THE ORIGINS OF ENDURING ECONOMIC INEQUALITY

Appendix

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1. Tests for comparisons of wealth inequality

Comparison	Conventional p-value t-test (1 tail)*	Permutation p-value
Hunter-gatherers (0.307) vs Labor-limited farmers (0.355)	0.274	0.242
Labor-limited farmers (0.355) vs Land-limited farmers non states (0.577)	0.0001	0.0001
Land-limited farmers non state (0.577) vs Land-limited farmers archaic proto states (0.706)	0.002	0.003
Land-limited farmers archaic proto states (0.706) vs Land-limited farmers slave states (0.787)	0.001	0.001

*Alternative hp: True difference in means is less than 0.

2. Further information on the figures and tables

Figure 1: Not shown are three semi-sedentary hunter gatherer populations at Ohalo II from 21 thousand years ago (near the Sea of Galilee, $G = 0.295$) and 18 thousand years ago (on the Russian Plain, $G = 0.509$ and 0.224). The mean [and 95% confidence intervals] for the $n = 18$ Roman Empire observations is 0.832 [0.466, 0.930].

Figure 3: The importance of the form of wealth at one of the named vertices is indicated by the distance between the point in the simplex and the edge opposite the named vertex. Thus, a point at the vertex for material wealth would indicate that in that society the only form of wealth that mattered is material wealth ($\mu = 1$); a point on the opposite edge, like the observation for the Hadza in the figure, indicates $\mu = 0$. The mean estimates of μ for material wealth are hunter-gatherer 0.15 [0.00, 0.25], horticulture, 0.21 [0.15, 0.30] pastoral 0.61 [0.50,0.70] and agriculture 0.59 [0.35,0.80]. Source: Borgerhoff Mulder, Bowles, Hertz et al. (2009) Table S1 (in Supporting online materials).

Figure 4: Data are from Borgerhoff Mulder, Bowles, Hertz et al. (2009); Ross et al. (2018) and !Kung wealth inequality from Fochesato and Bowles (2015) the exponent is for Jo'hansi (a !Kung community) reported in the first source above, and Ache wealth inequality (data supplied by Kim Hill, with the anthropologists' employees eliminated from the sample).

Figure 6: The permutation based p values for the difference in means between labor-limited non states (n=90) and land-limited non states (n=16) is 0.0001, between land-limited non states and land-limited archaic states (n=45) is 0.003 and between land-limited archaic states and slave states

(n=22) is 0.001. We have excluded from this analysis 5 land-limited cases for which we were not able to classify the political institution.

Table 2. Rice and other cereals agriculture are shown separately due to the substantial differences in the labor intensity of these crops, as is evidenced by the estimates of μ and also in factor use studies (Ahmad and Martini 2000, Yadav, Chandra, Khura et al. 2013). For the Gambia μ was estimated by the current authors from the data in Haswell 1953. The numbers in parentheses in column 5 are the average ethnographic estimate of μ from Smith, Borgerhoff Mulder, Bowles, et.al. (2010) and Hertz, Bell, Piraino et al., (2010). The ethnographic estimates for land limited rice agriculture is the average of the Khasi and Bengali ethnographic sites in Table A2 of Hertz, Bell, Piraino et al., (2010), for land limited agropastoralists and pastoral is the average for the pastoral sites, and for land limited (all cereal) is the average for the non-rice agriculture sites (Kipsigis, Yomut Chomur, England, Skelleftea and Krummhorn.), and the labor-limited rows is the average of the horticultural sites.

3. Designations of institutions. States and Archaic Proto States

The earliest states in Mesopotamia.

The paucity of evidence in many cases makes it impossible to designate the state, proto-state, or non-state status of a site with any confidence. We have excluded these data from the portions of our analysis concerning states. We have not classified cases for which there is evidence of state rule, but reason to believe that the community under study did not include the elite. The following sites have been excluded for these reasons (insufficient evidence or likely non-representativeness) from the analysis involving states and proto states: Syria - Habuba Kebira (Phase 2B), Lebanon - Sidon-Dakerman (Chalcolithic), Palestine – Yiftahel (Stratum II), Palestine - Beer Resisim (One Period Site), North Syria - Ugarit (Late Bronze Age), Palestine – Beer-Sheba (Stratum 3, Stratum 2), Palestine - Tell Beit Mirsim (Stratum A).

There is no evidence during the Neolithic for the formation of states in the standard Weberian sense (or following the usage favored by many archaeologists due to Henry Wright), or of our category of archaic proto states. Neolithic communities evidently had social structures capable of making collective decisions, as the early Neolithic massive gazelle traps at Abu Hureyra and monumental structures at Göbekli Tepe and elsewhere suggest (Celik, 2015, Dietrich et al., 2012, Kuijt and Goring-Morris, 2002, Moore et al., 2000). But it appears that these substantial sedentary communities "could be formed and maintained without social hierarchies of power" as the archaeologist Trevor Watkins put it, describing the Neolithic revolution throughout the Levant. "Ascribed status, social hierarchies and inequalities of power" would later follow (Watkins, 2010).

In Wright's *Atlas of Chiefdoms and States,* Sush c 3500 BCE is the first listed "primary state."(Wright, 2006). But there is some evidence (mentioned in the main text) for state-like structures earlier. Stein (2012) writes that: "Overall, the LC2 [4200-3850 BCE] period at present provides the earliest evidence in Upper Mesopotamia for the emergence of formalized political

leaders, economic differentiation, hereditary elites with recognizably distinct markers of high status, and the earliest trends toward urbanization."

At Tepe Gawra level XIA/B he finds "architectural evidence of formalized political leaders, as exemplified by the unique and large scale "round house," with similar contemporaneous evidence at Brak. Mortuary evidence also at Tepe Gawra "suggests the emergence of hereditary elite social status." p.135. About Tell Zeidan he writes "… we have recovered evidence for administrative activity by people with a high social rank – perhaps the emerging class of elites who ruled over Tell Zeidan and its surrounding region …about 4100BC….[which] suggests that in this period high ranking elites were assuming leadership positions at places like Zeidan and Gawra and that those widely dispersed elites shared a common set of symbols and perhaps even a common ideology of social status" (Stein, 2009). Stein also suggests parallels between Tell Zeidan and Tell Brak.

Classification of Levantine and Mesopotamian sites.

On this basis we identify Tepe Gawra level XIA/B as the first Mesopotamian archaic proto state site in our data set (level XII is non-state). The first proper (meaning not proto-) state observations in our data set are from Italy at 300 BCE.

We designate as archaic proto-states states these sites with "palaces" or other monumental buildings (other than defensive): Tell Asmar (Stratum Va), Ugarit, Zincirli Hoyuk, Kültepe-Kanesh (level 2), Nuzi (Stratum 2), Kirkenes, Ur (counting Giparku as a palace). Our evidence for the designation of other sites follows.

Marki Alonia (Cyprus) Phases D-H -2125 to -1900 (or MC I and II). The construction of fortifications in Cyprus post-dates our evidence from Marki ((Webb and Knapp, 2020)). Of Marki, Webb and Knapp write ' Despite some architectural anomalies that might be regarded as indications of social dominance or the locus of ceremonial activities or display, these three sites conform to what we regard as small agropastoral villages whose inhabitants relied on the usual faunal and plant resources and engaged in small-scale metalworking, pottery production, and other craft activities." And "there was little evidence for major differences in social status at any time, and no indicators of wealth, individual power, or prestige." Not a state.

Haradum. Kepinski refers to the "mayor's house," and a Council of Elders. The "city paid taxes to the king of Babylon" (Kepinski, 2005) Archaic proto state.

Beer Sheeba (all strata). Hertzog refers to the military and administrative function of the entire city and that the streets were laid out in a grid, with separate areas for administrative, commercial, military, and residential use as the first planned settlement in the region (Herzog, 1997). Also: http://cojs.org/beer-sheba_of_the_patriarchs-_ze-ev_herzog-_bar_6-06-_nov-dec_1980/ in which we read: "Stratum VI could be interpreted only as a camp for the construction of Stratum V … when King David decided to build a royal urban center at Beer-sheba to replace King Saul's fortified settlement of Stratum VII. Archaic proto state.

Tell en Nasbeh. From its town plan characteristic of the Kingdom of Judah, its massive defenses, and its location on the frontier of the Kingdom of Israel and Kingdom of Judah (a fortress of

Judah also called "Judah's other capital"), this appears to be under archaic proto-state rule (Zorn, 1993).

Khirbet al Lahun. Swinnen writes: "The archaeological remains did not include any distinctive, public/administrative or other prominent buildings except perhaps for houses 1 and 11 both of which were better constructed than most of the other buildings." And then, in a footnote: "House 1… is thought to have been the residence of a very important person perhaps the leader of the community of head of the village." This appears to be a "big man" and not a public official. (Swinnen, 2009) Not a state.

Tell Masos. From Kempinski we read that "a highly developed complex of public buildings …testifies to the existence of a central government…" (Kempinski, 1978) An archaic proto state.

Tell Beit Mirsim, - 700 stratum A. No evidence of administrative or public functions, but from its location and date it appears to be well within the Kingdom of Judah, and it does include a couple of substantial houses (Herzog, 1997). Not enough evidence to classify this site. Exclude from the state/non-state distinction.

Beer Resisim -2100 (far southern Israel). Very little information (may have been a camp of semi sedentary pastoralists). Basri and Lawrence comment that the data provided by the source (Dever) is often insubstantial and self-contradictory. Exclude from the state/non-state distinction. (Basri and Lawrence, 2020)

Habuba Kebira 2B (-3500). This walled city from the middle of the Uruk period could be an archaic proto state as it is in upper Mesopotamia after the LC2 period (in which Stein dates the emergence of state like structures). But Stein does not mention it. No direct evidence. Exclude from the state/non-state distinction.

Sidon Dakerman Chalcolithic (-3300). Very little information. Not mentioned in Stein. Exclude from the state/non-state designation.

Yiftahel Stratum II – 3300. Very little information. Exclude from the state/non-state distinction.

Tell Selenkahiye -2250. May have been part of the Early Dynastic III kingdom of Mari or possibly the early rulers of Akkad empire. There was a "defensive system" and on the mound "a large building with portico entrance, perhaps served administrative purposes." The building had three floors; on the first floor were jar sealings, one of which was a Mesopotamian cylinder seal of the late Akkad period 2150. There is some evidence that they used horses and harnesses, and that at a similar site there were cattle. This information found at https://oi.uchicago.edu/sites/oi.uchicago.edu/files/uploads/shared/docs/ar/61-70/67-68b/67-68b_Euphrates.pdf which is by Murits Van Loon, who directed the 1967 Euphrates Valley Expedition to Tell Selenkahiye. An archaic proto-state.

Ubaid Eridu. There is no evidence consistent with the emergence of a state-like political system at Eridu (or anywhere else in Mesopotamia) as early as 4500 BCE (the date of our observation there) (Stein, 2012).

Other Mesopotamian sites. The Early Dynastic Khafajah, Akkadian, and Old and Neo Babylonian data from Stone (2018), all more recent than 3000 BCE, are designated archaic proto-states.

Other state designations.

The determination of the political system governing our Thai sites. Since the late Neolithic through most of the Iron Age, the societies in Northeast Thailand were not governed by any form of centralized state. On the contrary, during the last phase of the Iron Age (6^{th}-7^{th} century AD) the societies living in the region became regional states (Fochesato et al., 2021). Therefore we have categorized all the observations prior to that phase as "non-state" and the only observation that overlaps with the 6^{th}-7^{th} century AD (Non Ban Jak) as "archaic proto-state".

Western hemisphere sites. We have just two archaic proto-state or state designations in the western hemisphere prior to European settlement.

Aztec We did not include the Aztec data as there is no way to estimate the number of enslaved people and others without wealth. Feinman et al. (2018) describe the political structure in the Valley of Oaxaca at time as "corporate" rather than governed by an archaic state. Our observations date from before the Monte Alban I period that saw the emergence of what Flannery and Marcus term the "Zapotec state". (Marcus and Flannery, 1996)

Chaco. The two Chaco Canyon observations during the Pueblo II period 890-1145 CE, are designated archaic proto-states based on evidence provided by Stefani Crabtree, Timothy Kohler, and others for a highly centralized and apparently tribute-financed political system. Archaic proto-state. (Crabtree et al., 2017, Kohler and Turner, 2006).

Cahokia (US). Brown and Kelly represent the political leaders as chiefs and describe a society of competitive feasting. (Brown and Kelly, 2015) See also the review of the literature in (Emerson, 2018) in which we read that "[t]he archaeological and bioarcheological evidence for a diverse population composed of numerous immigrants support the model of a polity housing multiple ethnic, social, and political factions, each with potentially differing goals and competing/conflicting/ cooperating power structures." Yoffe, writing about Cahokia, notes an absence of "economically stratified societies, cities and urban offices and (to the extent that can be ascertained) an ideology of statecraft" Yoffee (2005) Others have termed Cahokia a state, but we rely on Emerson's review of the debate, and the assessment of Melvin Fowler (one of the main early excavators of the site) who regarded calling Cahokia ether a state or a city to be "a slight exaggeration" (Emerson, 2018). Not a state.

4. Designation of technology and land- or labor-limited

Using techniques developed by Amy Bogaard and her colleagues that we have used in our previous joint work with her (Bogaard et al., 2019, Bogaard et al., 2013, Bogaard et al., 2018, Fochesato et al., 2019, Weide et al., 2022, Weide et al., 2021), it is possible to distinguish empirically between relatively labor-limited and land-limited farming systems in western Eurasia. This is done using evidence for both animal traction and crop growing conditions, the latter based on direct archaeological evidence of preserved remains of crops and their associated arable weed flora.

Recent methodological work has combined functional ecological analysis of weed flora with stable carbon and nitrogen isotope analysis of crops to build a robust assessment of cultivation intensity. Where possible, we use these results to distinguish between the labour- and land-limited farming cases in our dataset.

Recall that we use the term land-limited to refer to broadly to any material wealth-limited economy, including the salt and copper producing economies described in the text. We represent Durankulak (Todorova 2002) as a land-limited economy, based on evidence for large-scale salt production along the Black Sea coast, the epitome of a clumped resource (Krauß 2008; Nikolov 2011, 2012; Ivanova 2012).

A mere potential for animal traction, evidenced by use of animal draught at the relevant site or in the wider region, does not classify a case as land-limited if crop growing conditions appear to have been labour-intensively maintained (sustained high soil fertility and mechanical disturbance; Bogaard 2011 (Bogaard, 2011)). Where this detailed archaeobotanical diagnosis is not available for an individual site, we turn to regional data from similar sites or to available documentary sources, such as southern Mesopotamian texts (e.g. Postgate 1992).

Extensive irrigation works and terracing also provide evidence that an economy is land-limited. The fact that farmers in southern Mesopotamia devoted substantial amounts of labour to the augmentation of available land suggests that land was relatively valuable compared to labour. The case of late medieval Egypt (not considered here) demonstrates this relationship between relative labour abundance and irrigation. Complex irrigation systems required substantial amounts of labour to increase and maintain the amount of production and cultivatable land. After the demographic shock of the Black Death in 1348, the drastic population decline inverted the relative values of labour and land. As the opportunity cost of labour increased, irrigation systems rapidly decayed (Borsch 2005). Thus, along with the archaeobotanical evidence, extensive irrigation works or terracing offer evidence of land-limited production systems.

In many agricultural systems, land- and labour-intensive farming were, in fact, part of an agroecological continuum. Halstead's (2014: 60, 119 & 319) analysis of Aegean Bronze Age farming, for example, contrasts 'palatial' strategies—the deployment of specialised plough oxen to produce a narrow range of cereals, as documented in Mycenaean Linear B texts—with more diverse, labour-intensive, smallholder farming evidenced in the archaeobotanical record. Such a system was fundamentally land-limited in nature, since elite maintenance of specialised plough animals raised the value of land relative to labour.

5. Regression analyses

We test the importance of the time trend when comparing labour-limited non state economies with land-limited non state economies by running the following regression:

$\ln(\text{Gini}_{it}) = b_0 + b_1 * \textit{LandLimited\_Nonstate}$

Where the dependent variable $\ln(\textit{Gini}_{it})$ is the natural logarithm of the Gini coefficient of economy i at time t, and the explanatory variable is a categorical variable for farming technology, namely land-limited non-state economies (*LandLimited_Nonstate*) with the reference group the labor-limited

non-state economies. The results of the OLS estimation of the coefficients b_0 and b_1, with standard errors in parentheses, are

$$\ln(Gini_{it}) = -1.105 + 0.520 * LandLimited\_Nonstate$$
$$(0.040) \quad (0.103)$$

The difference between the estimated Gini coefficient from the regression coefficients for the land-limited non-state (0.577) and the labor-limited non-state economies (0.355) is 0.222.

Conditioning on time we then get the following results:

$$\text{Ln}\,(Gini_{it}) = -1.289 + 0.441 * LandLimited\_Nonstate + 0.00003 * year$$
$$(0.143) \quad (0.188) \qquad\qquad (0.00002)$$

The difference between the estimated Gini coefficient from the coefficients from the time-conditioned regression for the land-limited non-states (0.428) and for the labor-limited non-states (0.275) is 0.153, which is 67 percent of the predicted mean difference when not conditioned on time (0.258).

We then test the importance of the time trend when comparing land-limited non state economies with land-limited archaic states by running the following regression

$$\ln(Gini_{it}) = b_0 + b_1 * LandLimited\_Nonstate + b_2 * LandLimited\_archaic + b_3 * Slave$$

Where the dependent variable $\ln(Gini_{it})$ is the natural logarithm Gini coefficient of economy *i* at time *t*, and the explanatory variables are the four categories combining farming technology and political institutions, namely land-limited non-state economies (*LandLimited_Nonstate*), land-limited archaic proto-states (*LandLimited_archaic*), slave states (*Slave*), and the reference group is are the labor-limited economies. The results of the OLS estimation of the coefficients b_0, b_1, b_2 and b_3 , with standard errors in parentheses, are

$$\ln(Gini_{it}) = -1.105 + 0.520 * LandLimited\_Nonstate + 0.749 * LandLimited\_archaic + 0.890 * Slave$$
$$(0.032) \quad (0.084) \qquad\qquad (0.056) \qquad\qquad (0.074)$$

The difference between the estimated Gini coefficient from the regression coefficients for the land-limited archaic states (0.700) and the land-limited non-state economies (0.577) is 0.143.

Conditioning on time we then get the following results:

$$\ln(Gini_{it}) = -1.246 + 0.460 * LandLimited\_Nonstate + 0.645 * LandLimited\_archaic + 0.734 * Slave + 0.00002 * year$$
$$(0.110) \quad (0.095) \qquad\qquad (0.096) \qquad\qquad (0.138) \qquad (0.00002)$$

And the difference between the estimated Gini coefficient from the coefficients from the time conditioned regression for the land-limited archaic states (0.538) and the land-limited non-state economies (0.447) is 0.091, which is 63 percent of the predicted mean difference when not conditioned on time (0.143).

6. Decomposing the difference in wealth inequality between labor-limited and land-limited economies into parts due to differences in the extent of shocks and differences in the extent of intergenerational transmission.[1]

Recall from Section 2 the intergenerational transmission model

$$w_i = (1-\beta)\underline{w} + \beta w_i' + \lambda_i$$

where w_i represents the wealth of agent i, w_i' represents the wealth of the previous generation of i, $\underline{w}$ represents the mean wealth of the population, β represents the extent of intergenerational transmission of wealth, and λ_i represents an (uninsured) wealth shock with mean 0 and variance σ_λ^2. The variance of w_i is given by:

$$\sigma_w^2 = \frac{\sigma_\lambda^2}{1-\beta^2} = \sigma_\lambda^2(1+\rho)$$

where $\rho = \frac{\beta^2}{1-\beta^2}$. The standard deviation of w_i may be found by taking the square root of both sides

$$\sigma_w = \sigma_\lambda\sqrt{1+\rho}$$

We are interested in quantifying the percent change in σ_w between sets of observations A, corresponding to labor-limited pre-state economies, and B, corresponding to land-limited pre-state economies. The reason we measure the change in standard deviation rather than variance is because the relationship between the standard deviation of the logarithm of wealth and the Gini coefficient, the unit-free measure of inequality in which the archaeological data is provided, is approximately linear over the range of inequality in question, whereas the relationship between the variance of the logarithm of wealth and the Gini coefficient is not. Given the fact that it is not possible to write a closed-form decomposition of the Gini coefficient directly, the close-to-proportional relationship between the Gini coefficient and the standard deviation of the logarithm of wealth means that the decomposition of the latter is as close of an approximation to a Gini decomposition as is possible.

Thus, we want to estimate a model of the form

$$\frac{\sigma_{wB}}{\sigma_{wA}} = \frac{\sigma_{\lambda B}}{\sigma_{\lambda A}}\sqrt{\frac{1+\rho_B}{1+\rho_A}}$$

[1] This section is due to Max Greenberg.

Defining $\sigma_{wB}/\sigma_{wA} = 1 + \delta_w$, $\sigma_{\lambda B}/\sigma_{\lambda A} = 1 + \delta_\lambda$, and $\sqrt{(1+\rho_B)/(1+\rho_A)} = 1 + \delta_\rho$, the above model may be rewritten

$$\boldsymbol{\delta_w = \delta_\rho + \delta_\lambda + \delta_\rho \delta_\lambda} \qquad \textbf{(1)}$$

where δ_w represents the percent change in the standard deviation of the distribution of the logarithm of wealth between labor-limited and land-limited non-state economies, δ_ρ represents the percent change in the term $1 + \rho$ between the same two periods, and δ_λ represents the percent change in the standard deviation of wealth shocks.

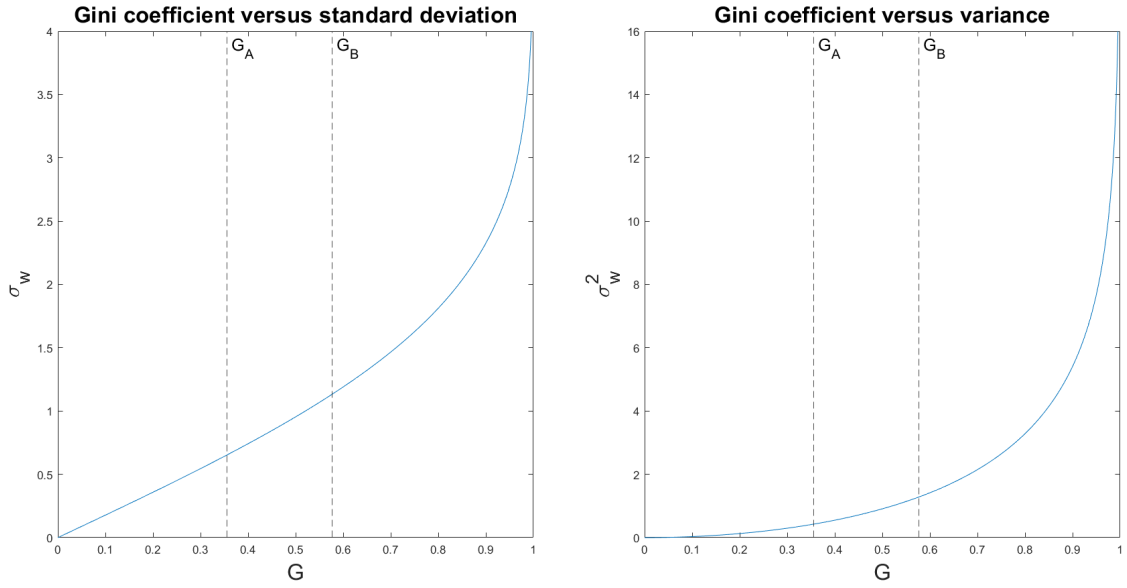

Figure A1. The relationship between the Gini coefficient and the standard deviation of the distribution of the logarithm of wealth is close to linear on the interval [0, 0.6], while that between the Gini coefficient and the variance is not.

While we have data for the percent change in the Gini coefficient between sets of observations A and B (the mean Gini coefficient of each set is 0.355 and 0.577 respectively, representing a 63% increase), the percent change in the standard deviation of the log wealth distribution will be somewhat greater, as the Gini coefficient compresses (potentially very large) standard deviations into an index that does not exceed unity (see Fig. 6.1). In order to correct for this discrepancy, we assume that the true wealth distribution from which each observation was sampled, like the stationary distribution of the intergenerational transmission model, is log-normal. We then leverage the fact that the relationship between the Gini coefficient G of a log-normal distribution and the standard deviation σ_w of the distribution of the logarithm of wealth is given by

$$G = \operatorname{erf}\left(\frac{1}{2}\sigma_w\right)$$

where $\operatorname{erf}(\cdot)$ is the Gaussian error function. The inverse relationship

$$\sigma_w(G) = 2\,\mathrm{erf}^{-1}(G)$$

allows us to estimate that $\sigma_{wA}(G_A) = 0.652$ and $\sigma_{wB}(G_B) = 1.116$. We thus obtain $\delta_w = 1.116/0.652 = 0.712$. From ethnographic studies of contemporary hunter-gatherer societies, we likewise estimate that $\rho_A = 0.008$ and $\rho_B = 0.577$ ($\beta_A = 0.089$, $\beta_B = 0.605$), and thus $\delta_\rho = 0.251$. We do not have any data on the magnitude of wealth shocks in either set of observations, but (using equation 6.1) we can solve for

$$\delta_\lambda = \frac{\delta_w - \delta_\rho}{1 + \delta_\rho} = 0.369$$

We identify δ_ρ/δ_w as the percent change in the standard deviation of the logarithm of wealth that would be observed had there been no change in the magnitude of uninsured wealth shocks; δ_λ/δ_w as the percent change in the standard deviation that would be observed had there been no change in the extent of intergenerational transmissibility; and $(\delta_\rho\delta_\lambda)/\delta_w$ as the percent change in the standard deviation that would be caused by the interaction of the two effects had both occurred. Plugging in our estimates for all three variables, we obtain the following decomposition (the components summing to one):[2]

$$\frac{\delta_\rho}{\delta_w} = 0.352$$

$$\frac{\delta_\lambda}{\delta_w} = 0.518$$

$$\frac{\delta_\rho\delta_\lambda}{\delta_w} = 0.130$$

On the basis of this decomposition, it appears that increases in both the transmissibility of wealth between generations and in the magnitude of wealth shocks are important in explaining the increase in wealth inequality in the late Neolithic and Early Bronze Age.

7. Dataset for wealth inequality in Western Eurasia from the Paleolithic to the Roman Empire

Society	year	N	Asset type	Technology	Institution	Source
Ohalo II	-21000	7	House area	Hunting and gathering	Non-state	(Nadel, 2003)

[2] Due to the aforementioned positive bias in the ratio of mean standard deviation in sets A and B relative to the ratio of Gini coefficients in those same sets (which has the effect of inflating δ_w relative to δ_ρ), the first component of this decomposition, corresponding to the change in the extent of intergenerational transmissibility, is slightly smaller than the value that would hypothetically be obtained were a direct decomposition of the change in the Gini coefficient possible.

Society	year	N	Asset type	Technology	Institution	Source
Russian plain - Mezin	-18000	5	House area	Hunting and gathering	Non-state	Our computation from Soffer (1989)
Russian plain - Other villages	-18000	13	House area	Hunting and gathering	Non-state	Our computation from Soffer (1989)
South East Turkey - Çayönü Round Buildings	-9850	12	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
Palestine - Gilgal Tentative	-9250	13	House area	Hunting and gathering	Non-state	Our computation from Basri and Lawrence (2020)
Mesopotamia – Jerf Al Ahmar	-9000	5	Storage area	Labor-limited farming	Non-state	(Bogaard, Styring, Whitlam, Fochesato and Bowles, 2018)
South East Turkey - Çayönü Early Grill Buildings	-8585	15	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
Palestine - Nahal Oren Stratum II	-7750	13	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
South East Turkey - Aşıklı Höyük Layer 2A-C	-7750	49	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
South East Turkey - Canhasan III Layers 1 & 2	-7125	12	House area	Labor-limited farming	Non-state	Our computation from Basri and

Society	year	N	Asset type	Technology	Institution	Source
						Lawrence (2020)
South East Turkey - Çayönü Cobble Paved Buildings	-6850	9	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
East Syria – Bouqras Phase III	-6800	13	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
South East Turkey - Cathaloyuk - Level 8	-6650	8	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
South East Turkey - Çayönü Cell Buildings c1	-6650	14	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
South East Turkey - Cathaloyuk – Level 7	-6550	28	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
South East Turkey - Cathaloyuk – Level 6B	-6475	37	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
South East Turkey - Cathaloyuk - Level 6A	-6425	35	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
South East Turkey - Cathaloyuk – Level 5	-6350	18	House area	Labor-limited farming	Non-state	Our computation from Basri and

Society	year	N	Asset type	Technology	Institution	Source
						Lawrence (2020)
South East Turkey - Çayönü Cell Buildings c3	-6350	15	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
South East Turkey - Cathaloyuk – Level 4	-6250	12	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
South Balkans Nea Nikomedeia	-6200	12	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
South East Turkey - Cathaloyuk – Level 3	-6150	10	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
Mesopotamia - Tell Sabi Abyad – Level 6	-6000	4	Storage area	Labor-limited farming	Non-state	(Bogaard, Styring, Whitlam, Fochesato and Bowles, 2018)
East Balkans Karanovo - Bebaungsphase III	-5750	5	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
Jordan - Beidha Phase C	-5750	24	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
South Balkans Sesklo	-5650	18	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
Mesopotamia - Tell es-Sawwan - Level 3A	-5292	8	House area	Labor-limited farming	Non-state	Our computation from Basri and

Society	year	N	Asset type	Technology	Institution	Source
						Lawrence (2020)
Germany – Vaihingen	-5200	11	Storage area	Labor-limited farming	Non-state	(Bogaard, Styring, Whitlam, Fochesato and Bowles, 2018)
Cyprus – Khrokitia N3	-5150	12	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
Bulgaria – Hamangia I - II	-5100	88	Storage area	Land-limited (non farming)	Non-state	(Windler et al., 2013)
South Balkans Dimini	-4950	10	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
South Balkans Tsangli	-4950	4	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
South Balkans Visviki	-4950	19	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
West Balkans - Okoliste 2	-4925	15	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
Western Balkans - Uivar	-4875	52	House area	Labor-limited farming	Non-state	(Porčić, 2012)
East Balkans Ovcharovo phase I	-4800	7	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
West Balkans Banjica	-4800	9	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
West Balkans Kundruci	-4800	4	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)

Society	year	N	Asset type	Technology	Institution	Source
West Balkans Opovo	-4800	5	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
West Balkans - Gomolava - house	-4800	14	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
West Balkans - Gomolava I b	-4800	12	Storage area	Labor-limited farming	Non-state	(Porčić, 2012)
Bulgaria – Hamangia III	-4800	172	Storage area	Land-limited (non farming)	Non-state	(Windler, Thiele and Müller, 2013)
Western Balkans - Okoliste 3	-4775	11	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Ovcharovo phase II	-4750	9	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
West Balkans - Divostin II b	-4750	13	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
West Balkans – Obre II	-4750	11	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
West Balkans – Parta 7 b	-4750	8	House area	Labor-limited farming	Non-state	(Porčić, 2012)
West Balkans – Parta 7a	-4750	10	House area	Labor-limited farming	Non-state	(Porčić, 2012)
West Balkans – Parta 7c	-4750	12	House area	Labor-limited farming	Non-state	(Porčić, 2012)
West Balkans - Stubline	-4750	209	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
West Balkans – Mali borak	-4750	5	House area	Labor-limited farming	Non-state	(Porčić, 2012)

Society	year	N	Asset type	Technology	Institution	Source
East Balkans Ovcharovo phase III	-4700	9	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Golyamo Delcevo – phase III	-4687	11	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Radingrad – phase I	-4680	16	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Golyamo Delcevo – phase IV	-4650	10	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Ovcharovo – phase IV	-4650	9	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Polyanitsa – phase II	-4650	14	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Targovishte – phase I	-4650	12	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Golyamo Delcevo – phase V	-4612	13	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Ovcharovo – phase V	-4600	7	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Golyamo Delcevo – phase VI	-4575	10	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Polyanitsa phase III	-4575	16	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Radingrad phase II	-4560	9	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)

Society	year	N	Asset type	Technology	Institution	Source
East Balkans Ovcharovo phase VI	-4550	10	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
Bulgaria – Hamangia IV	-4550	67	Storage area	Land-limited (non farming)	Non-state	(Windler, Thiele and Müller, 2013)
East Balkans Golyamo Delcevo – phase VII	-4537	11	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Golyamo Delcevo – phase VIII	-4500	11	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Ovcharovo – phase VII	-4500	8	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Ovcharovo-gorata	-4500	27	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Polyanitsa phase IV	-4500	15	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Targovishte phase II	-4500	14	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
Mesopotamia - Ubaid Eridu	-4500	80	Grave goods	Land-limited farming	Archaic proto-state	(Stone, 2018)
East Balkans Golyamo Delcevo – phase IX	-4462	7	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Azmak phase I	-4450	4	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Chavdar	-4450	4	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)

Society	year	N	Asset type	Technology	Institution	Source
East Balkans Ovcharovo phase VIII	-4450	8	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
Bulgaria – Varna I	-4450	30	Grave goods	Land-limited (non farming)	Non-state	(Windler, Thiele and Müller, 2013)
East Balkans Durankulak phase IV	-4450	15	House area	Land-limited (non farming)	Non-state	Our computation from Porčič (2019)
East Balkans Radingrad phase III	-4440	13	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Golyamo Delcevo – phase X	-4425	7	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Polyanitsa phase V	-4425	30	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Ovcharovo phase IX	-4400	18	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
Mesopotamia - Tepe Gawra – Level XII	-4400	11	House area	Land-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
East Balkans Golyamo Delcevo – phase XI	-4387	7	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Golyamo Delcevo – phase XII	-4350	7	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Ovcharovo phase X	-4350	16	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Polyanitsa phase VI	-4350	18	House area	Labor-limited farming	Non-state	Our computation

Society	year	N	Asset type	Technology	Institution	Source
						from Porčič (2019)
East Balkans Targovishte phase III	-4350	15	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
Bulgaria – Varna II-III	-4350	88	Grave goods	Land-limited (non farming)	Non-state	(Windler, Thiele and Müller, 2013)
East Balkans Radingrad phase IV	-4320	11	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Golyamo Delcevo – phase XIII	-4312	6	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Ovcharovo phase XI	-4300	12	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Golyamo Delcevo – phase XIV	-4275	6	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Polyanitsa phase VII	-4275	22	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Ovcharovo phase XII	-4250	12	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Golyamo Delcevo – phase XV	-4237	6	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Golyamo Delcevo – phase XVI	-4200	7	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Polyanitsa phase VIII	-4200	21	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
East Balkans Radingrad phase V	-4200	13	House area	Labor-limited farming	Non-state	Our computation

Society	year	N	Asset type	Technology	Institution	Source
						from Porčič (2019)
East Balkans Targovishte phase IV	-4200	10	House area	Labor-limited farming	Non-state	Our computation from Porčič (2019)
Mesopotamia - Tepe Gawra – Level XI A/B	-4000	8	Storage area	Land-limited farming	Archaic proto-state	(Bogaard, Styring, Whitlam, Fochesato and Bowles, 2018)
Germany - Hornstaad	-3900	30	Storage area	Labor-limited farming	Non-state	(Bogaard, Styring, Whitlam, Fochesato and Bowles, 2018)
Syria – Habuba Kebira Phase 2B	-3500	36	House area	N/A	N/A	Our computation from Basri and Lawrence (2020)
Lebanon – Sidon-Dakerman Chalcolithic	-3300	18	House area	N/A	N/A	Our computation from Basri and Lawrence (2020)
Palestine - Yiftahel Stratum II	-3300	9	House area	N/A	N/A	Our computation from Basri and Lawrence (2020)
Mesopotamia - Tell Brak	-3000	4	Storage area	Land-limited farming	Archaic proto-state	(Bogaard, Styring, Whitlam, Fochesato and Bowles, 2018)
Mesopotamia - Khafajah Early Dynastic	-2500	83	Grave goods	Land-limited farming	Archaic proto-state	(Stone, 2018)
Mesopotamia - Ur Early Dynastic	-2500	327	Grave goods	Land-limited farming	Archaic proto-state	(Stone, 2018)

Society	year	N	Asset type	Technology	Institution	Source
Mesopotamia - Akkadian	-2250	206	Grave goods	Land-limited farming	Archaic proto-state	(Stone, 2018)
Palestine – Arad	-2275	4	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
N Syria – Tell Halawa B	-2275	6	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
N Syria – Melebiye	-2275	7	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
N Mesopotamia – Tell Bderi	-2275	10	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
N Mesopotamia – Tell Chuera	-2275	16	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
S Mesopotamia – Khafaja	-2275	36	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
S Mesopotamia – Tell Asmar	-2275	40	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
N Syria - Tell Selenkahiye	-2250	14	House area	Land-limited farming	Archaic proto-state	Our computation from Basri and

Society	year	N	Asset type	Technology	Institution	Source
						Lawrence (2020)
Cyprus - Marki Alonia Phase D	-2125	11	House area	Land-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
Palestine - Beer Resisim One Period Site	-2100	54	House area	Land-limited farming	N/A	Our computation from Basri and Lawrence (2020)
Cyprus - Marki Alonia Phase E	-2050	11	House area	Land-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
Cyprus - Marki Alonia Phase F	-2025	17	House area	Land-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
Cyprus - Marki Alonia Phase G	-1925	15	House area	Land-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
Cyprus - Marki Alonia Phase H	-1900	13	House area	Land-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
Turkey - Kültepe-Kanesh Level II	-1863	46	House area	Land-limited farming	Archaic proto-state	Our computation from Basri and Lawrence (2020)
S Mesopotamia – Tell ed Der	-1825	4	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and

Society	year	N	Asset type	Technology	Institution	Source
						Altaweel (2022)
S Mesopotamia – Isin	-1825	6	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
S Mesopotamia – Tell Abu Habba	-1825	8	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
S Mesopotamia – Nippur	-1825	12	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
S Mesopotamia – Tell Harmal	-1825	17	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
Mesopotamia - Ur Larsa Period	-1791	94	House area	Land-limited farming	Archaic proto-state	Our computation from Basri and Lawrence (2020)
Mesopotamia – Old Babylonian	-1750	38	Grave goods	Land-limited farming	Archaic proto-state	(Stone, 2018)
Mesopotamia - Haradum Paleo-Babylonian	-1648	33	House area	Land-limited farming	Archaic proto-state	Our computation from Basri and Lawrence (2020)
Crete – Knossos	-1550	6000	House area	Land-limited farming	Archaic proto-state	(Bogaard, Styring, Whitlam, Fochesato and Bowles, 2018)

Society	year	N	Asset type	Technology	Institution	Source
Mesopotamia - Nuzi Stratum 2	-1450	11	House area	Land-limited farming	Archaic proto-state	Our computation from Basri and Lawrence (2020)
N Mesopotamia – Assur	-1375	4	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
N Syria – el-Qitar	-1375	10	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
N Syria – Munbaqa	-1375	11	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
N Syria – Tell Bazi	-1375	12	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
N Syria – Alalakh	-1375	15	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
N Mesopotamia – Nuzi	-1375	29	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
North Syria - Ugarit Late Bronze Age	-1205	45	House area	Land-limited farming	N/A	Our computation from Basri and Lawrence (2020)

Society	year	N	Asset type	Technology	Institution	Source
Mesopotamia – Tell Sabi Abyad – level 5	-1189	21	House area	Labor-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
Turkey - Kerkenes	-1178	131	House area	Land-limited farming	Archaic proto-state	Our computation from Basri and Lawrence (2020)
Jordan – Khirbet al-Lahun Iron Age I	-1150	15	House area	Land-limited farming	Non-state	Our computation from Basri and Lawrence (2020)
Palestine - Tell Masos Stratum 2	-1100	15	House area	Land-limited farming	Archaic proto-state	Our computation from Basri and Lawrence (2020)
Palestine – Beth Shemesh	-900	4	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
Palestine – Megiddo	-900	8	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
Palestine – Tell Qasile	-900	8	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
Palestine – Hazor	-900	16	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)

Society	year	N	Asset type	Technology	Institution	Source
Palestine – Beer Sheeba Strata 4-5	-850	49	House area	Land-limited farming	Archaic proto-state	Our computation from Basri and Lawrence (2020)
South East Turkey – Zincirli Hoyuk	-775	11	House area	Land-limited farming	Archaic proto-state	Our computation from Basri and Lawrence (2020)
Palestine – Beer-Sheba Stratum 3	-758	44	House area	Land-limited farming	N/A	Our computation from Basri and Lawrence (2020)
Palestine – Megiddo	-756	4	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
N Mesopotamia – Tell Billa	-756	5	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
N Mesopotamia – Assur	-756	30	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
Palestine – Beer-Sheba Stratum 2	-711	51	House area	Land-limited farming	N/A	Our computation from Basri and Lawrence (2020)
Palestine - Tell Beit Mirsim Stratum A	-700	32	House area	Land-limited farming	N/A	Our computation from Basri and Lawrence (2020)

Society	year	N	Asset type	Technology	Institution	Source
Heuneburg Iva1	-600	8	Storage area	Land-limited farming	Non-state	(Bogaard, Styring, Whitlam, Fochesato and Bowles, 2018)
Heuneburg Ivb2	-600	11	Storage area	Land-limited farming	Non-state	(Bogaard, Styring, Whitlam, Fochesato and Bowles, 2018)
S Mesopotamia - Nippur	-575	4	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
S Mesopotamia - Uruk	-575	7	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
S Mesopotamia - Babylon	-575	15	House area	Land-limited farming	Archaic proto-state	Our computation from Squitieri and Altaweel (2022)
Mesopotamia – Neo Babylonian	-500	49	House area	Land-limited farming	Archaic proto-state	(Stone, 2018)
Roman Empire - Italy	-300	143	House area	Land-limited farming	Slave state	(Stephan, 2013)
Roman Empire - North Africa - Punic	-300	82	House area	Land-limited farming	Slave state	(Stephan, 2013)
Egypt - Kerkeosiris	-116	190	Land	Land-limited farming	Slave state	(Bowman and Wilson, 2009)
S Mesopotamia - Seleucia on the Tigris	41	10	House area	Land-limited farming	Slave state	Our computation from Squitieri and Altaweel (2022)

Society	year	N	Asset type	Technology	Institution	Source
Egypt - Krokodilopolis	50	493	Land	Land-limited farming	Slave state	(Bowman and Wilson, 2009)
Italy - Herculaneum	79	44	House area	Land-limited farming	Slave state	(Stone, 2018)
Italy - Pompeii	79	78	House area	Land-limited farming	Slave state	(Stone, 2018)
Roman Empire - Ligures Baebiani	101	173	Land	Land-limited farming	Slave state	(Duncan-Jones, 1990)
Roman Empire - Veleia	102	139	Land	Land-limited farming	Slave state	(Duncan-Jones, 1990)
Egypt - Panopolis	150	1151	Land	Land-limited farming	Slave state	(Bowman and Wilson, 2009)
Roman Empire - Italy	200	785	House area	Land-limited farming	Slave state	(Stephan, 2013)
Roman Empire - North Africa	200	327	House area	Land-limited farming	Slave state	(Stephan, 2013)
Egypt - Philadelphia	216	342	Land	Land-limited farming	Slave state	(Bagnall, 1992)
Roman Empire - Lamasba	220	236	Land	Land-limited farming	Slave state	(Duncan-Jones, 1990)
Roman Empire - Magnesia	300	203	Land	Land-limited farming	Slave state	(Duncan-Jones, 1990)
Roman Empire - Volcei	307	109	Land	Land-limited farming	Slave state	(Duncan-Jones, 1990)
Egypt - Karanis	308	365	Land	Land-limited farming	Slave state	(Bowman and Wilson, 2009)
Egypt - Hermopolis (F)	350	1172	Land	Land-limited farming	Slave state	(Bowman and Wilson, 2009)
N Syria – Al Mina	440	18	House area	Land-limited farming	Slave state	Our computation from Squitieri and Altaweel (2022)

Society	year	N	Asset type	Technology	Institution	Source
Roman Empire - Italy	500	13	House area	Land-limited farming	Slave state	(Stephan, 2013)
Roman Empire - North Africa	500	144	House area	Land-limited farming	Slave state	(Stephan, 2013)
Egypt – Aphrodito	525	194	Land	Land-limited farming	Slave state	(Bagnall, 1992)

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