Analyzing ancient price data with modern methods
Some insights and puzzles

Alex Stomper, HU
Digital antique price data...

Example: The Babylonian „Astronomical Diaries“

- The Astronomical Diaries are a collection of cuneiform tablets from first millennium Babylon.
  - They record celestial, ecological/climate-related, economic and historic events, including the „silver equivalents“ of 6 goods (barley, dates, ...)
  - Much of the data are available in digital form: [http://www.iisg.nl/hpw/babylon.php](http://www.iisg.nl/hpw/babylon.php)

- It appears that, also more generally, price/wage/rent data are often found in antique texts.

- The „Topoi“ cluster has built the expertise for digitising these and other data.
  - This is particularly useful if the data are combined with some „keys“/identifiers that appear in various datasets.
Measuring Babylonian risk aversion
...in a nutshell

• The prices recorded in the Astronomical Diaries vary to a surprising extent.
  
  • This strongly suggests that the prices are market prices. Even then, why do we observe so many extreme price changes over relatively short periods?
  
  • Harvest risk appears to have caused much of the price variability: The barley growing period was a high-risk period.

• We use the last discovery to measure the risk aversion (RA) of a representative crop trader. In a nutshell:
  
  • Expected date price growth = RA x Covariance(price growth, SDF).
  
  • SDF means „stochastic discount factor“. We specify the variation in the SDF as variation proportional to the growth rate of the silver equivalent of barley.
  
  • We can measure RA using the harvest cycle as a cause of variation in the terms of the above-stated equation. (Don’t do this! Use a better method.)
Future research?

…putting the price data into context

• To which extent are the price fluctuations driven by harvest risk? What were the relevant „amplification mechanisms“?

• Can we link the data to data about other (more complicated) prices (e.g., interest rates)?
  
  • This requires economic theory, but „non-computability“ must be taken into account. This is my research agenda.

• Links between markets are very interesting. This can be studied using the archives of businesses and other institutions.

• With other kinds of data can be linked to price data?
  
  • Data about inequality?