleading phenomenon as the corpus shows considerable internal developments during its lifespan as regards the types of phenomena recorded: In the course of the 4th century, historical events gained gradually more weight, and at quite an early point in time they were given a separate section. Ominous events on the other hand – events that clearly resemble or even quote verbatim omen protases of the large Babylonian omen collections *šumma ālu* and *šumma izbu* – gradually diminished in importance. This development was possibly triggered by the on-going scientific paradigm shift in Babylonia posited by D. Brown (2000), which sees a gradual abandonment of divinatory practices and the emergence of a new predictive science based on empiricism and mathematical calculation (in D. Brown's words, the *Prediction of Celestial Phenomena*, or PCP–paradigm). The second part of this chapter investigated the socio-economic background to the price data on the basis of the rather scarce archival material from Northern Babylonia from the Late Achaemenid and Hellenistic periods. The impression that emerges is that there was no fundamental break with the circumstances prevailing in the much better documented 'long 6th century BC' (Jursa 2010). Babylonia seems to have been are fairly well integrated economic region, characterized by a market structure and economic actors aware of price fluctuations between regions and in time, and even of differing values of different types of coins.

Chapter 3, 'A price history of Babylonia, ca. 400 – ca. 140 BC', then discussed the characteristics such as the level of price volatility and related features – in a word, the statistics of the sample – as well as overall trends of the price data. The period was divided into four smaller sub-periods (Late Achaemenid – Early Hellenistic – Early and Late Seleucid Periods). During the Late Achaemenid Period, prices diplayed overall a very high level of volatility, possibly due to a combination of on-going political problems throughout the Empire and an unfavourable social structure (see the outlook in chapter 7 on this latter aspect). In the Early Hellenistic Period (ca. 330 – ca. 300 BC), prices skyrocketed due to the pernicious effects of the continuous warfare between the diadochi and the influx of a large amount of silver causing inflation. It is indeed during this period that the highest prices of the wole dataset are attested. In the Early Seleucid period, prices stabilized on a significantly lower level, however, numerous conflicts left their mark in the data as visible by the elevate number of outliers, prices that diverge to a considerable extent from the trend line. In the Late Seleucid Period, and more precisley after ca. 200 BC prices of all commodites decrease even further. The seemingly more stable political situation in Babylonia (for example, there are less instances of armed conflict during these years) is also reflected in a lower overall volatility.

The cause behind this development is to be sought in a) more favourable climatic circumstances and b) a contraction of the monetary supply after Antiochus III suffered a severe defeat in the Roman Wars (192 – 188 BC). These trends were also of relevance in an investigation into the relationship between barley and date prices over time. The overall pattern showed a fairly narrow gap between these commodities for roughly the first century of Seleucid reign over Babylon, with barley price being in general slighty above the date price (but ranging below the date price in the one and a half decades or so of the 3rd century BC, when date orchards still were not fully recovered from the wartime devastations from the early Hellenistic period). The divergence started to widen shortly after the turn from the 3rd to the 2nd century BC; however, it is indeed to be expected that the date price would be stronger affected by an general price decrease as dates were compared to barley the inferior (i.e. less expensive) commodity. Once the barley price fell below a certain threshold, people would substitute the inferior commodity dates with the higher esteemed commodity barley, hence stabilizing its price. A final observation ot be mentioned is that the graphs for wool showed that the price for the only non-foodstuff is clearly the most stable price of the dataset, fluctuating as a rule between one and two shekels per mina, (the main exception being the first decade or so after the warfare between Alexander's successors). This is easily explained by the higher demand elasticity of wool, which is of course not a basic foodstuff but a commodity that is quite easily economized upon.

Chapter 4 deepened the subject matter of exogenous shocks and their impact on prices by attempting to connect disproportionately high prices (outliers) to known historical events. It was indeed possible to individuate certain types of events that had a major effect on the price data. Among the broad variety of causes, internal warfare stands out in number of attestations and severity of impact. In chapter 5, maybe the methodologically most innovative chapter of the thesis this analysis was taken one step further. The heterogeneous historical facts and events were classified and distributed among discrete categories which were then used as dummy variables in a regression analysis. This simply means that the presence or absence of each type of events in every year was accounted for in an analysis of the time-series of the commodity prices provided by the ADs. This procedure enabled us to make statements whether a given category of events systematically – rather than only punctually, as was shown already chapter 4 – influenced prices.

Both historical episodes and the assumed underlying causes were analyzed in separat regressions, with largely positive results. For all commodities, the category of 'Domestic warfare' clearly exerted the strongest price-driving influence, and also yielded the most solid results from a statistical point of view. The category was usually followed by 'Rebellions in Babylonia', with a smaller degree of correlation to the price data and occasionally (with dates and sesame) statistically insignificant results. The effects of warfare abroad are more variegated – increasing the price for cress but driving down prices for sesame and wool – and more tenuous in their statistical reliability. The partial regression coefficients of the category of 'Domestic warfare' for barley and dates amounted to 6.90 and 3.71 respectively, both results were clearly significant at the 5% level, with the t-value exceeding 10 in both cases. The higher coefficient for barley signifying stronger price increases in cases of warfare can furthermore be interpreted as underlining the lower demand elasticity of the country's most important staple crop. As regards the assumed underlying causes of the price increases during these historical episodes, 'Military operations' revealed themselves a stronger price-increasing force than the mere 'Presence of an army', again particularly so for barley and dates. This result can be interpreted as indicating that whereas the Babylonian economy was better capable of coping with an increased demand, it was more susceptible to supply shocks. Such a reading aligns well with the finding that inter-annual storage was not practiced as means of price stabilization and risk reduction on a significant scale discussed in the final chapter 6.