The Origins of Political Institutions and Property Rights.*

Giacomo Benati (Eberhard Karls Universität Tübingen), Carmine Guerriero (University of Bologna), and Federico Zaina (University of Bologna)

November 29, 2021

Abstract

Despite the relevance of strong political and property rights, we lack an organic and empirically sound theory of their origins and interaction. In our model, the elites can elicit the nonelites' cooperation in investment by enacting a more inclusive political process, allowing them to select the tax rate and organize public good provision, and by punishing suspected shirking through the restriction of the nonelites' input use rights. When the expected investment return is small, cooperation can only be attained under strong nonelites' political and property rights and full taxation. When the expected investment return is intermediate, the elites keep control over fiscal policies but must continue to protect the nonelites' property. When, finally, the expected investment return is large, the elites can also weaken the nonelites' property rights to strengthen their own use rights to input provided that the value of the extra public good provision necessary to assure the nonelites' participation is sufficiently small because of a very observable output. These predictions are consistent with novel data on the division of the decision-making power, strength of the farmers' use rights to land, provision of public goods and geographic traits determining the expected return on farming and its opacity in a panel of 44 major Mesopotamian polities spanning each half-century between 3050 and 1750 BCE. Crucially, our estimates are similar when we also control for trade potential, severity of internal and external conflicts and degree of urbanization. Keywords: Geography; Time Inconsistency; Opacity; Inclusive Political Institutions; Property Rights. JEL classification: O13; H10; D23.

^{*}An earlier version of this paper has been circulated under the title: "The Origins of Political Institutions and Property Rights: Time Inconsistency Vs. Opacity." We wish to thank for the insightful comments Mark Altaweel, Gojko Barjamovic, Federica Carugati, Francesca Chelazzi, Mark Dincecco, Andy Hanssen, Omer Moav, Nicoló Marchetti, Joram Mayshar, Jacopo Monastero, Francesco Moro, Josiah Ober, Massimiliano Onorato, Alessio Palmisano, Luigi Pascali, Laura Righi, David Stasavage, Davide Ticchi, Barry Weingast and seminar participants in Bologna, Parthenope, Sorbonne and Stanford Universities and the 2019 CIED and SIOE meetings and for funds the University of Bologna through the 2017 Alma Idea Grant. Corresponding author: Carmine Guerriero. Address: Piazza Scaravilli 2, 40126 Bologna, Italy. E-mail: c.guerriero@unibo.it

1 Introduction

Despite the overwhelming evidence documenting the economic relevance of inclusive political institutions and strong property rights and their correlation (Besley and Persson, 2009), we still lack an organic and empirically sound theory of the origins and interaction of these two institutional arrangements (Guerriero, 2019; 2020). To contribute to filling this gap, we lay out a model supporting the idea that adverse production conditions push the elites to grant strong political and property rights to nonelite groups to convince them that a sufficient part of the returns on joint investment activities will be shared via public good provision and, thus, to cooperate. Not only does this mechanism provide a formal justification for the empirical regularity that democratization episodes tend to be preceded by a temporary dip in income (Acemoglu et al., 2019), but it is also consistent with a novel data set on the vast institutional revolution that shook Mesopotamia during the Early and Middle Bronze Ages. Initially characterized by similar states of nature lacking institutionalized decision-making powers, protection of private rights and public good provision, this region developed the first recorded forms of stable state institutions in human history.

First, the droughts—i.e., cold and dry spans [Weiss 2017, p. 94]—of the urban revolution period (3800-3300 BCE) increased consumption risk and the value of irrigation infrastructures, pushing the landholding groups to give up their exclusive control over resources and empower priestly figures endowed, thanks to their religious leadership, with precious organizational skills.¹ Exploiting this new role, the temples gained, over the proto-states period (3300-3100 BCE), the control over public good provision. Second, the severe drying up of the city-states period (3100-2550 BCE) further reduced the farming returns, forcing the temple to share its power with rising palatial households, who succeeded in involving a larger share of the population in farming by offering tenure-for-service agreements in exchange for the participation in stable armies. The conscripted workers gained redistribution and several crucial risk-sharing activities. Third, the kingdoms period (2550-2350 BCE) witnessed a

¹Building on Liverani (2014, table 1.1), we label with "Lower" ("Upper") Mesopotamia the regions of Southern (Northern) Iraq and Southwestern Iran (Northern Israel, Northeastern Syria and Southeastern Turkey) and with "Greater Mesopotamia" the union of the two areas. Moreover, the proto(city)-states era corresponds to the Late Uruk (Jemdet Nasr and Early Dynastic) period(s) and the kingdoms (empires) era coincides with the Pre-Sargonic (Akkadian, Ur III and Old Babylonian) period(s).

milder climate, which curbed the temple's and palace's need to share their power. Fourth, an extended period of harsher climate and the consequent expansion of long-distance trade as an alternative economic activity encouraged, over the empires period (2350-1750 BCE), the religious and palatial elites of the polities, who anticipated the largest payoff from trade, to involve merchant guilds in policy making and to produce trade-related public goods. Finally, over all five periods, adverse climate shocks and the diffusion of more opaque farming activities, such as viticulture, were accompanied by stronger farmers' property rights to land.

To elucidate the economic incentives behind these events, we build on Boranbay and Guerriero (2019) and Guerriero (2019), and we construct a simple, and yet general, model of the possible cooperation between an "elite" and a "nonelite" in a joint investment.² Without loss of generality, we focus on a farming activity, which delivers a valuable harvest if the nonelite commits to a costly and unobservable investment and the imperfectly observable farming conditions are "favorable," e.g., the temperature is suitable. An exogenous factor that might impede observability is, for instance, the random diffusion of a less transparent crop such as the grapevine (Fleck and Hanssen, 2006). The elite keeps the untaxed output and to incentivize the nonelite cannot commit to direct transfers. She can, however, lean on two other instruments. First, she can grant him a more inclusive political process, which allows him to select the tax rate and organize public good provision. Second, she can punish him for suspected shirking by weakening his use rights to land, e.g., evicting him. By weakening the nonelite's property rights, the elite increases her own use rights to land (Guerriero, 2019). When the expected investment return is small, the nonelite cooperates only under strong property rights and the more inclusive political institution, which allows him to fully tax the output and produce his preferred public good. When, instead, the expected investment return is intermediate, the elite keeps control over fiscal policies and can implement partial taxation. Yet, the nonelite's property rights must be strong to assure participation. This is because his individual rationality constraint is more stringent than his incentive compatibility constraint and, thus, punishment cannot be used as enforcement mechanism to decrease taxation. When the investment return is large, however, the elite can also weaken the nonelite's private rights when her expected cost of providing the extra public

 $^{^{2}\}overline{\text{We refer to the elite as "she", to the nonelite as "he" and to a generic party as "it."$

good needed to assure his participation is more than compensated by her expected payoff from stronger use rights. This is more often the case when the output is more observable and, thus, the expected nonelite's compensation is small. Our model entails three implications. First, political and property rights must be stronger the smaller is the expected farming return and, thus, the more severe are the time inconsistency issues faced by an elite unable to commit to direct transfers. Second, only the legal protection of the nonelite's property is related—and in a positive way—to the opacity of farming. Finally, only the inclusiveness of political institutions shapes—and in a positive manner—the nonelite's expected welfare.

We evaluate the model implications by analyzing a panel of 44 major Mesopotamian polities spanning each half-century between 3050 and 1750 BCE. To proxy the expected farming return, we rely on the growing season temperature averaged over a 30 km radius, which was the maximum distance between the cultivated fields and the settled center of the city around which a polity evolved, and, as any other non-institutional variable, over the previous half-century. Judging from paleo-botanical and indirect statistical evidence, this measure is the most suited to capture the geographic factors easing the domestication of the most diffused crops. Accordingly, it is strongly and significantly correlated with the coeval barley yields in l/ha, conditional on institutions and the opacity of farming. Turning to the latter, we consider the exogenous spread of—the very opaque—viticulture through inter-palatial gift exchanges. Because of its primarily elitist use, the grapevine was extremely costly to trade, and its diffusion was essentially driven by the distance from its native habitat. Regarding the nonelite's expected welfare, we closely follow the model reasoning and gather information on the number of public and ritual buildings and the presence of a conscripted army. While the former eased both the organization of consumption risk-sharing activities and the elite's propaganda, the latter was, above all, a key empowerment mechanism for the nonelites and, in our view, their preferred public good. To construct these and the remaining variables, we build on a variety of historical analyses of the single periods and polity-specific secondary sources informed by either land or trade contracts as well as royal inscriptions. Turning to the inclusiveness of the political process and the strength of the farmers' property rights, we build on the events in a 40-year window around each time period, and we construct a five-point score rising with the division of the decision-making power and a six-point index increasing when the land exploitation by the elite was indirect—and, thus, the nonelite's land tenure was longer—rather than direct and/or when entitlements were enforced *de jure* rather than *de facto*. Crucially, the fact that both variables are rule-based rather than subjectively coded implies that there is no arbitrariness in our measurement of institutions.

Conditional on polity and half-century fixed effects, OLS estimates imply that the inclusiveness of political institutions and the strength of property rights are significantly and inversely related to the expected farming return, whereas only the protection of the farmers' property rights to land is significantly—and positively—driven by the opacity of farming. Finally, public good provision is unrelated to property rights protection but significantly and positively linked to the inclusiveness of the political process and, more so, when the public good is the organization of a conscripted army. Even if all our OLS estimates are consistent with the predictions of our model, they might be significantly attenuated by measurement errors or they may be capturing reverse causality and/or unobserved heterogeneity.

We evaluate these issues as follows. First, we obtain similar results when we deal with measurement error by either considering alternative proxies for the expected farming return and institutions or when we treat political and property rights as ordinal. To perform this last robustness, we study institutional formation via either fixed effects ordered Logit models or fixed effect Logit models with dependent variable dummies equal to one when some form of either political or property protection existed. In the last case, we assess the impact of these dummies on public good provision through OLS fixed effects models. Second, the independence from both human effort and institutional decisions of the proxies for the expected return on farming and its opacity excludes reverse causation in our analysis of institutional formation, whereas the fact that public goods are unrelated to future institutions is inconsistent with public good provision driving coeval institutional arrangements. Finally, we follow a two-step strategy to assess the role of unobservable heterogeneity. First, we control for the other key determinants of institutions and public good provision identified by the extant literature, i.e., trade potential (Acemoglu et al., 2005), environmental circumscription (Mayoral and Olsson, 2019), severity of external and internal conflicts (Besley and Persson, 2009; Acemoglu and Robinson, 2000; Chaney, 2013), and urbanization (Inglehart and Welzel, 2005). Considering these observables either stepwise or together leaves our results almost intact. We reach similar conclusions when we also incorporate in the analysis the rainfall and the severity of climate volatility (Boranbay and Guerriero, 2019), political and property rights prevailing in neighboring polities (Fleck and Hanssen, 2013), the presence of merchant institutions (Greif, 1992), alternative measures of trade potential (Barjamovic et al., 2019) and the political instability driven by the ascent to the throne of a young king (Cassidy et al., 2015). Second, we calculate how much greater the influence of unobservables, relative to that of all the observables considered in the main specifications, would need to be to explain away the links among geography, institutions and public good provision. We find that it would have to be on average more than eleven times greater than the influence of all observables, which seems unlikely. Overall, these robustness checks make difficult to envision that our estimates are driven by mechanisms different from those we model and, thus, we take our results as consistent with, if not proving, causality running from geography to political and property rights and from the latter to public good provision.

Our paper is closely related to four main strands of the vast literature on the formation and evolution of the state. First, we provide a formal framework to think about the link between geography and state formation in ancient societies emphasized by a long historical tradition (Wittfogel, 1957; Adams, 1981; Nissen, 1988; Hole, 1994; Kennett and Kennett, 2006; Staubwasser and Weiss, 2006), debunking, moreover, the conjecture that these early states relied solely on coercion (see also Blanton and Fargher, [2016]). Second, we share with North and Weingast (1989), Barzel and Kiser (1991) and Myerson (2008) the idea that time inconsistency issues created by the elite's inability to commit to direct transfers to the nonelite are key determinants of democratization.³ Different from these contributions and similar to Boranbay and Guerriero (2019),⁴ we pinpoint that public good provision is the main commitment device in the elite's hands, documenting for the first time its empirical relevance. Third, we incorporate in our model the Mayshar et al.'s (2017) and Ahmed and Stasavage's (2020) intuition that the inability of the elite to elicit cooperation through punishment due to the opacity of the farming process could force her to grant to the nonelite

³While Bentzen et al. (2016) document that the elite lacks this incentive when she controls the access to water resources, Ciccone and Ismailov (2020) report a U-shaped link between democratization and rainfall. ⁴Albeit this model assumes that investment never prevails under less inclusive political institutions, it produces, as our own setup, the prediction that cooperation is maximized under limited investment returns.

strong political and property rights.⁵ Yet, in contrast to these papers, we show that punishment cannot be used as enforcement mechanism and, thus, the opacity of farming is unrelated to the inclusiveness of political institutions and linked to property rights only when the elite prefers to exchange more taxation for stronger use rights. These differences are crucially driven by the fact that these studies overlook the relevance of time inconsistency by assuming that the nonelite's individual rationality constraint is always met and the elite can commit to direct transfers. Finally, we compare the explanatory power of our framework with that of the appropriability and circumscription theories of state formation as well as those arguments suggesting that the elite expands the nonelite's power when intimidated by possible unrest and/or by his larger resources (Acemoglu and Robinson, 2000; Acemoglu et al., 2005; Boix, 2015; Chaney, 2013; Inglehart and Welzel, 2005).

Our analysis delivers three key contributions. First, we develop a theory of endogenous political and property rights grounded in the trade-off between the mix of the elite's inability to commit and limited punishment capacity, on the one hand, and her rent-seeking incentives, on the other hand. The implications of our model stress the primacy of time inconsistency issues as a determinant of institutions. Second, we confirm the model predictions by devising a novel data set on the best recorded ancient society.⁶ Different from similar databases on medieval and modern societies (Guerriero, 2020), our data set displays large variation across time and space on economies sufficiently simple to credibly link geography to institutions and demarcated by well-defined, narrow, and stable boundaries, includes detailed information on public goods and is unaffected by the European colonization. Therefore, our exercise draws the attention of economists to ancient societies and that of archaeologists and historians to institutional economics. By allowing the two groups of scholars to cooperate, similar projects will not only produce otherwise unfeasible data but will also deliver deeper insights. Finally,

⁵Mayshar et al. (2021) relate pre-colonial state centralization to the harvest appropriability as proxied by the relative land suitability for cereals breeding, whereas Ahmed and Stasavage (2020) link the opacity of the farming process, as driven by variation in potential agricultural suitability, to council governance. Mayoral and Olsson (2019) also report correlations between environmental circumscription and political stability.

⁶The secondary sources that we use to build our data set rely on the remains gathered by the thousands of archaeological campaigns conducted in the last two centuries and the best-preserved—because of the use of clay tablets–corpus of ancient writing [Barjamovic 2013, p. 120-122], i.e., 176,000 administrative documents, 19,000 royal and monumental inscriptions and 8,000 legal texts (see https://cdli.ucla.edu/).

institutions not only validates our reasoning but also identifies an understudied determinant of the rise of the state's fiscal capacity (see also Guerriero and Righi [2021]).

The paper proceeds as follows. In section 2, we review three central historical facts about Bronze Age Mesopotamia consonant with the implications of the theoretical framework that we illustrate in section 3. Next, we state the model testable predictions in section 4, and we discuss their empirical test in section 5. Finally, we conclude in section 6, and we report figures and tables (data construction and extra tables) in the (Internet) appendix.

2 State Formation in Bronze Age Mesopotamia

Next, we summarize the economic and institutional evolution of Greater Mesopotamia during the Early and Middle Bronze Ages, highlighting, in particular, three key facts consistent with the implications of our theoretical model: [a] climatic shocks reducing the expected farming return forced the elites to grant strong political and property rights to nonelites with complementary skills; [b] nonelites involved in more opaque activities enjoyed stronger property rights to land; and [c] reforms towards stronger political and property rights were accompanied by a larger provision of public goods, especially those preferred by the nonelites.

Urban revolution (3800-3300 BCE).—Initially "characterized by the limited hierarchy of the [...] of Neolithic communities, the modest influence of political and cultic leadership, the low density of the population [and] the local dimension of production and of family relations" [Liverani 2014, p. 44], Greater Mesopotamia gradually developed the first recorded forms of stable state institutions [Liverani 2014, p. 43-45]. To start with, the drying up of the second half of the 4th millennium induced the collapse of the urban sites in Upper Mesopotamia and the reclamation of the marshy alluvium in Lower Mesopotamia [Liverani 2014, p. 53-61; Riehl et al. 2014, p. 3]. In the Alluvium, the smaller water supply together with its mismatch with the agricultural cycles magnified the returns on both artificial irrigation infrastructures and the organizational skills necessary for their construction and maintenance [Brooke 2014, p. 203]. These precious inputs were provided by priestly figures [a], who favored the transition from "earlier generic worldviews about uncontrollable forces guiding nature and fertility, in favor of established divine characters" [Liverani 2014, p. 58] on behalf of which they "toiled [...]. [Thanks to their leadership.] the community [gained the] economic proceeds from the operations of the whole enterprise, with the size of the individual shares depending on the member's rank within the community's social ladder" [Steinkeller 2019, p. 113].

Proto-states period (3300-3100 BCE).—Such an organizational role established the temple as the first institutionalized decision-maker. First, the temple households transferred increasingly larger estates from the landholding groups to the specialized, and especially literate, workers in exchange for corvée and/or a share of the produce [Liverani 2014, p. 51-69; Englund 1998, p. 176-181]. While hired workers remained rightless, allotting gradually imposed private property and tenured farmers' *de facto* rights to cultivated land [**a**] [Gelb et al., 1991; Wilcke 2007, p. 25-26]. Second, the temples extended their control over vital public tasks like gathering taxes, managing the construction of the first defensive infrastructures, supporting short-distance trade, animal husbandry and handcraft and providing risk-sharing activities [**c**], i.e., hosting orphans, storing goods, supplying grain in times of famine, regulating interest charges, accommodating those in need with loans and paying ransoms for soldiers captured in battle [Liverani 2014, p. 61-82; Charpin, 2017].

City-states period (3100-2550 BCE).—The regional divides were stretched by the 3200-2850 BCE droughts, which left the rain-fed North blocked in its village-based cul-de-sac and obstructed, without impeding, farming in the Alluvium Liverani 2014, p. 89; Ristvet 2017, p. 38-40]. This shock pushed the Southern religious ranks to share, from 2850 BCE on, their political power with a rising military class, who had left the temple to establish the "palace" under the kingly figures of the *en*, *lugal* and *ensi* [**a**] [Staubwasser and Weiss 2006, p. 379-380; Marchesi and Marchetti 2011, p. 90-100; Garfinkle 2013a, p. 108-110; Steinkeller 2019, p. 122-123]. These palatial households succeeded in involving a larger share of the population in the farming activities by offering leasing and renting contracts as well as tenure-for-service i.e., $s \check{u} ku$ —agreements eventually more appealing than those proposed by the temple [Cripps 2007, p. 12-20. To elaborate, not only did farmers participate in valuable civil engineering projects, such as canals and fortifications, but they also gained the unique benefits of serving in stable armies [c] [Richardson 2011, p. 17-36], i.e., they had access to food, irrigation facilities and draft animal power, in times of peace, and to the booty after military victories [Steinkeller 2018, p. 10-11]. Meanwhile, in Upper Mesopotamia, the improved post-2700 BCE climatic conditions triggered urbanization, first, and the empowerment of extended royal families supported by religious ranks and elders' councils, later [**a**] [Archi 2015, p. 570-591; Ristvet 2017, p. 40]. At the same time, sharecroppers and rightless hired laborers coexisted with tenured farmers enjoying *de facto* property rights [**a**] [Widell et al. 2013, p. 63-64]. The strengthening of political and private rights was accompanied by a larger provision of public buildings and a conscripted army [**c**] (Richardson, 2011).

Kingdoms period (2550-2350 BCE).—Thanks to the mix of intensified warfare and the larger farming returns assured by a milder climate, the royal households slowly acquired political supremacy, which they affirmed by limiting the temple's ability to tax and enslave its debtors in the South and by curbing the power of the religious ranks and elders' councils in the North [a] [Liverani 2014, p. 99-122]. Meanwhile, the spread of the domesticate grapevine from its indigenous areas of the Zagros, Caucasus and Taurus mountains into the neighboring Northern polities, first, and into the Alluvium, then, exerted a countervailing effect on the farmers' private rights (Miller, 2008). To illustrate, the irreplaceable role of wine in cultic and social rituals favored the exchange of the grapevine as a standard diplomatic gift among polities increasingly distant from its native habitat and a rising legal protection for its quite opaque breeding [b] [Powell 1996, p. 103-112; Dietler, 2005; Benati 2016, p. 156-157; Barjamovic and Fairbairn, 2018]. Over Greater Mesopotamia, the land granted under the $s \check{u} k u$ system became protected under de j ure property rights—i.e., heritable alongside service duties and alienable [Cripps 2007, p. 70-77; Wilcke 2007, p. 26-27, 67-70], and the major polities continued to provide public and ritual buildings and conscripted and professional armies [a, c] [Hamblin 2006, p. 48-72; Liverani 2014, p. 99-100, 108-114].

Empires period (2350-1750 BCE).—After having consolidated their control over Lower Mesopotamia, the Akkadian kings conquered large portions of the Fertile Crescent [Sallaberger and Schrakamp 2015, p. 105-112]. While the formerly independent Southern citystates were—at least at first—left to local rulers in exchange for tributes, the other annexed states were managed by governors appointed by the king and assisted by both royal functionaries and local temple households [Wilcke 2007, p. 31-41; Liverani 2014, p. 138]. The Akkadian kings' power was, however, fragile, and the cold and dry spell that hit the entire Mesopotamian region between 2200 and 1900 BCE favored, first, the expansion of *de jure* farmers' rights to land, even that directly controlled by the crown, and the collapse of the Akkadian state itself later [a] [Wilcke 2007, p. 70-72; Cookson et al., 2019].

Only after a phase of political fragmentation were the Ur III kings able to reunify, between 2120 and 2000 BCE, much of Greater Mesopotamia [Barjamovic 2013, p. 124-125; Liverani 2014, p. 155-160]. This dynasty divided the empire into core provinces administered by co-opted governors and peripheral regions controlled by military officials and crown functionaries, who gained large estates [Garfinkle 2013b; Liverani 2014, p. 161]. The farmers, by contrast, received land in exchange for corvée and, even if these plots were inalienable, their *de facto* property rights were strictly enforced [**a**] [Liverani 2014, p. 197-198].

A series of new extended droughts contributed to the collapse, around 2000 BCE, of the Ur III kingdom in Lower Mesopotamia [Yoffee 2005, p. 145-146] and to both population decline and political instability in Upper Mesopotamia [Ristvet 2017, p. 49]. This uncertainty was soon exploited by the semi-nomadic Amorite populations, which, over the period 2000-1850 BCE, extended their control over competing polities [Liverani 2014, p. 175-181]. To manage this quarrelsome reign, the Amorite kings negotiated with both tribal leaders and councils of elders and offered to the population tenured and safe land in exchange for military services [a], i.e., *ilkum* [Fleming 2004, p. 33, 75; Ziegler 2008, p. 50; Liverani 2014, p. 224].

More importantly, the falling farming returns, together with the diffusion of metal tools in all households, paved the way for a trade revolution that, from 2000 BCE, determined the formation of a new exchange landscape around two interlocking circuits [Liverani 2014, p. 163, 190, 212-218; Barjamovic 2018, p. 121-125], i.e., the Old Assyrian network carrying textiles and tin from Ashur to Kanesh and bringing back precious metals and the Old Babylonian network exchanging metals and textiles between Shush and Hazor (see figure 1). In contrast to the fourth and third millennium exchange trade circuits, which were organized by both agents of the institutionalized decision-makers and merchant families, the second millennium trade networks were dominated by private entrepreneurs who were able to accumulate increasing political power [**a**] [Van de Mieroop 2015, p. 89-92; Liverani 2014, p. 163, 190, 212-218; Barjamovic 2018, p. 128; Yoffee and Barjamovic 2018, p. 816]. To illustrate, the temple and palatial households of the polities foreseeing the largest payoff from long-distance trade—i.e., Ashur, Emar, Sippar and Tuttul—substituted the merchant guilds for the Ur III provincial administrators and supported both limited custom duties and the provision of trade-related public goods $[\mathbf{a}, \mathbf{c}]$, i.e., securing trade routes and establishing inter-polity exchange agreements [Postgate 1992, p. 221; Garfinkle 2010, p. 186-193; Van de Mieroop 2015, p. 89-92; Barjamovic 2018, p. 123-128; Palmisano 2018, p. 22]. The trade revolution was completed under the Old Assyrian (Isin-Larsa and Old Babylonian) kingdom(s) that dominated Upper (Lower) Mesopotamia during the extremely dry 1950-1780 (2017-1763) BCE period [Liverani 2014, p. 192-218]. These regional powers supported the expansion of *de jure* farmers' rights, the adoption of edicts remitting debts and abolishing debt-based slavery, renewed provision of public and ritual buildings and the organization of conscripted and professional armies $[\mathbf{a}, \mathbf{c}]$ [Westbrook 2003, p. 362-407; Richardson 2011, p. 21-32; Liverani 2014, p. 187-188]. Only the accession to the Babylonian throne of Hammurabi (1810-1750 BCE), who unified the Alluvium in 1755 BCE, blocked these dynamics by empowering the "palace [at] the expenses of the private sector as well as the temple," which lost its power to manage justice and organize trade [Liverani 2014, p. 242].

3 Theory

Next, we illustrate our model of endogenous political and property rights.

3.1 Model Setup

The economy.—We consider a representative elite interested in maximizing the farming output obtained by cooperating with a representative nonelite. To elaborate, the output Y is a function of the imperfectly observable state of the world $\theta \in \{G, B\}$ and the unobservable nonelite's effort $e \in \{l, h\}$, and it equals V > 0 if θ is good and the nonelite exerts the high effort and zero otherwise. We maintain that $\theta = G$ with probability $p \in (0, 1)$ and e entails a cost 0 if low and $\gamma > 0$ if high. After the selection of effort, everybody observes a public signal $\sigma \in \{g, b\}$ about θ whose accuracy $q \in [0.5, 1)$ is such that $Pr(g \mid G) = Pr(b \mid B) = q$ and $Pr(g \mid B) = Pr(b \mid G) = 1 - q$. As a consequence, q represents the degree of transparency of production. A q approaching 1 implies that the signal almost perfectly reveals the state of the world, whereas q = 0.5 entails, instead, that the signal is completely uninformative.

Both nonelite and elite are risk neutral and have an outside option that we normalize to zero. To elaborate, the nonelite's expected utility—i.e., $U_{r,d}$ —equals the expected payoff from public good consumption net of both the effort cost and the expected loss from weaker use rights due to punishment, whereas the elite's expected payoff—i.e., $\pi_{r,d}$ —equals the sum of untaxed output, expected payoff from public good consumption and expected gain from stronger use rights due to punishment. While the index r picks the political regime, the index d captures the punishment regime. Two are the crucial hypotheses underlying this payoff structure. First, as Boranbay and Guerriero (2019), we maintain that the elite always keeps control and transfer rights to the input, leaving to the nonelite only the use rights. Hence, she pockets the entire untaxed output. This assumption captures the prevailing distribution of property rights during our historical example and the fact that the elites appropriated virtually all the untaxed farming surplus [Cripps 2007, p. 11-22; Garfinkle 2013a, p. 112-113; Steinkeller 1999, p. 290]. Second, and differently from Mayshar et al. (2017), we assume that the elite lacks the ability to commit to direct transfers. This assumption derives from a long literature on the time inconsistency issues inherent to politics (North and Weingast 1989; Barzel and Kiser, 1991; Myerson, 2008; Boranbay and Guerriero, 2019).

The elite, however, can rely on two other instruments to incentivize the nonelite. First, she can grant the nonelite a more inclusive political institution, which allows him to guide taxation and public good provision. Second, she can punish suspected shirking through the restriction of the nonelite's use rights to the input. Starting with the provision of public good, its technology is linear in the tax revenues $pV\delta_{r,d}$. The tax rate $\delta_{r,d}$ is selected by the elite under the autocratic regime r = A and by the nonelite under the more inclusive political institution r = I, and it depends on the punishment regime d. We maintain that a supply $g_{r,d}$ of public good delivers a sub-utility $\rho g_{r,d}$ to the group selecting $\delta_{r,d}$ and directing public good provision and a sub-utility $\beta g_{r,d}$ to the other group and that $0 < \beta < \rho < 1$. While $\rho < 1$ entails that public good provision is less valuable than private good production, $\beta < \rho$ captures the degree of heterogeneity in the groups' preferences for the public good and the lower ability of each of them to provide the public good preferred by the other group (Boranbay and Guerriero, 2019). In our case study, the nonelite (elite) preferred empowerment through the participation in a conscripted army over the construction of public and ritual buildings (the way around) (see sections 2 and 5.1.3). Turning to the stick d, we focus, for simplicity, on a non-probabilistic strategy such that the stick is embraced whenever

the elite receives a signal that the lack of production is due to low effort by the nonelite. We interpret the punishment regime d = 0 as a scenario of de facto and, possibly, de jure nonelite's use rights to the input and d = 1 as a case of weak protection of such rights, i.e., an insecure land tenure (Mayshar et al., 2017).⁷ Consistent with an expanding literature on endogenous property rights (Guerriero, 2019) and different from Mayshar et al. (2017), we assume that punishment in the form of weaker nonelite's use rights must correspond to a strengthening of the elite's property rights to the input. Since, however, the elite must also substitute a dismissed nonelite, we maintain that her payoff from eviction is not too large and, in particular, smaller than the nonelite's cost from being dismissed. Formally, the elite's gain from replacing the nonelite x > 0 and the nonelite's cost $\alpha > 0$ from being evicted are such that $x < \hat{x} \equiv \min\{\frac{\gamma\beta}{\rho(1-p-q+2pq)}, \frac{\gamma(\rho-\beta)}{\beta(1-p)(1-q)}\}, \alpha > \hat{\alpha} \equiv \frac{\gamma(\rho-\beta)}{\beta(1-p)(1-q)}$ and, thus, $\alpha > x$. These conditions capture three key facts about our historical experiment. First, tenure-for-service agreements allowed the household to inherit the land conditional on the tenured farmer having properly fulfilled his duties [Cripps 2007, p. 24-27]. Second, while turnover costs were limited by the availability of waged laborers [Steinkeller 2015, p. 20-24], the elites greatly valued dispossessed land as a bargaining chip to use with rising nonelites.⁸ Finally, the peasants' costs from being evicted were sizeable and included the immediate exclusion from the risk-sharing activities organized by the institutionalized decision-makers as well as the possible future loss of the returns from future public good provision because of enslavement [Wilcke 2007, p. 53-58]. Together these pieces of evidence suggest that the nonelite's disutility from dismissal is larger than the positive and not too large difference between the elite's payoff from stronger use rights and her turnover costs. As clarified below, if the elite's gain from replacing the nonelite was negative, punishment would never arise.

Timing of events.—At time t_0 , the elite picks the political regime r. At time t_1 and for r = I, the nonelite selects the tax rate $\delta_{I,d}$ and the elite decides the punishment level d. For r = A instead, the elite picks both $\delta_{A,d}$ and d. At time t_2 , the elite decides whether to entrust the land to the nonelite who, in turn, chooses whether to participate in the

⁷In environments different from our case study, punishment could be corporal (North et al., 2009).

⁸Two examples are illuminating. After having conquered large tracts of the Alluvium, the Akkadian kings assigned the confiscated domains to a rising class of local dignitaries [Foster 2016, p. 39-40]. Similarly, Hammurabi of Babylon, after having conquered the reign of Larsa (1763 BCE), redistributed the conquered land to his retinues under tenure-for-service agreements [Fiette 2018, p. 19].

production process and an effort level e. At time t_3 and under the tenancy agreement, the state of the world θ is realized, everybody observes the public signal σ , private and public goods are possibly produced and the payoffs are realized.

Discussion.—In evaluating our setup, several remarks should be heeded. First, the interaction between elite and nonelite should be envisioned between any two consecutive and unforeseen technological shocks, each endowing the nonelite with a new and more efficient technology and leaving to the elite the control over scarce resources and the institutional design (Benati and Guerriero, 2020; 2021). In our case study, the elite (nonelite) represents the landholding groups (temple) during the urban revolution period, religious (military) ranks during the city-states period and temple and palatial (merchant) households during the empires period (see section 2). In the empires period, Y captures the returns on long-distance trades and falls with the distance from commercial partners, θ is the transportation risk and e picks the costs of organizing the exchange, i.e., securing trade routes, settling trade-related disputes and offering financial services. Second, our results will be similar should we allow the decision-maker to also select the type of public good (Boranbay and Guerriero, 2019). Third, the assumption that the elite does not always punish the nonelite for $\theta = B$ and that she adopts a non-probabilistic punishment strategy can be relaxed at the cost of a more cumbersome algebra (Mayshar et al., 2017). Finally, our analysis will be similar should we allow expropriation by assuming that $pV(1 - \delta_{r,d})$ is the share of output produced by the nonelite and appropriated by the elite and/or should we let the elite either commit to direct transfers or offer a sharecropping contract (see section 3.2 and footnote 12).

3.2 Endogenous Political Institutions and Property Rights

Since the outside options are zero, the nonelite participates only to exert the high effort, whereas an elite willing to produce punishes only if sure of the nonelite's participation and if the stick curbs taxation and/or sufficiently raises the expected value of stronger use rights.

Once the elite has embraced the more inclusive political process, a nonelite foreseeing to participate selects a $\delta_{I,d}$ maximizing his net utility from redistributing through public spending the positive production value, subject to assuring the elite's participation. Contemporaneously, the elite picks d to maximize her payoff. To illustrate, for e = h, the nonelite obtains $p\rho\delta_{I,d}V - \gamma - (1-p)(1-q)d\alpha$ and the elite gets $p\left[(1-\delta_{I,d})V + \beta\delta_{I,d}V\right] + (1-p)(1-q)dx$. Since the nonelite maximizes the expected output that he can appropriate through public good provision by selecting $\delta_{I,d} = 1$, he cooperates under strong property rights when $pV \geq \frac{\gamma}{\rho} \equiv \tilde{\Omega}$ and for d = 1 when $pV \geq \frac{\gamma + (1-p)(1-q)\alpha}{\rho}$. Because of the first inequality in the $x < \hat{x}$ condition,⁹ the elite has no incentive to use a stick in the first case and she does so both in the second case and when $pV < \tilde{\Omega}$. In both instances, punishment does not discourage full taxation and it increases the elite's expected payoff from stronger use rights. Overall, if r = I and $pV \ge \tilde{\Omega}$, two possible scenarios arise: 1. when $\tilde{\Omega} \le pV < \frac{\gamma + (1-p)(1-q)\alpha}{\rho}, d = 0$, $\delta_{I,0}^* = 1, \ e = h, \ U_{I,0} = p\rho V - \gamma \ge 0 \text{ and } \pi_{I,0} = p\beta V > 0; \ 2. \text{ when } pV \ge \frac{\gamma + (1-p)(1-q)\alpha}{\rho}, \ d = 1,$ $\delta_{I,1}^* = 1, e = h, U_{I,1} = p\rho V - \gamma - (1-p)(1-q)\alpha \ge 0 \text{ and } \pi_{I,1} = p\beta V + (1-p)(1-q)x > 0.$

After having kept autocracy, an elite willing to produce chooses both d and $\delta_{A,d}$ to maximize her expected payoff subject to satisfying all individual rationality constraints and the nonelite's incentive compatibility. Formally, her strictly concave problem is

$$\max_{d,\delta_{A,d}\in[0,1]} \quad p\left[(1-\delta_{A,d})V + \rho\delta_{A,d}V\right] + (1-p)\left(1-q\right)dx \quad s.t.:$$
(1)

$$(IR) \quad p\beta\delta_{A,d}V - \gamma - (1-p)\left(1-q\right)d\alpha \ge 0;$$

$$(IC) \quad p\beta\delta_{A,d}V - \gamma - (1-p)\left(1-q\right)d\alpha \ge -pqd\alpha - (1-p)\left(1-q\right)d\alpha.$$

It is immediate to see that the nonelite's incentive compatibility constraint is redundant, punishment cannot substitute larger taxation, and the elite's choices will be solely taken to foster the nonelite's participation and/or enlarge her return from stronger use rights. To elaborate, the nonelite's (IR) constraint holds for e = l and d = 0 and fails for e = land d = 1, for e = h and d = 0 when $pV < \frac{\gamma}{\beta} \equiv \hat{\Omega}$ and for e = h and d = 1 when $pV < \frac{\gamma + (1-p)(1-q)\alpha}{\beta} = \overline{\Omega}$ with $\tilde{\Omega} < \hat{\Omega} < \overline{\Omega}$. Since the elite prefers private to public good consumption, in order to elicit production she sets $\delta_{A,d}$ at the lowest possible level $\delta^*_{A,d}$ = $\frac{\gamma+(1-p)(1-q)d\alpha}{n\beta V}$ such that the nonelite's (IR) constraint holds. Being the threshold over which cooperation prevails under democracy and punishment larger than the threshold over which it arises under autocracy and strong property rights,¹⁰ and since the elite always prefers the

⁹Whenever the inequality $x < \frac{\gamma\beta}{\rho(1-p-q+2pq)}$ holds and $pV \ge \tilde{\Omega}$, $\pi_{I,0}$ is larger than the elite's utility from punishing and discouraging production, which equals the value (1 - p - q + 2pq)x. ¹⁰While $\alpha > \hat{\alpha}$ implies $\frac{\gamma + (1-p)(1-q)\alpha}{\rho} > \hat{\Omega}$, $x < \hat{x}$ entails $\pi_{A,0} > \pi_{I,1}$ for $pV > \hat{\Omega}$ since $\pi_{A,0} > p\rho V$ and the

second arrangement to the first one when $pV > \hat{\Omega}$, three possible scenarios arise.

When $\hat{\Omega} < (=) pV < \overline{\Omega}$, the elite grants strong nonelite's use rights, selects $\delta_{A,0}^* = \frac{\gamma}{p\beta V} < (=) 1$ and gains $\pi_{A,0} = pV - \frac{\gamma(1-\rho)}{\beta} = p \left[\left(1 - \delta_{A,0}^*\right) V + \rho \delta_{A,0}^* V \right]$. The payoff $\pi_{A,0}$ is larger than $p\rho V$ and, a fortiori, than the elite's payoff under democracy, i.e., $\pi_{I,0} = p\beta v$. For $pV \ge \overline{\Omega}$, the elite protects the nonelite's property rights and picks $\delta_{A,0}^*$ when $\pi_{A,0} > \pi_{A,1} = pV - \frac{\gamma(1-\rho)}{\beta} - \frac{(1-p)(1-q)\alpha(1-\rho)}{\beta} + (1-p)(1-q)x$, which is the case if $x \le \frac{\alpha(1-\rho)}{\beta}$. If instead $x > \frac{\alpha(1-\rho)}{\beta}$, which is possible for $x < \hat{x}$, she picks punishment and $\delta_{A,1}^* = \frac{\gamma+(1-p)(1-q)\alpha}{p\beta V} \le 1$. To illustrate, punishment is optimal only when the elite's cost of providing the extra public good needed to assure the nonelite's participation is at least compensated by her expected payoff from stronger use rights. This is more often the case when the output is more observable and the expected nonelite's compensation $(1-p)(1-q)\alpha$ is smaller. Crucially, the negative effect of the observability of output on the nonelite's property rights is not driven by the ability of punishment to function as an enforcement mechanism (Mayshar et al., 2017), but by its impact on the extra public good provision necessary to entice the nonelite.

Overall, when $pV \ge \tilde{\Omega}$,¹¹ the expected output pV determines both political and property rights, whereas the degree of observability of the output q only affects the latter. To elaborate, when $\tilde{\Omega} \le pV < \hat{\Omega}$, granting the more inclusive political institution and strong property rights is the only way to elicit the high effort level. When, instead, pV exceeds $\hat{\Omega}$, the elite always keeps the autocratic regime, embracing, moreover, a stick for both $pV \ge \overline{\Omega} > \hat{\Omega}$ and $x > \frac{\alpha(1-\rho)}{\beta}$. The following proposition summarizes our analysis:

Proposition: For $0 < \beta < \rho < 1$, $x < \hat{x}$, $\alpha > \hat{\alpha}$, and $pV \ge \frac{\gamma}{\rho}$; 1. When the expected investment return is such that $\frac{\gamma}{\rho} \le pV < \frac{\gamma}{\beta}$, the elite grants strong nonelite's political and property rights, whereas the nonelite selects both the high effort level e = h and the maximum tax rate $\delta_{I,0}^* = 1$; 2. When $\frac{\gamma}{\beta} < (=) pV < \frac{\gamma+(1-p)(1-q)\alpha}{\beta}$, the elite keeps the autocratic regime, grants strong nonelite's property rights and fixes a tax rate $\delta_{A,0}^* = \frac{\gamma}{p\beta V} < (=) 1$, whereas the nonelite selects e = h; 3. When $pV \ge \frac{\gamma+(1-p)(1-q)\alpha}{\beta}$ and $x \le \frac{\alpha(1-\rho)}{\beta}$, the elite keeps the autocratic regime, the autocratic regime, grants strong nonelite's property rights and fixes a tax rate $\delta_{A,0}^* < \frac{\alpha(1-\rho)}{\beta}$, the elite keeps the autocratic regime, the autocratic regime, grants strong nonelite's property rights and fixes a data $x \le \frac{\alpha(1-\rho)}{\beta}$, the elite keeps the autocratic regime, the autocratic regime, grants strong nonelite's property rights and fixes a data $x \le \frac{\alpha(1-\rho)}{\beta}$, the elite keeps the autocratic regime, grants strong nonelite's property rights and fixes a data $x \ge \frac{\alpha(1-\rho)}{\beta}$, the elite keeps the autocratic regime, grants strong nonelite's property rights and fixes a data $x \ge \frac{\alpha(1-\rho)}{\beta}$, the elite keeps the autocratic regime, grants strong nonelite's property rights and fixes a data rate equal to $\delta_{A,0}^* < 1$, whereas the nonelite selects e = h; 4. When $pV > (=) \frac{\gamma+(1-p)(1-q)\alpha}{\beta}$ and $x > \frac{\alpha(1-\rho)}{\beta}$,

 $[\]overline{\text{sufficient condition } p\rho V > p\beta V + (1-p)(1-q)x \text{ holds for } x < \frac{\gamma(\rho-\beta)}{\beta(1-p)(1-q)} \text{ and } pV > \frac{\gamma}{\beta}.$

¹¹If $pV < \tilde{\Omega}$, production is unfeasible under any political regime and the elite prefers to punish the nonelite.

the elite keeps the autocratic regime, restricts the nonelite's property rights and fixes a tax rate $\delta_{A,1}^* = \frac{\gamma + (1-p)(1-q)}{p\beta V} < (=) 1$, whereas the nonelite selects e = h; 5. The nonelite's expected welfare rises with the inclusiveness of political institutions and is independent from the strength of the nonelite's property rights, i.e., it is $p\rho V - \gamma \ge 0$ for r = I and 0 otherwise.

In a world of inefficient public good provision, a reform towards a more inclusive political process and stronger nonelite's property rights makes possible a cooperation otherwise unattainable given time inconsistency issues for $\tilde{\Omega} \leq pV < \hat{\Omega}$. When such alternative arrangements are unavailable, an elite preferring production to stronger use rights can entice the nonelite only by credibly committing to transfers. To illustrate, she would offer to the nonelite ϵpV , with $\epsilon > \beta$, as either a direct transfer or an incentive within a sharecropping contract. Such a payment induces cooperation for $\frac{\gamma}{\epsilon} < pV < \hat{\Omega}$.¹² When, instead, time inconsistency issues are mild because of the large expected investment return—i.e., $pV \ge \hat{\Omega}$, the elite prefers to direct fiscal policy, decrease taxation and, possibly, embrace the stick. Constraining the nonelite's property rights, however, is optimal only for an expected output and a degree of transparency sufficiently large and, notably, such that the elite's expected payoff from stronger use rights surpasses her expected cost of convincing through public good provision the nonelite to participate despite punishment. If this is not the case, the elite must optimally strengthen the nonelite's private rights—contemporaneously weakening her own—to curb the ex post misallocation of valuable resources (Guerriero 2016a; 2019).

4 Empirical Implications

In the most plausible scenario of $0 < \beta < \rho < 1$, $x < \hat{x}$, $\alpha > \hat{\alpha}$, and $pV \ge \frac{\gamma}{\rho}$ (see section 2), the model implications can be restated as the following testable predictions:

Testable Predictions: 1. The inclusiveness of political institutions decreases with the expected farming return, and it is unrelated to the opacity of farming. 2. The strength of the nonelite's property rights weakly falls with the expected farming return and weakly rises with the opacity of farming. 3. The nonelite's expected welfare increases with the inclusiveness of political institutions and is unrelated to the strength of the nonelite's property rights.

¹²Should transfers be possible under any institution, an elite willing to produce will use them only for $\frac{\gamma}{\epsilon} < pV < \tilde{\Omega}$ and $\epsilon > \rho$ since they are pure losses and, thus, inferior compared to public good consumption.

5 Evidence

We focus on the 44 polities that are best documented for each half-century between the Early Bronze Ages I-IV and the Middle Bronze Age I [Liverani 2014, table 1.1], i.e., 3050-1750 BCE. The logic underlying this approach is twofold. First, we have selected, as cross-section identifiers, polities displaying settlement continuity and steady political importance as implied by their experience with the first recorded forms of stable political institutions and property rights protection (Barjamovic, 2013; Garfinkle, 2013a). Whether dominated or independent states/kingdoms/empires, these polities evolved around one major city [Westenholz 2002, p. 26]. While the names of these historical cities and the present-day archaeological sites are reported in table 1, their locations are displayed in figure 1 and directly collected from the Ancient Near East Placemarks.¹³ Second, the institutional evolution of the period preceding the invention of the logo-graphic writing and, in turn, our sample is still ill-understood [Liverani 2014, p. 62-77], whereas the rise of the Hittite empire at the end of our sample induced a shift of the political core towards the Anatolian and Levantine regions, the consequent reduction in written sources over our sample and the formation of regional Babylonian and Assyrian states obscuring the evolution of the single polities [Liverani 2014, p. 271]. By relying on the "middle chronology," it is, instead, possible to accurately link historical to archaeological data and, thus, document three key transitions in our sample, i.e., from proto- and city-states to kingdoms and, possibly, empires (Manning et al., 2016). Crucially, the information reported in the Ancient Near East Placemarks and middle chronology is widely accepted by the predominant literature (see the Internet appendix).¹⁴

5.1 Measurement

5.1.1 Expected Farming Return and the Opacity of the Farming Process

Since the maximum distance between the cultivated fields and the settled center was 30 km [Liverani 2014, p. 106], we average geographic variables over a 30 km radius around the polity coordinates. Following the extant literature moreover (Guerriero, 2020), we consider,

¹³This data set is available from https://www.lingfil.uu.se/research/assyriology/earth

¹⁴The only possible exception concerns the physical location of Abarsal [Winters 2019, p. 155-160]. Yet, considering the proposed alternative coordinates does not affect our conclusions (see the Internet appendix).

for each non-institutional variable, data from the half-century preceding each time period.

Cereals were the dominant crops in Greater Mesopotamia, whereas olive oil became, because of its use as cooking and perfume-making ingredient, the farming output most widely exchanged over the second millennium BCE [Paulette 2013, p. 102-103]. Extensive botanical evidence suggests that wheat and barley (olive) farming needs a temperature ranging between 5 and 38 (higher than 4) degrees Celsius, suffers from water scarcity and requires an altitude between 0 and 3050 m (Serna-Saldivar, 2010; Oteros et al., 2013). Yet, the growing season temperature is, by far, the most influential determinant of agricultural production (Zhao et al., 2017).¹⁵ Accordingly, we capture the expected farming return with the growing season temperature in Celsius averaged over the previous half-century, i.e., *Temperature* (see table 2 for the definition, sources and summary statistics of each of the variables that we use). The climatic data are devised by the Transient Climate Evolution—i.e., TRACE—project for each of the last 22,000 years and the entire planet at a 3.75-degree spatial resolution. The model underlying these estimates combines discrete equations for fluid motion with grid-specific information on land, soil and plant characteristics to simulate the interactions among atmosphere, oceans, land surface and ice [He 2011, p. 16]. This process produces observations significantly more accurate than proxy data, which are, instead, based on a handful of sources of variation, but strongly correlated with the available ones (He, 2011). To illustrate, the correlation between *Temperature* and the proxy data obtained from isotope analyses of speleothems performed over nine of our polities by Bar-Matthews et al. (1997), Sinha et al. (2019) and Altaweel et al. (2019) is, conditional on half-century dummies, 0.67 and significant at one percent. Five remarks confirm the solidity of our measurement choice.

First, over the range observed in our sample, the link between the growing season temperature and farming returns is linear (Aragón et al., 2019). Second, albeit any linear impact of altitude is absorbed by the polity fixed effects, this geographic feature has also a zero nonlinear effect because the maximum altitude in our sample is that of Kanesh, i.e., 1106 m. Third, our conclusions are the same when we evaluate the nonlinear impact of soil fertility by considering Storie indexes obtained multiplying *Temperature* by the land suitability for

¹⁵Over our sample, moreover, lower winter temperatures extended the period of dormancy of plants greatly reducing (increasing) the effectiveness (riskiness) of seasonal floods [Hole 1994, p. 127].

either wheat, barley or olive or their maximum (Storie, 1978), i.e., Wheat, Barley, Olive and *Crops*, respectively (see the Internet appendix). Soil suitability concerns the ability of the soil to retain and supply nutrients and water to enable crops to maximally utilize the climatic resources of a given location (Serna-Saldivar, 2010; Oteros et al., 2013), and it has been estimated by the Global Agro-Ecological Zones—i.e., GAEZ—project for the entire planet at a 5 arc-minute resolution, two categories of water supply—i.e., rain-fed and irrigation—and three levels of inputs, i.e., high, medium and low. To prevent reverse causality concerns, we focus on the values available for the agro-climatic conditions considered by GAEZ as arguably unaffected by human intervention, i.e., low (middle) input for polities embracing rain-fed(irrigation)-based farming. Albeit this approach shows that our conclusions are unchanged when we rely on a much more granular proxy for the expected farming return, it is less impervious to shifts of the Tigris-Euphrates river system (Heldring et al., 2020). Fourth, our estimates remain stable when we control for the growing season large scale and convective precipitation in mm, i.e., Rainfall.¹⁶ This is consistent with the main findings on the determinants and organization of farming over our sample. While Upper Mesopotamia enjoyed rainfall sufficient to rely on rain-fed farming operated over flat tablelands around each settlement [Hole 1994, p. 137], the scarcity of precipitation induced Lower Mesopotamia to embrace irrigation-based farming operated on the outer slopes of the levees of the great rivers (see figure 2; Widell et al., [2013]). Here, an extended canal system directed the winter rains and the spring snow coming from the Iranian and Turkish mountains towards the Southern fields, pouring the excess water in the marshy plain (Wilkinson et al., 2015). Exactly because of the mismatch between the great rivers' flooding and the harvest season, it was not too difficult for the elite to observe and incentivize canal maintenance and the returns on farming were shaped more by the temperature level than by the rainfall [Hole 1994, p. 138; Garfinkle 2013a, p. 100; Liverani 2014, p. 65-67, 93, 232].¹⁷ Consistent with this view, our results are similar when we distinguish between rain-fed- and irrigation-based farming polities by employing for the former (latter) the growing (winter-spring) season temperature (of the

¹⁶In the Internet appendix, we also consider the climate volatility since it is closely linked to a culture of cooperation and, in turn, a more inclusive political process (Boranbay and Guerriero, 2019).

¹⁷Notably, the centralization of the management of irrigation is unrelated to institutions and their determinants conditional on polity and half-century fixed effects (results available upon request).

headwaters of the nearest between the Tigris and Euphrates), i.e., *Temperature-T* (see the Internet appendix). Finally, the partial correlation between *Temperature* and the available data on coeval barley yields in 1/ha is 0.59 and significant at one percent, conditional on institutions and the opacity of farming (see the Internet appendix).

Turning to the opacity of farming, we rely on the dummy *Vine*, which equals one if the polity cultivated the domesticated grapevine over the previous half-century. Viticulture requires activities significantly more opaque than cereals and olive breeding such as pruning the vines during the winter months, managing the canopies, monitoring the development of grapes and avoiding pests and diseases (Miller, 2008). To construct *Vine*, we combine cuneiform studies on inter-palatial exchange with data on paleobotanical remains—i.e., carbonized seeds and grapes—from the ADEMNES database (see the Internet appendix).

To better appreciate the reliability of our measurement choice, two observations are crucial. First, the diffusion of viticulture over our sample was arguably exogenous. As seen in section 2, wine trade was so costly to be negligible and the grapevine diffusion was entirely driven by the inter-palatial exchange of gifts among polities increasingly distant from the grapevine native habitat [Zohary 1996, p. 26; Barjamovic and Fairbairn, 2018; Powell 1996, p. 109-110]. Consonant with this view, a regression of *Vine* on the distance between each polity and the origin of the grapevine diffusion,¹⁸ institutions, the controls discussed in section 5.4.2 and half-century fixed effects reveals two key patterns (results available upon request). On the one hand, the distance from the grapevine native habitat is negatively related to the spread of viticulture, significant at 1% and explains alone the 55% of the observed R^2 . On the other hand, political and property rights are insignificant in these regressions. Hence, it is quite difficult to think of any role of unobserved heterogeneity and/or reverse causality in determining the coefficient attached to Vine. Second, the product of Temperature and the difference between the maximum land suitability for cereals and that for olive—i.e., Cereals, which is considered by Mayshar et al. (2021) an obvious proxy for appropriability, is never statistically significant in our specifications conditional on *Vine* (see the Internet appendix).

5.1.2 Political Institutions and Nonelite's Property Rights

Regarding the inclusiveness of political institutions, we follow a long literature on the 18 This is the Sanliurfa-Adiyaman region near the Atatürk Dam (see figure 1 and Miller [2008, table 2]).

relevance of the constraints on the elite's power for the success of open access orders (North et al., 2009), and we construct an indicator equal to one for polities mostly dominated by another political entity and to values between two and five otherwise, i.e., *Political*-Institutions. To elaborate, *Political-Institutions* equals two in the absence of any of the three possible institutionalized decision-makers—i.e., temple, extended royal family and town elites, three when only one was active, four when two were controlling policy making, and five when the political power was contested among all three decision-makers. While a value of one indicates a dominated polity that completely lost the control over policy making and private rights in favor of a neighboring kingdom/empire,¹⁹ a value of two points to a state of nature where at least natural rights can be assured (North et al., 2009). A value of three, instead, captures a limited access social order controlling anarchy through less inclusive political institutions, whereas scores equal to four and five pick societies increasingly more open to the political rise of new groups (North et al., 2009). Following the extant literature (Acemoglu et al., 2005; Guerriero, 2020), we build *Political-Institutions* on the basis of the main events in a 40-year window around each time period. These facts are extracted from historical analyses of the single periods and polity-specific secondary sources on the constraints on the elite's power imposed by accountability groups (see the Internet appendix). Accordingly, *Political-Institutions* is strongly—0.83—and significantly—at one percent—correlated with a one to six index conceptually similar to the constraints on the executive score developed by the Polity IV data set—i.e., Constraints-on-Executive—conditional on the expected return on farming and its opacity. Crucially, we obtain similar results when we substitute *Political*-*Institutions* with *Constraints-on-Executive* (see the Internet appendix).

Turning to the strength of the nonelite's use rights to land, we closely follow the model and we construct a measure of land tenure security. Operationally, our index captures the probability that, once a plot is directly or indirectly—through the action of the state taken—e.g., invaded or expropriated—from another private party, it is, then, given back to the tenured farmer (Guerriero, 2016a; 2019).²⁰ Such probability rises with the length of the

¹⁹We do not consider as dominated politically independent polities forced to pay a tribute to a foreign power.
²⁰This definition is not only consonant with Alchian's (1965) view that property rights are those of "individuals to the use of resources" but also avoids the confusion between likelihood and value of usage inherent in the Barzel's (1994) conceit that they correspond to the expected stream of net utility (Guerriero, 2016a; 2019).

farmers' tenure, the strength of the legal remedies available to them, the efficiency of the public enforcement of these remedies and the extent of alienability of the plot.

To capture these features for our sample, we gather information on the degree of control over the land exploitation by peasants and on whether private rights were enforced de jure rather than *de facto*. Starting from the second dimension, we define a right as being enforced *de jure* if it can be identified through a formal title protected by an institutionalized third party, e.g., written and, possibly, registered contracts safeguarded by statutes and/or common law enacted by an institutionalized decision-maker, who also supports contractual enforcement. Such formalized protection strengthens the peasants' legal remedies and eases the alienability of their entitlements compared to a scenario in which private rights are recognized but not formally enforced (Guerriero 2016a; 2019). Turning to land exploitation,²¹ the elite could either directly organize farming by relying on slaves and full-time waged laborers, possibly paid through a share of the produce, or lean on either leasing, renting or tenurefor-service contracts. Indirect exploitation prolonged tenure, reinforcing the peasants' legal remedies and facilitating the alienability of their entitlements. Overall, we employ an indicator equal to one for mostly dominated polities and to values between two and six otherwise, i.e., *Property-Rights*. To elaborate, *Property-Rights* equals two in the absence of any private right, three (four) if the land exploitation was direct and farmers had de facto (de jure) property rights and five (six) if the land exploitation was indirect and farmers had de facto (de jure) property rights. Again, a value of two is typical of a state of nature, whereas larger values can be found in increasingly open access social orders. This time, *Property-Rights* still builds on the main events in a 40-year window around each half-century, but it is extracted from polity-specific secondary sources on the structure of the regional land tenure informed by land transfers attested as early as 3100 BCE (see the Internet appendix).

As stressed by Acemoglu et al. (2019), our measures of institutions might suffer from two methodological issues. First, they might be subject to measurement error and changes in their cardinal values could only correspond to ordinal switches or, even, no institutional

²¹Indirect exploitation might reduce the overuse of land, magnify under-reporting of output and shift residual rights towards the more productive party (see footnote 12; Allen and Lueck, [2003]). To assess the importance of these issues, we document in the Internet appendix that our analysis will be similar should we only compare *de jure* and *de facto* rights, i.e., use *Private-Rights*, which is strongly—0.95—and significantly—at one percent—correlated with *Property-Rights*, conditional on the expected return on farming and its opacity.

evolution. To tackle this problem, we show that our analysis stands when we treat *Political-Institutions* or *Property-Rights* as ordinal by running either fixed effects ordered Logit models or fixed effect Logit models with dependent variable dummies equal to one when some form of protection existed (see the Internet appendix). In the last case, we assess the impact of these dummies on public good provision through OLS fixed effects models. Second, they might be picking institutional waves due, for instance, to the risk of migration and/or unrest created for neighboring polities by a reform (Fleck and Hanssen, 2013). To evaluate this form of political circumscription, we show in the Internet appendix that our estimates are robust to considering the average of *Political-Institutions (Property-Rights)* over the remaining polities weighted by the inverse distance to each of them, i.e., *Political-Inst-N (Property-Rights-N)*.

5.1.3 Public Good Provision

We consider two proxies for public good provision. The first one is the number of public and ritual buildings built over the previous half-century, i.e., *Public-Buildings*. These structures hosted a variety of activities, such as banks, courts, prisons, schools, libraries, archives, funeral homes, workshops, large-scale festivities and, even, brothels and were, therefore, highly appreciated by the population (Charpin, 2017). The second proxy is a dummy for whether the polity organized, over the previous half-century, a conscripted army, i.e., *Army*. While *Public-Buildings* might also capture tools of the elite's propaganda, *Army* identifies an organization that politically empowered the nonelite members and gave them access to key redistribution and risk-sharing activities, regardless of the actual occurrence of warfare [Richardson 2011, p. 20-33; section 2]. Hence, we consider *Army* as picking the public good preferred by the nonelites.²² To construct both variables, we build on polity-specific archaeological reports and post-2700 BCE monumental inscriptions (see the Internet appendix).

5.2 Estimating Equation

A glance at figures 3 and 4 reveals that the model predictions square with our data. Four patterns are evident. First, the worsening of the climatic conditions between the proto- and

²²This assumption is also consistent with the classical Athenian shift from an "elite democracy" of the relative wealthier citizens to an "all-encompassing one" (Kyriazis et al., 2015). The eight century BCE introduction of the hoplites, first, and the 482 BCE "Naval Law" later conscripted the top income quintile of and the entire Athenian population, respectively. Both innovations forced the landholding elite to raise the military wage and extend the franchise to all the citizens actively defending the polity (Kyriazis et al., 2015).

the city-states eras and during the empires period reduced the farming returns, forcing the elites to grant strong political and property rights to nonelites with complementary skills. Second, the improved climate conditions of the kingdoms era corresponded to a fall in the inclusiveness of the political process. Third, over the same period, the diffusion of viticulture contributed to the expansion of the farmers' rights to land in the communities most involved in this opaque activity. Finally, reforms towards stronger political and property rights were accompanied by a more intense provision of public goods and, especially, a conscripted army.

A poster child of these patterns is Ashur. Initially organized as a city-state around the temple of Ishtar, it was absorbed by the Akkadian empire, first, and the Ur III empire later [Ristvet 2017, p. 47-48]. The beginning of the second millennium BCE, with its falling farming returns, witnessed both the transformation of the former Ur III governors into kingly figures and a series of pro-trade reforms [Palmisano 2018, p. 17-24]. To illustrate, the City Hall, which was dominated by merchant ranks and headed by annually appointed magistrates, created colonies along the caravan routes reaching Anatolia and affirmed itself as third institutionalized decision-maker [Yoffee and Barjamovic 2018, p. 817-818], i.e., it managed, through the chamber of affairs—karum—of Kanesh, the Assyrian trade and the related legal disputes, provided credit and collected taxes [Palmisano 2018, p. 19].

Having discussed extensive anecdotal evidence consistent with the model predictions, we now turn to multivariate analysis, and we run by OLS the following panel models

$$Y_{p,t} = \alpha_p + \beta_t + \gamma' \mathbf{X}_{p,t} + \delta' \mathbf{Z}_{p,t} + \varepsilon_{p,t}, \qquad (2)$$

where $Y_{p,t}$ is either Political-Institutions, Property-Rights, Public-Buildings and Army. α_p encapsulates polity fixed effects controlling for time-independent determinants of $Y_{p,t}$. These are other geographic traits, such as the land suitability for agriculture and pasture (Litina, 2016), and predetermined shocks like the out of Africa exodus of humankind and the agricultural revolution.²³ β_t incorporates half-century dummies picking up regional macro-shocks like epidemics, which might have modulated the incentives to escape the Malthusian trap

²³While Ashraf and Galor (2013) document that prehistoric migratory distance from East Africa is related to both genetic diversity and present-day trust, Olsson and Paik (2016) suggest that an early Neolithic transition to agriculture is correlated with patriarchal values and a less inclusive political process.

(Voigtländer and Voth, 2009). Finally, $\mathbf{X}_{p,t}$ gathers *Temperature* and *Vine* if $Y_{p,t}$ is either *Political-Institutions* or *Property-Rights* and *Temperature*, *Vine*, *Political-Institutions* and *Property-Rights* otherwise. Since we do not observe all the geographic determinants of the expected return on farming and its opacity and, in turn, of the distribution of inclusive political institutions and the strength of property rights, we allow *Political-Institutions* and *Property-Rights* to directly shape public good provision, and we focus on the coefficients attached to these two variables to assess our third testable prediction. Finally, $\mathbf{Z}_{p,t}$ possibly includes—singularly or together—the extra controls discussed in section 5.4.2.

In evaluating our approach, two remarks are key. First, when we switch to a fixed effects Logit model to study the probability of observing a conscripted army, several observations are dropped because of limited within-variation, but the message of our analysis stands (see the Internet appendix). Second, to reckon with the within-polity correlation in $\varepsilon_{p,t}$ possibly driven by institutional persistence, we cluster the standard errors at the polity level.²⁴ Yet, we document that our conclusions will survive should we also deal with the spatial dependence in $\varepsilon_{p,t}$ possibly produced by the resolution of the geographic data by relying on either the Driscoll-Kraay or the Conley (1999) standard errors (see the Internet appendix).

5.3 Basic Empirical Results

Table 3 displays the basic estimates, which are consistent with the main model predictions (see section 1). First, a one-standard-deviation rise in *Temperature* is associated with a significant 2.4-standard-deviation fall in *Political-Institutions* and a significant 1.79standard-deviation decrease in *Property-Rights*. Second, the diffusion of the viticulture induces a significant—at 5%—0.4-standard-deviation rise in the strength of private rights, but it is unrelated to *Political-Institutions*. Finally, *Property-Rights* is not significantly linked to public good provision, whereas *Political-Institutions* is always positively related to it and, as expected, more significantly to *Army* than to *Public-Buildings*.

5.4 Gaining More Insights About Causality

Despite measurement error is not a major issue for our analysis since, as aforementioned,

²⁴Our results survive when we switch to the Cameron et al.'s (2008) wild cluster bootstrapping to deal with a possible bias driven by the small number of clusters (see the Internet appendix).

our results remain substantially similar when we consider either alternative measures of the dependent and independent variables or ordinal proxies for the strength of political and property rights, the OLS estimates reported in table 3 might still be inconsistent because of reverse causality and/or unobserved heterogeneity. Next, we evaluate both issues in turn.

5.4.1 Evaluating Reverse Causality

Starting from the former, the independence from both human effort and institutional decisions of the proxies for the expected return on farming and its opacity immediately excludes reverse causation in our analysis of institutional formation. A more direct test is, instead, necessary to rule out that the contemporary link between public good provision and institutions is driven by the former causing the latter. We follow Angrist and Pischke (2009), and we estimate equation (2) with either *Public-Buildings* or *Army* as dependent variable and both *Political-Institutions* and *Property-Rights* lead one time period as extra controls. If reverse causality was an issue, then one would expect even stronger correlations between current public good provision and future institutions. As detailed in the Internet appendix, lead values of the strength of political and property rights are never significant.

5.4.2 Controlling for Observables

Turning to the importance of omitted variables, we pursue a two-step strategy. First, we evaluate the impact on the main coefficients of considering the other key determinants of institutions and public good provision identified by the extant literature. Second, we calculate how much greater the influence of unobservable factors, relative to that of all these extra controls, would need to be to explain away the main estimates.

Three are the primary theories of institutional evolution alternative to our approach.

First, Acemoglu et al. (2005) provide evidence that the opening of the Atlantic routes strengthened the political rights of the merchant groups in England and the Provinces, allowing them to constrain the decision-making power of the monarchy. In a vein more similar to our model, Boranbay and Guerriero (2019) document that the medieval lords expanded the political rights of the population where the returns on cooperating in joint trade investment were the largest. To illustrate, democratization was positively related to a direct access to the sea as well as to the average distance to the commercial hubs, which, in

turn, decreases the payoff from long-distance trades. Building on this intuition, we consider two proxies for trade potential. The first one is calculated through a naive gravity trade model as the sum of the ratios of the product of each polity's estimated—as illustrated below—settled area over the previous half-century and that of another polity to the distance between the two (Barjamovic et al., 2019), i.e., Trade-Potential. Turning to our second proxy, we consider a measure of the payoff from sharing consumption risk with neighboring polities via trade. To illustrate, we calculate the ratio of the farming return averaged over the previous half-century and the remaining polities weighted by the inverse distance to each of them to the polity's value of *Temperature*, i.e., *Risk-Sharing*. *Risk-Sharing* is also an inverse measure of environmental circumscription, which is the difference between the productivity of the polity core and that of the surrounding areas and, thus, a deterrent to exit and unrest (Mayoral and Olsson, 2019). This interpretation, however, is complicated by the fact that severe corporal and financial penalties for runaway workers, together with inter-polity treaties forbidding the harboring of fugitives, limited their free movement [Reid 2015, p. 581-600; Veenhof, 2013]. To cross-validate Trade-Potential and Risk-Sharing, we calculate that they are correlated at the 1% and 5%, respectively, with a measure of trade expansion over the previous half-century—i.e., Imports, conditional on the strength of political and property rights.²⁵ Considering also *Imports* does not change our conclusions.

We also obtain similar results when we consider either the presence over the previous halfcentury of a formal merchant institution,²⁶ such as the karum, a port authority or a merchant court—i.e., *Merchant-Institutions*—or a measure of the returns on cooperating in the trades channeled by the Old Assyrian and/or Old Babylonian trade networks, i.e., *Trade-Network*. As aforementioned, the diffusion of metals in virtually all households caused, at the turn of the second millennium BCE, a dramatic expansion of long-distance trade, determining an unprecedented institutional revolution. These transactions were directed by two major interlocking circuits structured around connecting nodes and characterized by three aspects. First, almost all polities were involved in a single network by law [Barjamovic 2013, p.

²⁵Imports is the number—between one and seven—of costly-to-obtain imported items, i.e., soft stones, chipped stones, precious stones, metals, ivory, weights and shells (Wilkinson, 2014; Massa and Palmisano, 2018).

²⁶Notably, Greif (1992) documents how similar institutions surmounting commitment problems also supported both the expansion of trade and the rise of state's capacity during the medieval "commercial revolution."

128]. Second, the connecting nodes pumped into the system goods produced by the nearest polities not laying on the routes [Liverani 2014, p. 216-217; Barjamovic 2018, p. 120-125]. Third, these nodes, in turn, were divided in simple transit points and full-fledged hubs in which professional merchants would organize the inter-hub exchange, i.e., Ashur, Babylon, Larsa, Kanesh and Sippar [Barjamovic 2018, p. 122-128; De Boer, 2019]. The hubs revolved around a karum, which contracted sworn agreements between nodes, settled trade-related disputes and offered financial services [Postgate 1992, p. 218-221, 300; Palmisano 2018, p. 22]. Building on these stylized facts, we define *Trade-Network* as a variable equal to: a) zero if the polity did not have, over the previous half-century, any access to the Old Babylonian and/or Old Assyrian trade networks; b) the distance to the nearest node of the networks to which the policy belonged if it was part of at least one trade network but not a node; and c) the distance to the nearest hub of the networks to which the polity belonged if it was part of at least one trade network and a node. Trade-Network assumes higher values when cooperating in long-distance trades was more rewarding, and it distinguishes not only between polities with or without access to trade but also between polities on or off the trade itineraries [Liverani 2014, figure 12.4; Van de Mieroop, 2015; Barjamovic, 2018].

Second, a long tradition on state's capacity suggests that common interest goods, such as fighting external wars, are conducive to forceful private rights (Besley and Persson, 2009). As aforementioned moreover, warfare politically empowered those defending the polity (Richardson, 2011; Kyriazis et al., 2015). Building on these remarks, we consider the number of external wars in which the polity participated over the previous half-century, i.e., *External-Conflicts.* A growing body of research suggests, instead, that inter-groups conflicts might impede the protection of private property or push the elite to grant more inclusive political institutions (Ashraf and Galor, 2013; Acemoglu and Robinson, 2000; Chaney, 2013). To capture both mechanisms, we consider a dummy equal to one if the polity experienced either an uprising against the institutionalized power/s or a rebellion against an external ruler over the previous half-century, i.e., *Internal-Conflicts.* To construct *External-Conflicts* and *Internal-Conflicts*, we build on polity-specific secondary sources on warfare and monumental inscriptions (see the Internet appendix). Crucially, we obtain similar results when we turn to a measure of political instability defined as the average of a dummy for the ascent to the throne, over the previous half-century, of kings twenty or younger in the other polities weighted by the inverse distance to each of them, i.e., *Young-King*. Following Cassidy et al. (2015), an inexpert ruler is more vulnerable to external and internal attacks/requests.

Finally, to evaluate the modernization effect (Inglehart and Welzel, 2005), we consider the estimated settled area of each polity over the previous half-century in ha, i.e., *Polity-Size*. This figure is obtained by observing the walled area, the distribution of pottery fragments and the extension of settlement remains over archaeological sites, and it is strongly correlated with population density and urbanization [Colantoni 2017, p. 95-106].

As clarified by the estimates listed in panels A and B of table 4, controlling for the aforementioned confounding variables either singularly or together leaves unchanged the message of our analysis. Conditional on all observables, in particular, four are the key patterns in the data. First, the sign, magnitude and statistical significance of the coefficients on Temperature and Vine and the links between both Political-Institutions and Property-*Rights*, on the one hand, and both *Public-Buildings* and *Army*, on the other hand, remain almost unchanged. Second, conflicts and, in particular, the external ones predict only public good provision. This evidence is somehow consistent with Beslev and Persson (2009) but at odds with Acemoglu and Robinson (2000).²⁷ Third, the coefficient on *Polity-Size* does not support a modernization effect of economic development. Further evidence available upon request corroborates this conclusion by showing that past values of *Polity-Size* are never significant when added as extra controls. Finally, over and above the farming returns, the possibility of sharing consumption risk with neighboring polities is the only other factor driving political and property rights. The negative coefficients on *Risk-Sharing* in columns (5) and (6) of panel B of table 4, however, are inconsistent with either a negative impact of circumscription on political and property rights or a trade-related opening of the social order (Acemoglu et al, 2005; Mayoral and Olsson, 2019), but they are consonant with the idea that a rise in the returns on cooperating in lucrative long-distance trades curbed the importance of farming and, in turn, the elite's need to entice the agrarian nonelites.

²⁷Different from several successful palace conspiracies [Foster 2016, p. 8-10], all the major revolts ended up in mass murder and both deportation and subjugation of the population (Yoffee and Seri, 2019).

5.4.3 Using Selection on Observables to Assess the Bias from Unobservables

Despite our attempts to control for observables, the estimates presented so far may still be biased by unobservable factors. To evaluate this issue, we calculate the index proposed by Bellows and Miguel (2009) to measure how much stronger selection on unobservables, relative to selection on observables, must be to explain away the entire estimated effects. To see how the index is calculated, consider a regression with a restricted set of controls and one with a full set of controls. Next, denote the estimate of the coefficient attached to the variable of interest from the first regression γ^R , where R stands for "restricted," and that from the second regression γ^F , where F stands for "full." Then, the index is the absolute value of $\gamma^F/(\gamma^R - \gamma^F)$. The intuition behind the formula is as follows. The lower the absolute value of $(\gamma^R - \gamma^F)$ is, the less the estimate of the coefficient attached to the variable of interest is affected by selection on observables, and the stronger selection on unobservables needs to be to explain away the entire effect. Similarly, the higher the absolute value of γ^F is, the greater is the effect that needs to be explained away by selection on unobservables.

We consider the specifications without controls reported in table 3 as the restricted regressions and those incorporating all controls in columns (5) to (8) in panel B of table 4 as the full regressions, and we report the indexes calculated from the regressions with dependent variable *Political-Institutions*, *Property-Rights*, *Public-Buildings* and *Army* in columns (1) to (4) of table 5, respectively. We focus on the variables testing the key model predictions. No index is lower than one, and their median (average) is 2.91 (11.54). Hence, to attribute the entire estimates to selection effects, selection on unobservables would have to be on average more than eleven times greater than selection on all observables, which seems unlikely.

6 Concluding Comments

We have developed a theory of endogenous political and property rights grounded in the trade-off between the mix of the elite's inability to commit and limited punishment capacity, on the one hand, and her rent-seeking incentives, on the other hand. Moreover, we have tested the empirical implications of our model exploiting a novel data set on the first recorded forms of stable state institutions sprang in Bronze Age Mesopotamia.

We close by highlighting avenues for further research. First, a key issue unanswered by our empirical test is whether reforms towards stronger political and property rights fostered, thanks to the larger provision of public goods, economic development. Our results suggest that, differently from the extant literature (Besley and Persson, 2009), one should employ the geographic determinants of the state's fiscal capacity to isolate its true impact (Guerriero and Righi, 2021). Second, an issue key for the design of economic and political unions is to evaluate if the most politically developed dominated polities obstructed the market integration of the Mesopotamian empires, pushing the rulers to impose a complex bureaucracy on all of them and extractive policies on the less militarily relevant ones (Grafe, 2012; Altaweel and Squitieri, 2018; de Oliveira and Guerriero, 2018; Guerriero, 2020). Finally, economic success also depends on the ability of the legal system to implement the socially optimal punishment for deviant behaviors and to properly protect private property (North et al., 2009; Guerriero, 2016b; 2019). Building on cross-sectional data, Guerriero (2016a, b, c) documents that reforms from a decentralized legal order, characterized by judicial precedents, procedural discretion and a strong protection of the original owners' property, to a centralized one, marked by legislation, bright-line procedural rules and a strong protection of the buyers' reliance on contracts, are related to a more inclusive political process. Given the variety of observed legal solutions (Roth, 1997), Bronze Age Mesopotamia constitutes a superb environment where these ideas can be more credibly tested by adding a time dimension.

References

Acemoglu, Daron, Simon Johnson, and James A. Robinson. 2005. "The Rise of Europe: Atlantic Trade, Institutional Change, and Economic Growth." *American Economic Review*, 95: 546-579.

Acemoglu, Daron, Suresh Naidu, Pascual Restrepo, and James A. Robinson. 2019. "Democracy Does Cause Growth." *Journal of Political Economy*, 127: 47-100.

Acemoglu, Daron, and James A. Robinson. 2000. "Why Did the West Extend the Franchise? Democracy, Inequality and Growth in Historical Perspective." *Quarterly Journal* of Economics, 115: 1167-1199.

Adams, Robert Mcc. 1981. Heartland of Cities. Surveys of Ancient Settlement and Land Use on the Central Floodplain of the Euphrates. Chicago-London: The University of Chicago Press.

Ahmed, Ali, and David Stasavage. 2020. "Origins of Early Democracy." American Political Science Review, 114: 502-518.

Alchian, Armen A. 1965. "Some Economics of Property Rights." Il Politico, 30: 816-829.

Allen, Douglas W., and Dean Lueck. 2003. *The Nature of the Farm*. Boston, MA: MIT University Press.

Altaweel Mark, and Andrea Squitieri. 2018. *Revolutionizing a World: From Small States* to Universalism in the Pre-Islamic Near East. London, UK: UCL Press.

Altaweel Mark, et al. 2019. "New Insights on the Role of Environmental Dynamics Shaping Southern Mesopotamia: From the Pre-Ubaid to the Early Islamic Period." *Iraq*, 81: 23-46.

Angrist, Joshua D., and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics*. Princeton, NJ: Princeton University Press. Aragón, Fernando M., Francisco Oteiza, Juan Pablo Rud. 2019. "Climate Change and Agriculture: Subsistence Farmers' Response to Extreme Heat." *arXiv: 1902.09204.*

Archi, Alfonso. 2015. *Ebla and Its Archives. Texts, History, and Society.* Berlin, DE: De Gruyter.

Ashraf, Quamrul, and Oded Galor. 2013. "Genetic Diversity and the Origins of Cultural Fragmentation." *American Economic Review*, 103: 528-533.

Bar-Matthews, Miryam, Ayalon Avner and Aaron Kaufman. 1997. "Late Quaternary Paleoclimate in the Eastern Mediterranean Region from Stable Isotope Analysis of Speleothems at Soreq Cave, Israel." *Quaternary Research*, 47: 155-168.

Barjamovic, Gojko. 2013. "Mesopotamian Empires." In: Oxford Handbook of the State in the Ancient Near East and the Mediterranean, Peter F. Bang and Walter Scheidel (eds.), Oxford, UK: Oxford University Press.

Barjamovic, Gojko. 2018. "Interlocking Commercial Networks and the Infrastructure of Trade in Western Asia during the Bronze Age." In: *Trade and Civilisation: Economic Networks and Cultural Ties from Prehistory to the Early Modern Era*, Kristian Kristiansen, Thomas Lindkvist and Janken Myrdal (eds.), Cambridge, UK: Cambridge University Press.

Barjamovic, Gojko, and Andrew S. Fairbairn. 2018. "Anatolian Wine in the Middle Bronze Age." *Die Welt Des Orients*, 48: 249-284.

Barjamovic, Gojko, Thomas Chaney, Kerem Coşar, and Ali Hortaçsu. 2019. "Trade, Merchants and Lost Cities of the Bronze Age." *Quarterly Journal of Economics*, 134: 1455-1503.

Barzel, Yoram, and Edgar Kiser. 1991 "The Origins of Democracy in England." *Ratio*nality and Society, 3: 396-422.

Barzel, Yoram. 1994. "The Capture of Wealth by Monopolists and the Protection of Property Rights." International Review of Law and Economics, 14: 393-409.

Bellows, John, and Edward Miguel. 2009. "War and Local Collective Action in Sierra Leone." *Journal of Public Economics*, 93: 1144-1157.

Benati, Giacomo. 2016. "High, Low and in Between: Patterns of Bureaucracy, Storage and Mobilization of Resources in Middle Bronze Age (2000-1600 BC) Northern Levant." *Studia Eblaitica*, 2: 123-176.

Benati Giacomo, and Carmine Guerriero. 2020. "The Origins of the State: Technology, Cooperation and Institutions." Forthcoming, *Journal of Institutional Economics*.

Benati Giacomo, and Carmine Guerriero. 2021. "Climate Change and State Evolution." Proceedings of the National Academy of Sciences of the United States of America, 118: e2020893118.

Bentzen, Jeanet Sinding, Nicolai Kaarsen, and Asger Moll Wingender. 2016. "Irrigation and Autocracy." *Journal of the European Economic Association*, 15: 1-53.

Besley, Timothy, and Torsten Persson. 2009. "The Origins of State Capacity: Property Rights, Taxation, and Politics." *American Economic Review*, 99: 1218-1244.

Blanton, Richard E., and Lane Fargher. 2016. *How Humans Cooperate. Confronting the Challenges of Collective Action.* Boulder, CO: University of Colorado Press.

Boix, Carles. 2015. *Political Order and Inequality*. Cambridge, UK: Cambridge University Press.

Boranbay, Serra, and Carmine Guerriero. 2019. "Endogenous (In)Formal Institutions." Journal of Comparative Economics, 47: 921-945.

Brooke, John L. 2014. Climate Change and the Course of Global History. A Rough Journey. Cambridge, UK: Cambridge University Press.

Cameron, Colin A., Jonah B. Gelbach, and Douglas L. Miller. 2008. "Bootstrap-based Improvements for Inference with Clustered Errors." *Review of Economics and Statistics*, 90: 414-427.
Cassidy, Traviss, Mark Dincecco, and Massimiliano Onorato. 2015. "The Economic Legacy of Warfare. Evidence from European Regions." Unpublished.

Chaney, Eric. 2013. "Revolt on the Nile: Economic Shocks, Religion, and Political Power." *Econometrica*, 81: 2033-2053.

Charpin, Dominique. 2017. La Vie Méconnue Des Temples Mésopotamiens. Paris, FR: Les Belles Lettres, Collège de France.

Ciccone, Antonio, and Adilzhan Ismailov. 2020. "Democratic Tipping Points." Unpublished.

Colantoni, Carlo. 2017. "Are We Any Closer to Establishing How Many Sumerian per Hectare? Recent Approaches to Understanding the Spatial Dynamics of Populations in Ancient Mesopotamian Cities." In: *At the Dawn of History*, Yagmur Heffron, Adam Stone, and Martin Worthington (eds.), Winona Lake, IN: Eisenbrauns.

Cookson, Evangeline, Daniel J. Hill, and Dan Lawrence. 2019. "Impacts of Long Term Climate Change during the Collapse of the Akkadian Empire." *Journal of Archaeological Science*, 106: 1-9.

Conley, Timothy G. 1999. "GMM Estimation with Cross Sectional Dependence." *Journal* of *Econometrics*, 92: 1-45.

Cripps, Eric. 2007. Land Tenure and Social Stratification in Ancient Mesopotamia: Third Millennium Sumer Before the UR III Dynasty (BAR S1676). Oxford, UK: Archaeopress.

De Boer, Rients. 2019. "The Diyala Region as a Linchpin in Early Old Babylonian Trade Networks: A View from Sippar." Unpublished.

de Oliveira, Guilherme, and Carmine Guerriero. 2018. "Extractive States: The Case of the Italian Unification." *International Review of Law and Economics*, 56: 142-159.

Dietler, Michael. 2005. "Comments on Jenning et Al. 'Drinking in a Blissful Mood." Current Anthropology, 46: 289-290. Englund, Robert K. 1998. "Texts from the Late Uruk Period." In: *Mesopotamien: Späturuk-Zeit und Frühdynastische Zeit (Annäherungen 1, Orbis Biblicus et Orientalis 160/1)*, Josef Bauer, Robert K. Englund, and Manfred Krebernik (eds.), Göttingen, DE: Vandenhoeck & Ruprecht.

Fiette, Baptiste. 2018. "Le Domaine Royal de Hammurabi de Babylone. Apports de La Documentation Cunéiforme à l'Histoire Agraire." *Histoire et Sociétés Rurales*, 49: 9-53.

Fleck, Robert K., and F. Andrew Hanssen. 2006. "The Origins of Democracy: a Model with Application to Ancient Greece." *Journal of Law and Economics*, 49: 115-146.

Fleck, Robert K., and F. Andrew Hanssen. 2013. "When Voice Fails: Potential Exit as a Constraint on Government Quality." *International Review of Law and Economics*, 35: 26-41.

Fleming, Daniel E. 2004. *Democracy's Ancient Ancestors: Mari and Early Collective Governance*. Cambridge, UK: Cambridge University Press.

Foster, Benjamin R. 2016. The Age of Agade. Inventing Empire in Ancient Mesopotamia. London, UK: Routledge.

Garfinkle, Steven J. 2010. "Merchants and State Formation in Early Mesopotamia." In: Opening the Tablet Box. Near Eastern Studies in Honor of Benjamin R. Foster, Sarah C. Mellville and Alice L. Slotsky (eds.). Leiden-Boston: Brill.

Garfinkle, Steven J. 2013a. "Ancient Near Eastern City-States." In: Oxford Handbook of the State in the Ancient Near East and the Mediterranean, Peter F. Bang and Walter Scheidel (eds.), Oxford, UK: Oxford University Press.

Garfinkle, Steven J. 2013b. "The Third Dynasty of Ur and the Limits of State Power in Early Mesopotamia." In: From the 21st Century BC to the 21st Century AD. Proceedings of the International Conference on Neo-Sumerian Studies Held in Madrid, 22-24 July, 2010, Steven Garfinkle and Manuel Molina (eds.). Winona Lake, IN: Eisenbrauns. Gelb, Ignace, Piotr Steinkeller, and Richard M. Whiting. 1991. *Earliest Land Tenure Systems in the Near East: Ancient Kudurrus*. Chicago, IL: The Oriental Institute of the University of Chicago.

Grafe, Regina. 2012. Distant Tyranny: Markets, Power, and Backwardness in Spain, 1650-1800. Princeton, NJ: Princeton University Press.

Greenfield, Haskell J. 2013. "The Fall of the House of Flint:' A Zooarchaeological Perspective on the Decline of Chipped Stone Tools for Butchering Animals in the Bronze and Iron Ages in the Southern Levant." *Lithic Technology*, 38: 161-178.

Greif, Avner. 1992. "Institutions and International Trade: Lessons from the Commercial Revolution." *American Economic Review*, 82: 128-133.

Guerriero, Carmine. 2016a. "Endogenous Property Rights." Journal of Law and Economics, 59: 313-358.

Guerriero, Carmine. 2016b. "Endogenous Legal Traditions." International Review of Law and Economics, 46: 49-69.

Guerriero, Carmine. 2016c. "Endogenous Legal Traditions and Economic Outcomes." Journal of Comparative Economics, 44: 416-433.

Guerriero, Carmine. 2019. "Property Rights, Transaction Costs, and the Limits of the Market." Unpublished.

Guerriero, Carmine. 2020. "Endogenous Institutions and Economic Outcomes." *Economica*, 87: 364-405.

Guerriero, Carmine, and Laura Righi. 2021. "The Origins of the State's Fiscal Capacity." Unpublished.

Hamblin, William J. 2006. Warfare in the Ancient Near East to 1600 BC. Holy Warriors at the Dawn of History. London, UK: Routledge. He, Feng. 2011. "Simulating Transient Climate Evolution of the Last Deglatiation with CCSM3." Unpublished.

Heldring, Leander, Robert C. Allen, and Mattia C. Bertazzini. 2020. "The Economic Origins of Government." Unpublished.

Hole, Frank. 1994. "Environmental Instability and Urban Origins." In: Chiefdoms and Early States in the Near East: The Organizational Dynamics of Complexity, Gil Stein and Mitchell S. Rothman (eds.). Madison, WI: Prehistory Press.

Inglehart, Ronald, and Christian Welzel. 2005. Modernization, Cultural Change, and Democracy: The Human Development Sequence. Cambridge, UK: Cambridge University Press.

Kennett, Douglas J. and James P. Kennett. 2006. "Early State Formation in Southern Mesopotamia: Sea Levels, Shorelines, and Climate Change." *Journal of Island and Coastal Archaeology*, 1: 67-99.

Kyriazis, Nicholas C., Xenophon Paparrigopoulos, and Emmanouil-Marios L. Economou.
2015. "The Glue of Democracy: Economics, Warfare and Values in Classical Greece." In: *Essays in Contemporary Economics*, George C. Bitros and Kyriazis Nicholas (eds), Berlin, DE: Springer.

Litina, Anastasia. 2016. "Natural Land Productivity, Cooperation and Comparative Development." *Journal of Economic Growth*, 21: 351-408.

Liverani, Mario. 2014. The Ancient Near East. History, Society, Economy. London, UK: Routledge.

Manning, Sturt W., Carol B. Griggs, Brita Lorentzen, Gojko Barjamovic, Christopher Bronk Ramsey, Bernd Kromer, and Eva M. Wild. 2016. "Integrated Tree-Ring-Radiocarbon High-Resolution Timeframe to Resolve Earlier Second Millennium BCE Mesopotamian Chronology." *PLoS ONE*, 11: 1-27. Marchesi, Gianni, and Nicolò Marchetti. 2011. The Royal Statuary of Early Dynastic Mesopotamia. Winona Lake, IN: Eisenbrauns.

Massa, Michele, and Alessio Palmisano. 2018. "Change and Continuity in the Long-Distance Exchange Networks between Western/Central Anatolia, Northern Levant and Northern Mesopotamia, c. 3200-1600 BCE." *Journal of Anthropological Archaeology*, 49: 65-87.

Mayoral, Laura, and Ola Olsson. 2019. "Pharaoh's Cage: Environmental Circumscription and Appropriability in Early State Development." Unpublished.

Mayshar, Joram, Omer Moav, and Zvika Neeman. 2017. "Geography, Transparency, and Institutions." *American Political Science Review*, 111: 622-636.

Mayshar, Joram, Omer Moav, Zvika Neeman, and Luigi Pascali. 2021. "The Origin of the State: Land Productivity or Appropriability?" Forthcoming, *Journal of Political Economy*.

Miller, Naomi F. 2008. "Sweeter than Wine? The Use of the Grape in Early Western Asia." *Antiquity*, 82: 937-946.

Myerson, Roger B. 2008. "The Autocrat's Credibility Problem and Foundations of the Constitutional State." *American Political Science Review*, 102: 125-139.

Nissen, Hans. J. 1988. The Early History of the Ancient Near East, 9000-2000 B.C. Chicago-London: University of Chicago Press.

North, Douglass C., and Barry R. Weingast. 1989. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England." *Journal of Economic History*, 49: 803-832.

North, Douglass C., John Joseph Wallis, and Barry R. Weingast. 2009. Violence and Social Orders: A Conceptual Framework for Understanding Recorded Human History. Cambridge, UK: Cambridge University Press.

Olsson, Ola, and Christopher Paik. 2016. "Long-Run Cultural Divergence: Evidence From the Neolithic Revolution." *Journal of Development Economics*, 122: 197-213. Oteros, Jose, Herminia García-Mozo, Luis Vázquez, Antonio Mestre, Eugenio Domínguez-Vilches, and Carmen Galán. 2013. "Modelling Olive Phenological Response to Weather and Topography." *Agriculture Ecosystems and Environment*, 179: 62-68.

Palmisano, Alessio. 2018. The Geography of Trade. Landscapes of Competition and Long-distance contacts in Mesopotamia and Anatolia in the Old Assyrian Colony Period. Oxford, UK: Archaeopress.

Paulette, Tate. 2013. "Consumption and Storage in the Bronze Age." In: *Models of Mesopotamian Landscapes.* Tony J. Wilkinson, McGuire Gibson and Magnus Widell (eds.), Oxford, UK: Archaeopress.

Postgate, J. Nicholas 1992. Early Mesopotamia: Society and Economy at the Dawn of History. London, UK: Routledge.

Powell, Marvin A. 1996. "Wine and the Vine in Ancient Mesopotamia: The Cuneiform Evidence." In: *The Origins and Ancient History of Wine*, Patrick E. McGovern, Stuart J. Fleming and Solomon H. Katz (eds.), Amsterdam, NL: Gordon & Breach.

Reid, John Nicholas. 2015. "Runaways and Fugitive-Catchers during the Third Dynasty of Ur." Journal of the Economic and Social History of the Orient, 58: 576-605

Richardson, Seth. 2011. "Mesopotamia and the 'New' Military History." In: *Recent Directions in the Military History of the Ancient World*, Lee L. Brice and Jennifer T. Roberts (eds.), Claremont, CA: Regina Books.

Riehl, Simone, Konstantin E. Pustovoytov, Heike Weippert, Stefan Klett, and Frank Hole. 2014. "Drought Stress Variability in Ancient Near Eastern Agricultural Systems Evidenced by $\Delta 13$ C in Barley Grain." *Proceedings of the National Academy of Sciences*, 111: 12348-12353.

Ristvet, Lauren. 2017. "Assyria in the Third Millennium BCE." In: A Companion to Assyria, Eckart Frahm (ed.), New York, NY: Wiley-Blackwell.

Roth, Martha T. 1997. Law Collections from Mesopotamia and Asia Minor. Atlanta, GA: Scholars Press.

Sallaberger, Walther, and Ingo Schrakamp. 2015. "Part 1: Philological Data for a Historical Chronology of Mesopotamia in the 3rd Millennium." In: *ARCANE III. History And Philology*, Walther Sallaberger and Ingo Schrakamp (eds.), Turnhout, BE: Brepols.

Serna-Saldivar, Sergio O. 2010. Cereal Grains: Properties, Processing, and Nutritional Attributes. Boca Raton, FL: CRC Press.

Sinha, Ashish et al. 2019. "Role of Climate in the Rise and Fall of the Neo-Assyrian Empire." *Science Advances*, 5: eaax6656.

Staubwasser, Michael, and Harvey Weiss. 2006. "Holocene Climate and Cultural Evolution in Late Prehistoric-Early Historic West Asia." *Quaternary International*, 66: 372-387.

Steinkeller, Piotr. 1999. "Land-Tenure Conditions in Third Millennium Babylonia: The Problem of Regional Variation." In: *Urbanization and Land Ownership in the Ancient Near East*, Michael Hudson and Baruch A. Levine (eds.), Cambridge, MA: Peabody Museum, Harvard University.

Steinkeller, Piotr. 2015. "Introduction. Labor in the Early States: An Early Mesopotamian Perspective." In: Labor in the Ancient World: A Colloquium held at Hirschbach (Saxony), April 2005 (The International Scholars Conference on Ancient Near Eastern Economies, 5), Piotr Steinkeller and Michael Hudson (eds.), Dresden, DE: ISLET-Verlag.

Steinkeller, Piotr. 2018. "The Reluctant En of Inana — or the Persona of Gilgameš in the
Perspective of Babylonian Political Philosophy." *Journal of Ancient Near Eastern History*,
5: 149-177.

Steinkeller, Piotr. 2019. "Babylonian Priesthood during the Third Millennium BCE: Between Sacred and Profane." *Journal of Ancient Near Eastern Religions*, 19: 112-151.

Storie, Earl R. 1978. Index Soil Rating. Berkeley, CA: University of California Press.

Van de Mieroop, Marc. 2015. "Production and Commerce in the Old Babylonian Period." *Rivista Di Storia Economica*, 31: 79-96.

Veenhof, Klaas R. 2013. "New Mesopotamian Treaties from the Early Second Millennium BC from Karum Kanesh and Tell Leilan (Šehna)." *Journal for Ancient Near Eastern and Biblical Law*, 19: 23-57.

Voigtländer, Nico, and Hans-Joachim Voth. 2009. "Malthusian Dynamism and the Rise of Europe: Make War, Not Love." *American Economic Review*, 99: 248-254.

Weiss, Harvey. 2017. "4.2 ka BP Megadrought and the Akkadian Collapse." In: *Megadrought* and Collapse, Harvey Weiss (ed.), Oxford, UK: Oxford University Press.

Westbrook, Raymond. 2003. "Old Babylonian Period." In: A History of Ancient Near Eastern Law, Raymond Westbrook (ed.), Boston: Brill.

Westenholz, Aage. 2002. "The Sumerian City-State." In: A Comparative Study of Six City-State Cultures. An Investigation Conducted by the Copenhagen Polis Centre, Mogens
H. Hansen (ed.), Copenhagen, DK: The Royal Danish Academy of Sciences and Letters.

Widell, Magnus, Carrie Hritz, Jason A. Ur, and Tony J. Wilkinson. 2013. "Land Use of the Model Communities." In: *Models of Mesopotamian Landscapes*, Tony J. Wilkinson, McGuire Gibson and Magnus Widell (eds.), Oxford, UK: Archaeopress.

Wilcke, Claus. 2007. Early Ancient Near Eastern Law. A History of Its Beginnings: The Early Dynastic and Sargonic Periods. 2nd ed. Winona Lake, IN: Eisenbrauns.

Wilkinson, Toby C. 2014. Tying the Threads of Eurasia. Trans-Regional Routes and Material Flows in Transcaucasia, Eastern Anatolia and Western Central Asia, c. 3000-1500BC. Leiden, NL: Sidestone Press.

Wilkinson, Tony J., Louise Rayne, and Jaafar Jotheri. 2015. "Hydraulic Landscapes in Mesopotamia: The Role of Human Niche Construction." *Water History*, 7: 397-418.

Winters, Ryan D. 2019. Negotiating Exchange: Ebla and the International System of the Early Bronze Age. PhD Dissertation, Harvard University, Boston, MA.

Wittfogel, Karl 1957. Oriental Despotism. A Comparative Study of Total Power. New York, NY: Random House.

Yoffee, Norman. 2005. Myths of the Archaic State. Evolution of the Earliest Cities, States, and Civilizations. Cambridge, UK: Cambridge University Press.

Yoffee, Norman, and Gojko Barjamovic. 2018. "Old Assyrian Trade and Economic History." In: *Grenzüberschreitungen. Studien zur Kulturgeschichte des Alten Orients. Festschrift für Hans Neumann Anlässich Seines 65*, Susanne Paulus, Kristin Kleber and Geörg Neumann (eds.), Münster, DE: Zaphon.

Yoffee, Norman, and Andrea Seri. 2019. "Negotiating Fragility in Ancient Mesopotamia: Arenas of Contestation and Institutions of Resistance." In: *The Evolution of Fragility: Setting the Terms*, Norman Yoffee (ed.), Cambridge, UK: Cambridge University Press.

Zhao, Chuang, et al. 2017. "Temperature Increase Reduces Global Yields of Major Crops in Four Independent Estimates." *Proceedings of the National Academy of Sciences of the United States of America*, 114: 9326-9331.

Ziegler, Nele. 2008. "Samsô-Addu et Ses Soldats." In: *Les Armées du Proche-Orient Ancien (BAR S1855)*, Philippe Abrahami and Laura Battini (eds.). Oxford, UK: Archaeopress.

Zohary, Daniel. 1996. "The Domestication of the Grapevine Vitis Vinifera L. in the Near East." In: *The Origins and Ancient History of Wine*, Patrick E. McGovern, Stuart J. Fleming and Solomon H. Katz (eds.), Amsterdam, NL: Gordon & Breach.

Tables and Figures

Table 1: The Sample — Major Bronze Age Mesopotamian Polities

RAIN-FED FARMING: Abarsal (*Tell Khuera*), Alalakh (*Tell Atchana*), Ashnakkum (*Chagar Bazar*), Ebla (*Tell Mardikh*), Gasur (*Yorgan Tepe*),
Gubla (*Byblos*), Hama (*Hama*), Harran (*Harran*), Hazor (*Tell Hazor*), Kahat (*Tell Barri*), Kanesh (*Kultepe*), Karkemish (*Karkemish*), Nabada (*Tell Beydar*), Nagar (*Tell Brak*), Qattan (*Tell Mishrifeh*), Qattar (*Tell Rimah*), Shashrum (*Tell Shemshara*), Shubat-Enlil (*Tell Leilan*), Tuba (*Umm el-Marra*), Ugarit (*Ras Shamra*), Uribium (*Erbib*), Urkesh (*Tell Mozan*). IRRIGATION FARMING: Adab (*Bismaya*), Ashur (*Qal'aat Sherqat*), Emar (*Tell Meskene*), Eridu (*Abu Shahrein*), Eshnunna (*Tell Asmar*), Girsu (*Tello*), Hattam (*Tell Agrab*), Isin (*Ishan Bahriyat*), Kish (*Tell Uhaimir*), Lagash (*Tell al-Hiba*), Larsa (*Tell Senkereh*), Mari (*Tell Harrin*), Nineveh (*Ninive*), Nippur (*Nuffar*), Shuruppak (*Fara*), Shush (*Susa*), Sippar (*Abu Habbah*), Tuttul (*Tell Bi'a*), Tutub (*Khafqah*), Umm (*Tell Jokha*), Ur (*Tell al-Muqayyar*), Uruk (*Tell al-Warka*).
Note:

The historical names of the polities that constitute the cross-section identifiers are in regular lowercase type, and those of the present-day archaeological sites are in Italic lowercase font.



Figure 1: Farming and Trade in Bronze Age Mesopotamia

Note: 1. The shapes of the Old Assyrian and Old Babylonian trade networks are extrapolated from figure 12.4 of Liverani (2014).



Note: 1. While the left figure is taken from Widell et al. (2013), the right one is collected from Wilkinson et al. (2015).

Tab	le	2:	Sum	mary	of	V	aria	bles
-----	----	----	-----	------	----	---	------	------

	Variable	Definition and Sources	Statistics	
	Political Institutional	Five-point score rising with the division of the decision-making power. Sources: see	2.305	
Institutions	1 onneur-mstitutions.	references listed in the Internet appendix.		
institutions.	Property Pighta	Six-point index increasing with the strength of the farmers' property rights. Sources:	2.231	
	1 topetty-mights.	see references listed in the Internet appendix.	(1.036)	
	Tommometumo	Growing season temperature in Celsius averaged over the previous half-century. Source:	25.837	
Geography:	1emperature:	https://www.earthsystemgrid.org/project/trace.html	(1.647)	
	Vince	Dummy for polities growing, over the previous half-century, the domesticated grapevine.	0.080	
	vine.	Sources: http://www.ademnes.de and references listed in the Internet appendix.	(0.271)	
	Trada Potential	Trade potential calculated through a naive gravity trade model. Source: Liverani	831.05	
	Trade-T otentiat.	(2014).	(1949.49)	
	Rick Sharing	Proxy for the payoff from sharing consumption risk with neighboring polities via trade.	1.009	
	nusk-bharing.	Source: https://www.earthsystemgrid.org/project/trace.html	(0.045)	
Extra	External Conflicts:	Number of external conflicts over the previous half-century. Sources: see references	0.301	
Controls:	Effernal-Confilers.	listed in the Internet appendix.	(1.469)	
	Internal Conflictor	Dummy for uprisings and/or rebellions over the previous half-century. Sources: see	0.029	
	Internal-Conflicts.	references listed in the Internet appendix.	(0.169)	
	Polita Sizos	Estimated settled area of the polity in ha over the previous half-century. Sources: see	50.621	
	1 only-bize.	references listed in the Internet appendix.	(79.871)	
	Public Buildings	Number of public and ritual buildings built over the previous half-century. Sources: see	1.085	
Public good	1 uone-Danamys.	references listed in the Internet appendix.	(1.831)	
provision:	Armai	Dummy for polities that set up, over the previous half-century, a conscripted army.	0.414	
	Aimy.	Sources: see references listed in the Internet appendix.	(0.493)	

Note: 1. The last column reports the mean value and, in parentheses, the standard deviation of each variable. Both are computed building on the sample used in tables 3 to 5.



Figure 3: Political Institutions, Property Rights and Public Good Provision

Note: 1. See table 1 for the definition of the two groups of polities and table 2 for the definition and sources of each variable.



Note: 1. See table 1 for the definition of the two groups of polities and table 2 for the definition and sources of each variable.

	(1)	(2)	(3)	(4)
		The dep	endent variable is:	
	Political-Institutions	Property-Rights	Public-Buildings	Army
Delitional Institutions			0.393	0.072
Foundat-Institutions			(0.201)*	(0.031)**
			- 0.113	- 0.002
Property-Rights			$(3) \\ e \text{ dependent variable is: } \\ Public-Buildings \\ 0.393 \\ (0.201)^* \\ - 0.113 \\ (0.171) \\ - 0.467 \\ (0.403) \\ 0.321 \\ (0.254) \\ OLS \\ 0.18 \\ 0.18 \\ (0.18) \\ 0.18$	(0.025)
— •	- 1.535	- 1.123	- 0.467	0.260
Temperature	$(0.568)^{***}$	$(0.667)^*$	(0.403)	(0.189)
17.	0.407	0.420	0.321	0.060
Vine	(0.292)	$(0.189)^{**}$	(0.254)	(0.090)
			OLS	
Within R ²	0.10	0.09	0.18	0.51
N I COL	1100	1100	1100	1100

Table 3: Endogenous Institutions and Public	c Good Provision
---	------------------

 within K
 0.10
 0.09
 0.18

 Number of Observations
 1188
 1188
 1188

 Notes:
 1.
 Standard errors clustered at the polity level in parentheses. *** denotes significant at the 1% confidence level; **, 5%; *, 10%.

 2.
 All specifications include polity and half-century fixed effects.

Table 4:	Endogenous	Institutions	and Public	Good Provision	- Controlling for	r Observables
----------	------------	--------------	------------	----------------	-------------------	---------------

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Pan	el A. The depe	ndent variable	e is:		
	Political-	Property-	Public-	Army	Political-	Property-	Public-	Army
	Institutions	Rights	Buildings		Institutions	Rights	Buildings	
Political Institutions			0.389	0.071			0.401	0.071
1 outcat-institutions			$(0.205)^*$	(0.032)**			$(0.200)^{**}$	$(0.031)^{**}$
Deservative Distant			- 0.130	- 0.012			- 0.182	- 0.005
1 topet ty-mynus			(0.167)	(0.028)			(0.157)	(0.026)
<i>T</i>	- 3.927	- 3.449	0.889	1.594	- 1.598	- 1.144	- 0.378	0.240
Temperature	$(0.846)^{***}$	$(1.157)^{***}$	(1.204)	$(0.336)^{***}$	$(0.598)^{**}$	(0.700)	(0.413)	(0.185)
Vino	0.396	0.409	0.323	0.060	0.360	0.361	0.198	0.055
VIIIE	(0.286)	$(0.185)^{**}$	(0.247)	(0.093)	(0.291)	$(0.190)^*$	(0.313)	(0.091)
Trada Potential	0.00015	0.00017	0.00008	0.00005				
11uue-1 otentiui	$(0.00003)^{***}$	$(0.00004)^{***}$	(0.00007)	$(0.00001)^{***}$				
Pick Shamina	- 91.067	- 88.952	48.622	48.070				
nisk-Sharing	$(24.617)^{***}$	(36.675)**	(36.262)	$(10.147)^{***}$				
Enternal Conflicts					0.092	0.114	0.278	0.014
External-Conflicts					$(0.050)^*$	$(0.054)^{**}$	$(0.112)^{**}$	(0.007)**
Internal Conflicts					0.262	0.118	- 0.460	0.057
Internal-Conflicts					(0.265)	(0.290)	(0.514)	(0.037)
				OL	S			
Within R ²	0.14	0.14	0.18	0.54	0.12	0.12	0.23	0.52
Number of Observations	1188	1188	1188	1188	1188	1188	1188	1188
			Pan	el B. The depe	ndent variable	e is:		
	Political-	Property-	Public-	Army	Political-	Property-	Public-	Army
	Institutions	Rights	Buildings		Institutions	Rights	Buildings	5
		5	0.353	0.065		0	0.349	0.072
Political-Institutions			$(0.196)^*$	(0.030)**			$(0.183)^*$	(0.031)**
D . D. I.			- 0.142	- 0.007			- 0.170	- 0.015
Property-Rights			(0.165)	(0.026)			(0.141)	(0.028)
_	- 1.465	- 1.055	- 0.471	0.259	- 4.157	- 3.530	0.689	1.597
Temperature	$(0.547)^{***}$	$(0.639)^*$	(0.368)	(0.183)	$(0.881)^{***}$	(1.183)***	(1.164)	(0.335)***
	0.311	0.327	0.225	0.043	0.301	0.323	- 0.012	0.059
Vine	(0.287)	(0.159)**	(0.244)	(0.089)	(0.291)	$(0.178)^*$	(0.312)	(0.097)
	()	()	(-)	()	0.00005	0.0001	- 0.0003	0.00005
Trade-Potential					(0.00008)	$(0.0001)^*$	(0.0001)**	$(0.00003)^*$
D: L CL ·					- 97.307	- 91.328	38.718	48.236
Risk-Sharing					$(24.457)^{***}$	(36.273)**	(32.962)	$(10.193)^{***}$
					0.077	ò.099	0.276	0.012
External-Conflicts					(0.049)	$(0.052)^*$	(0.113)**	(0.006)**
					0.174	0.039	- 0.728	0.003
Internal-Conflicts					(0.276)	(0.300)	(0.490)	(0.039)
	0.004	0.004	0.005	0.0009	Ò.003 Ó	Ò.002 ´	Ò.010 ´	- 0.0002
Polity-Size	$(0.001)^{***}$	$(0.001)^{***}$	$(0.002)^{**}$	(0.0004)**	(0.002)	(0.002)	$(0.003)^{***}$	(0.0008)
	. /	. /	. /	OL	S	. /	. /	. /
Within R ²	0.14	0.13	0.21	0.52	0.16	0.17	0.28	0.54
Number of Observations	1188	1188	1188	1188	1188	1188	1188	1188
				ale ale ale 🔹 📩	1 10			

 Standard errors clustered at the polity level in parentheses. *** denotes significant at the 1% confidence level; **, 5%; *, 10%.

 All specifications include polity and half-century fixed effects.

 1. 2.

Table 5: Using	Selection	on Observabl	es to Assess	s the Bias	from Unobservables
----------------	-----------	--------------	--------------	------------	--------------------

	(1)	(2)	(3)	(4)
		The dep	endent variable is	
	Political-Institutions	Property-Rights	Public-Buildings	Army
The index is calculated for				
Political-Institutions			7.93	71
Property-Rights			2.98	1.15
Temperature	1.59	1.47		
Vine	2.84	3.33		

The restricted set of controls includes those employed in the specifications reported in table 3, whereas the "full set" of covariates incorporates those used in the specifications listed in columns (5) to (8) of panel B of table 4. The sample size is always 1188. Note: 1.

APPENDIX (FOR ONLINE PUBLICATION)

Ι Supplementary Tables

	Variable	Definition and Sources	Statistics
	Constraints-on-Executive:	See text. Sources: see references listed in the Internet appendix.	2.539
	Private-Rights:	Indicator equal to one for mostly dominated polities and to values between two and four otherwise, i.e., two in the absence of any private right, three (four) if farmers had <i>de facto</i> (<i>de jure</i>) property rights. Sources: see references listed in the	(1.361) 2.174 (0.871)
Institutions:	Political-Inst-D:	Internet appendix. Dummy equal to one when <i>Political-Institutions</i> is strictly greater than two. Sources: see references listed in the Internet appendix.	0.320 (0.467)
	Property-Rights-D:	Dummy equal to one when <i>Property-Rights</i> is strictly greater than two. Sources: see references listed in the Internet appendix.	0.287 (0.453)
	Political-Inst-F:	Political-Institutions lead one time period. Sources: see references listed in the Internet appendix.	2.305 (1.088)
	Property-Rights- F :	<i>Property-Rights</i> lead one time period. Sources: see references listed in the Internet appendix.	2.227 (1.067)
	Temperature-A:	Temperature calculated considering the alternative location of Abarsal. Source: https://www.earthsystemgrid.org/project/trace.html	25.804 (1.666)
	Temperature-T:	See text. Source: https://www.earthsystemgrid.org/project/trace.html	17.460 (7.664)
	Crops:	See text. Sources: http://www.gaez.iiasa.ac.at/ and https://www.earthsystemgrid.org project/trace.html	(1.004) 0.629 (0.239)
	Wheat:	See text. Sources: http://www.gaez.iiasa.ac.at/ and https://www.earthsystemgrid.org project/trace.html	0.577 (0.270)
	Barley:	See text. Sources: http://www.gaez.iiasa.ac.at/ and https://www.earthsystemgrid.org project/trace.html	0.621 (0.242)
Geography:	Olive:	See text. Sources: http://www.gaez.iiasa.ac.at/ and https://www.earthsystemgrid.org project/trace.html	$0.126 \\ (0.285)$
	Cereals:	See text. Sources: http://www.gaez.iiasa.ac.at/ and https://www.earthsystemgrid.org project/trace.html	$\begin{array}{c} 0.551 \\ (0.314) \end{array}$
	Climate- $Volatility$:	Normalized—to range between zero and one—first principal component extracted from the mean thermal excursion in Celsius between hottest and coldest—above 0— months of the year and the ratio of the gap between large scale and convective precipitation of the wettest and driest months to the mean, both averaged over the previous half-century. Source: https://www.earthsystemgrid.org/project/trace.html	$ \begin{array}{c} 0.681 \\ (0.246) \end{array} $
	Rainfall:	Growing season large scale and convective previous half-century. Source: https://www.earthsystemgrid.org/project/trace.html	5.091 (5.311)
	Political-Inst-N:	See text. Sources: see references listed in the Internet appendix.	2.289 (0.417)
	Property- $Rights$ - N :	See text. Sources: see references listed in the Internet appendix.	2.222 (0.414)
Extra	Imports:	See text. Sources: see references listed in the Internet appendix.	2.636 (2.299)
controls:	$Merchant\mathchant\mathchant\mathchant\mathchant\mathchant\mathchan\mathc$	See text. Sources: see references listed in the Internet appendix.	(0.022) (0.146)
	Trade-Network:	See text. Sources: see references listed in the Internet appendix.	31.468 (125.057)
	Young-King:	See text. Sources: see references listed in the Internet appendix.	(0.122) (0.230)
Public good provision:	Public- $Buildings$ - A :	Public-Buildings calculated considering the alternative location of Abarsal. Sources: see references listed in the Internet appendix.	1.069 (1.791)
Note: 1.	The last column reports the	mean value and, in parentheses, the standard deviation of each variable. Both are compute	d building

Table I: Summary of Variables

on the sample used in tables II to VIII.

Table II: Considering the Alternative Location of Abarsal

	(1)	(2)	(3)	(4)
		The dep	endent variable is:	
	Political-Institutions	Property-Rights	Public- $Buildings$ - A	Army
Political Institutions			0.341	0.072
Founcal-Institutions			(0.180)*	$(0.030)^{**}$
Deserved Dishts			- 0.083	- 0.002
Froperty-Rights			(0.162)	(0.025)
<i>T</i>	- 1.419	- 1.062	- 0.508	0.258
1 emperature-A	$(0.548)^{***}$	(0.657)	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	(0.184)
17:	0.407	0.420	0.325	0.060
vine	(0.292)	$(0.189)^{**}$	(0.248)	(0.090)
			OLS	
Within R ²	0.09	0.09	0.17	0.51
Number of Observations	1188	1188	1188	1188
Notes: 1. The estimat	es are obtained identifying	Abarsal with the archaeolo	ogical site of Tell Bazi-Banat (Winters, 2019).

1.

The estimates are obtained identifying Abarsal with the archaeological site of Tell Bazi-Banat (Winters, 2019). Standard errors clustered at the polity level in parentheses. *** denotes significant at the 1% confidence level; **, 5%; *, 10%. All specifications include polity and half-century fixed effects. 2. 3.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			Pa	anel A. The dep	endent variable	is:		
	Political-	Property-	Public-	Army	Political-	Property-	Public-	Army
	Institutions	Rights	Buildings		Institutions	Rights	Buildings	
Political Institutions			0.412	0.086			0.390	0.073
Founcal-Institutions			$(0.208)^{**}$	$(0.031)^{***}$			$(0.201)^*$	$(0.031)^{**}$
Promonta Piahta			- 0.125	- 0.013			- 0.112	- 0.002
1 topetty-nights			(0.176)	(0.027)			(0.171)	(0.026)
Tomponature T	- 1.153	- 0.440	0.512	0.575				
remperature-1	$(0.410)^{***}$	(0.404)	(0.770)	$(0.148)^{***}$				
Crons					- 44.478	- 33.242	- 23.640	8.580
01093					$(16.518)^{***}$	$(16.881)^*$	(18.400)	(6.633)
Vine	0.361	0.407	0.348	0.086	0.378	0.398	0.304	0.066
VIIIC	(0.283)	$(0.186)^{**}$	(0.266)	(0.096)	(0.291)	$(0.184)^{**}$	(0.259)	(0.090)
				0	LS			
Within R ²	0.10	0.09	0.18	0.53	0.10	0.09	0.18	0.51
Number of Observations	1188	1188	1188	1188	1188	1188	1188	1188
			P;	anel B. The dep	endent variable	is.		
	Political-	Pronertu-	Public-	Armu	Political-	Propertu-	Public-	Armu
	Institutions	Rights	Buildinas	3	Institutions	Rights	Buildinas	
			0.391	0.072			0.390	0.073
Political-Institutions			$(0.202)^*$	(0.031)**			$(0.201)^*$	(0.031)**
			- 0.112	- 0.002			- 0.112	- 0.002
Property-Rights			(0.171)	(0.025)			(0.171)	(0.026)
	- 38.919	- 27.841	- 19.288	7.526			(0.2.2)	(0.0=0)
Wheat	(15.616)**	$(15.759)^*$	(19.336)	(6.178)				
	()	()	()	()	- 44.750	- 33.040	-22.970	9.050
Barley					(16.139)***	$(16.791)^*$	(19.018)	(6.669)
T.C.	0.375	0.398	0.304	0.067	0.376	0.397	0.303	0.067
Vine	(0.293)	(0.186)**	(0.261)	(0.090)	(0.291)	(0.184)**	(0.260)	(0.090)
	. /	()	. /	<u> </u>	LS	. /	· /	(/
Within B ²	0.10	0.09	0.18	0.51	0.10	0.09	0.18	0.51
Number of Observations	1188	1188	1188	1188	1188	1188	1188	1188
			D		. 1	•		
	D 1.1. I	D (P II'	anei C. The dep	endent variable	2 1S:	D 11'	4
	Political-	Property-	Public-	Army	Political-	Property-	Public-	Army
	Institutions	Rights	Dunaings	0.072	Institutions	Rights	Dunuings	0.070
Political-Institutions			0.389	0.073			0.393	0.072
			$(0.203)^{+}$	(0.031)**			$(0.201)^{+}$	(0.031)**
Property-Rights			- 0.110	- 0.003			- 0.113	- 0.002
	40.014	00 000	(0.172)	(0.025)			(0.171)	(0.025)
Olive	- 42.914 (15 050)***	-23.000	-2(.514)	9.972				
	$(15.050)^{+++}$	$(12.793)^*$	(52.714)	(0.043)	1 700	1 100	0.449	0.004
Temperature					- 1.700	-1.122	- 0.446	0.294
	0.291	0.408	0.201	0.067	0.005)	0.134)	(0.903)	(0.210)
Vine	(0.270)	0.408	(0.200)	(0.080)	(0.280)	0.420	(0.321)	(0.000)
	(0.270)	(0.100)	(0.230)	(0.069)	7 720	0.109)	0.200	1 505
Cereals					(17 210)	- 0.044 (14.024)	- 0.009	- 1.090
				0	1.5	(14.034)	(31.110)	(7.030)
W:1: D2	0.00	0.00	0.18	0.51	0.10	0.00	0.18	0.51
Witnin K"	1100	1100	1100	1100	1100	1100	1100	1100
number of Observations	1188	1188	1188	1188	1188	1188	1188	1188

Table III: Alternative Measures of the Expected Return on Farming and Its Opacity

 Notes:
 1.
 Standard errors clustered at the polity level in parentheses. *** denotes significant at the 1% confidence level; **, 5%; *, 10%.
 2.
 All specifications include polity and half-century fixed effects.

Table IV: Alternative Cardinal Measures of Institutions

	(1)	(2)	(3)	(4)	(5)	(6)	
	The dependent variable is:						
	Constraints-on-	Private-Rights	Public-Buildings	Public-Buildings	Army	Army	
	Executive	-		-		-	
Constraints on Emocuting			0.176		0.027		
Constraints-on-Executive			$(0.088)^{**}$		(0.023)		
Political Institutions				0.441		0.086	
1 ouncal-mistications				$(0.239)^*$		(0.037)**	
Privato Piahto				- 0.193		- 0.021	
1 noure-mignes				(0.259)		(0.041)	
Promonta Piahto			0.054		0.034		
1 topet ty-ttights			(0.122)		$(0.019)^*$		
<i>Tt</i>	- 1.737	- 1.455	- 0.576	- 0.548	0.236	0.253	
1 emperature	$(0.716)^{**}$	$(0.548)^{***}$	(0.384)	(0.384)	(0.186)	(0.185)	
Vin -	0.445	0.365	0.332	0.325	0.062	0.061	
vine	(0.417)	$(0.213)^*$	(0.228)	(0.260)	(0.091)	(0.089)	
			0	LS			
Within R ²	0.10	0.11	0.17	0.18	0.51	0.51	
Number of Observations	1188	1188	1188	1188	1188	1188	

 Notes:
 1.
 Standard errors clustered at the polity level in parentheses. *** denotes significant at the 1% confidence level; **, 5%; *, 10%.

 2.
 All specifications include polity and half-century fixed effects.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				The de	ependent vari	able is:			
	Political-	Property-	Political-	Property-	Public-	Army	Army	Public-	Army
	Institutions	Rights	Inst-D	Rights-D	Buildings	-		Buildings	
Political-Institutions							0.924	0.323	0.050
1 00000000 100000000000							$(0.240)^{***}$	$(0.159)^{**}$	$(0.026)^*$
Property-Bights							- 0.031	- 0.072	0.008
1 roperty ingine							(0.246)	(0.133)	(0.024)
Political-Inst-D					0.630	0.097			
1 0100000 11000 2					$(0.265)^{**}$	$(0.058)^*$			
Property_Bights_D					0.218	0.162			
1 toperty-mights-D					(0.262)	$(0.057)^{***}$			
Political-Inst-F								0.114	0.035
1 ottical-inst-i								(0.172)	(0.027)
Property Rights F								- 0.071	- 0.017
1 Toperty-Itights-1								(0.138)	(0.027)
Tomponature	- 3.478	- 3.473	- 3.251	- 4.168	- 0.414	0.324	1.380	- 0.507	0.247
remperature	$(1.304)^{***}$	$(1.770)^{**}$	$(1.189)^{***}$	$(1.191)^{***}$	(0.672)	$(0.147)^{**}$	(1.869)	(0.412)	(0.190)
Vinc	1.160	1.035	1.096	0.746	0.293	0.051	0.320	0.314	0.057
vine	(0.866)	$(0.592)^*$	$(0.413)^{***}$	$(0.393)^*$	(0.231)	(0.051)	(0.467)	(0.260)	(0.089)
	Ordere	d Logit	Logit	Logit	OLS	OLS	Logit	OLS	OLS
Pseudo R ²	0.09	0.09			0.19	0.54		0.18	0.51
# of Observations	3537	12727	1107	1161	1188	1188	1161	1188	1188

Table V	<i>V</i> :	Ordinal	Measures	of	Institutions	and	Reverse	Causality
---------	------------	---------	----------	----	--------------	-----	---------	-----------

 Standard errors (clustered at the polity level) in the parentheses of columns (3) to (7) ((1), (2), (8) and (9)).
 *** denotes significant at the 1% confidence level; **, 5%; *, 10%.

 All specifications include polity and half-century fixed effects.
 The fixed effects ordered Logit estimates are obtained via the 'blow-up and cluster' Baetschmann et al.'s (2015) estimator.

 Notes: 1.

2.

3.

Table VI: Wild Bootstrapped Standard Errors

	(1)	(2)	(3)	(4)	
		The dep	endent variable is:		
	Political-Institutions	Property-Rights	Public-Buildings	Army	
Political Institutions			0.393	0.072	
1 Onneal-Institutions			$(1.919)^*$	$(2.316)^{**}$	
Promonta Diahta			- 0.113	- 0.002	
1 roperty-mignes			(- 0.652)	(- 0.083)	
Tomponature	- 1.535	- 1.123	- 0.467	0.260	
remperature	(- 2.652)***	(- 1.653)*	(- 1.136)	(1.350)	
Vinc	0.407	0.420	0.321	0.060	
Vine	(1.368)	(2.183)**	(1.240)	(0.659)	
			OLS		
Within R ²	0.10	0.09	0.18	0.51	
Number of Observations	1188	1188	1188	1188	

T-test obtained from wild bootstrapped standard errors clustered at the polity level in parentheses. *** denotes significant at the 1% confidence level; **, 5%; *, 10%. All specifications include polity and half-century fixed effects. Notes: 1.

2.

Table VII: Allowing for Spatial Correlation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				The depende	ent variable is:			
	Political-	Property-	Public-	Army	Political-	Property-	Public-	Army
	Institutions	Rights	Buildings		Institutions	Rights	Buildings	
Political Institutions			0.393	0.072			0.393	0.072
1 outreat-mstitutions			$(0.111)^{***}$	$(0.028)^{**}$			$(0.156)^{**}$	$(0.041)^*$
Promonta Piahto			- 0.113	- 0.002			- 0.113	- 0.002
1 toperty-mignes			(0.068)	(0.021)			(0.125)	(0.020)
Tomponature	- 1.535	- 1.123	- 0.467	0.260	- 1.535	- 1.123	- 0.467	0.260
Temperature	$(0.727)^{**}$	(0.811)	(0.470)	(0.207)	$(0.755)^{**}$	(0.723)	(0.288)	(0.168)
Vinc	0.407	0.420	0.321	0.060	0.407	0.420	0.321	0.060
vine	$(0.183)^{**}$	$(0.122)^{***}$	$(0.188)^*$	(0.052)	$(0.221)^*$	$(0.194)^{**}$	(0.270)	(0.108)
				C	LS			
Within R ²	0.10	0.09	0.18	0.51				
Number of Observations	1188	1188	1188	1188	1188	1188	1188	1188

Driscoll-Kraay (Conley's (1999)) standard errors in the parentheses of columns (1) to (4) ((5) to (8)). *** denotes significant at the 1% confidence level; **, 5%; *, 10%. Notes: 1.

2.All specifications include polity and half-century fixed effects, Trade-Potential, External-Conflicts, Internal-Conflicts and Polity-Size

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	()	()	Pa	nel A. The dep	endent variable	e is:	()	()
	Political- Institutions	Property- Rights	Public- Buildings	Army	Political- Institutions	Property- Rights	Public- Buildings	Army
Political-Institutions			0.418 (0.203)**	$0.072 \\ (0.032)^{**}$			$0.424 \\ (0.200)^{**}$	$0.085 \\ (0.032)^{***}$
Property-Rights			-0.112 (0.167)	-0.003 (0.025)			-0.116 (0.167)	- 0.012 (0.028)
Temperature	- 1.035 (0.485)**	-0.711 (0.537)	- 0.950 (0.441)**	$0.116 \\ (0.188)$	- 0.911 (0.456)**	-0.564 (0.570)	- 1.188 (0.449)**	0.175 (0.171)
Vine	$\begin{array}{c} 0.345 \\ (0.294) \end{array}$	$0.368 \\ (0.203)^*$	$0.366 \\ (0.240)$	$0.066 \\ (0.088)$	$\begin{array}{c} 0.320 \\ (0.287) \end{array}$	$\begin{array}{c} 0.323 \\ (0.201) \end{array}$	0.419 (0.239)*	$0.068 \\ (0.088)$
Climate-Volatility	-4.351 (1.401)***	- 3.969 (1.668)**	2.976 (1.657)*	-0.815 (0.498)				
Rainfall	$ \begin{array}{c} 0.036 \\ (0.031) \end{array} $	$\begin{array}{c} 0.028 \\ (0.034) \end{array}$	-0.047 (0.034)	- 0.023 (0.007)***				
Political-Inst-N					0.592 (0.381)	-0.111 (0.300)	-0.656 (0.472)	- 0.232 (0.114)**
Property- $Rights$ - N					- 0.057 (0.344)	0.677 (0.278)**	- 0.009 (0.445)	0.172 (0.104)
	0.10	0.11	0.10	0.50	LS	0.11	0.10	0.50
Within R ²	0.12	0.11	0.19	0.52	0.12	0.11	0.19	0.52
Number of Observations	1188	1188	1100	1188	1100	1188	1188	1168
	D 1'1' 1	D (Pa	nel B. The dep	endent variable	e is:	D 11'	4
	Political- Institutions	Property- Rights	Public- Buildings	Army	Political- Institutions	Property- Rights	Public- Buildings	Army
Political-Institutions			0.288	0.054			0.409	0.072
			(0.188)	(0.028)*			0.156	(0.031)**
Property-Rights			- 0.103	(0.024)			- 0.150	(0.002)
	- 1.393	- 1.004	- 0.210	0.303	- 1.546	- 1.139	- 0.500	0.260
Temperature	(0.575)**	(0.674)	(0.380)	(0.184)	(0.575)***	(0.682)*	(0.409)	(0.188)
Vin -	ò.359 ´	0.380	0.221	0.043	0.237	0.181	0.184	Ò.060 Ó
vine	(0.271)	$(0.174)^{**}$	(0.236)	(0.081)	(0.320)	(0.207)	(0.235)	(0.092)
Imports	0.110	0.092	0.318	0.054				
Imports	$(0.028)^{***}$	$(0.030)^{***}$	$(0.061)^{***}$	$(0.012)^{***}$				
Merchant-Institutions					1.154	1.629	1.006	0.001
				0	(0.444)**	$(0.646)^{**}$	$(0.481)^{**}$	(0.082)
H7:11: D2	0.12	0.11	0.99	0.55	0.10	0.12	0.10	0.51
Number of Observations	1188	1188	1188	1188	1188	1188	1188	1188
Number of Observations	1100	1100	1100 D.		1100	1100	1100	1100
	Political	Property	Public	Armu	Political	Propertu	Public	Arma
	Institutions	Rights	Buildinas	Army	Institutions	Rights	Buildinas	Army
Political-Institutions			0.377	0.064			0.399	0.078
Property-Rights			(0.202) - 0.117 (0.169)	-0.004			-0.114	-0.002 (0.025)
Temperature	-1.459	-1.054	-0.440	(0.020) (0.183)	- 0.977 (0.482)**	-0.646	-0.540	(0.196) (0.171)
	0.483	0.490	0.386	0.091	0.290	0.320	0.336	0.073
Vine	$(0.256)^*$	$(0.150)^{***}$	(0.256)	(0.086)	(0.279)	$(0.179)^*$	(0.262)	(0.092)
Trade-Network	0.0016 (0.0005)***	0.0015 (0.0004)***	0.0012 (0.0006)**	0.0006 (0.0002)***	. /	. /	. /	. /
Young-King			·	-	- 1.981 (0.344)***	- 1.694 (0.317)***	0.293 (0.588)	0.256 (0.135)*
				0	LS`	. /	. /	. /
Within R ²	0.12	0.11	0.18	0.53	0.13	0.12	0.18	0.52
Number of Observations	1188	1188	1188	1188	1188	1188	1188	1188

Table VIII: Alternative Control Variables

 Notes:
 1.
 Standard errors clustered at the polity level in parentheses. *** denotes significant at the 1% confidence level; **, 5%; *, 10%.

 2.
 All specifications include polity and half-century fixed effects.

Polity	Political-Institutions and Constraints-on-Executive	Property-Rights and Private-Rights
Abarsal	Archi (2015b); Sallaberger (2011).	Sallaberger (2014); Milano (1996); Archi (1998a); Catagnoti (2003).
Adab	Sallaberger and Schrakamp (2015); Marchesi and Marchetti (2011).	Wilcke (2007); Renger (1995).
Alalakh	Lauinger (2015); Archi (2006); Welton et al. (2011); Bonechi (2016b); Astour (2002); Klengel (1992).	Lauinger (2015).
Ashnakkum	McMahon (2009); Archi (1998a); Ristvet (2008); Tunca and Baghdo (2008).	Tunca and Baghdo (2008); Lacambre (2010); Lafont (2000); Ristvet (2008).
Ashur	Sallaberger and Schrakamp (2015); Veenhof and Eidem (2008); Michalowsky (2009).	Foster (1982); Van Driel (2000).
Ebla	Astour (2002); Sallaberger and Schrakamp (2015); Archi (2015b); Klengel (1992); Bonechi (1997); Durand (2018).	Sallaberger (2014); Charpin (2004); Milano (1996); Archi (1998a); Catagnoti (2003); Kupper (2005).
Emar	Lauinger (2015); Archi (1990); Marchesi (2015b); Durand (1990); Seri (2005); Fleming (2004).	Sallaberger (2014); Lafont (2000); Milano (1996); Archi (1990, 1998a); Catagnoti (2003).
Eridu	Sallaberger and Schrakamp (2015); Roaf (1990); Safar et al. (1981).	Renger (1995); Cripps (2007); Pettinato (1999); Gelb et al. (1991); Wilcke (2007).
Eshnunna	Sallaberger and Schrakamp (2015); Charpin (2004); Goddeeris (2002); Kraus (1982); Kupper (1982).	Wilcke (2007); Renger (1995); Suleiman (1966); Gelb et al. (1991); Westbrook (2003).
Gasur	Sallaberger and Schrakamp (2015); Ristvet (2017); Steinkeller (2013b); Foster (1987).	Foster (1981, 1987); Lafont (2000); Ristvet (2008); Van Driel (2000).
Girsu	Sallaberger and Schrakamp (2015); Cooper (1983); Charpin (2004); Roaf (1990); Wilcke (2007); Michalowski (2010); Seri (2005); Taylor (2010); Steinkeller (2013b).	Wilcke (2007); Renger (1995); Gelb et al. (1991); De Maaijer (1998); Lafont and Westbrook (2003); Cripps, (2007).
Gubla	Liverani (2014); Cooper (2010); Charpin (2004); Archi (2015b).	Heltzer (1976, 1999); Van Driel (2000); Milano (1996).
Hama	Bonechi (2016b); Liverani (2014); Bryce (2009); Archi (2010).	Sallaberger (2014); Milano (1996); Archi (1998a).
Harran	Archi (2015b); Liverani (2014); Ristvet (2017); Charpin (2004); Fleming (2004).	Sallaberger (2014); Charpin (2004); Milano (1996); Archi (1998a).
Hattam	Charpin (2004); Marchesi and Marchetti (2011).	Wilcke (2007); Renger (1995); Gelb et al. (1991); Cripps (2007); Suleiman (1966).
Hazor	Bonechi (1992); Zuckerman (2013); Horowitz and Oshima (2006); Maeir (2000).	Horowitz, Oshima and Vukosavovic (2012); Horowitz and Oshima (2006); Van Driel (2000).
Isin	Sallaberger and Schrakamp (2015); Seri (2005); Charpin (2004); Roaf (1990).	Cripps (2007); Goddeeris (2002); De Maaijer (1998).
Kahat	Ristvet (2008); Archi (2015b); Eidem (2008); Salvini (1998).	Lafont (2000); Ristvet (2008); Van Driel (2000).
Kanesh	Michel (2011, 2015); Kulakoğlu and Güzel (2015); Palmisano (2018).	Dercksen (2004, 2008); Van Driel (2000).
Karkemish	Biga (2014); Marchesi (2014); Lacambre and Tunca (1999); Cooper (2006b); Kupper (1992).	Van Driel (2000).
Kish	Sallaberger and Schrakamp (2015); Charpin (2004); Goddeeris (2002); Cooper (1983); Yoffee (1998, 2013); Seri (2005); Goddeeris (2002).	Wilcke (2007); Goddeeris (2002); Cripps (2007).
Lagash	 Sallaberger and Schrakamp (2015); Cooper (1983); Charpin (2004); Steinkeller (2018b); Roaf (1990); Benati (2015); Wilcke (2007); Michalowski (2010); Seri (2005). 	Wilcke (2007); Renger (1995); Gelb et al. (1991); De Maaijer (1998); Cripps (2007).
Larsa	Sallaberger and Schrakamp (2015); Charpin (2004); Benati (2015); Seri (2005); Goddeeris (2002); Kraus (1982); Ishikida (1999).	Renger (1995); van de Mieroop (1992); Gelb et al. (1991); Wilcke (2007); De Maaijer (1998); De Jong Ellis (1976); Fiette (2018): Ishikida (1999).
Mari	Charpin (2004); Sallaberger and Schrakamp (2015); Archi (2015b); Bonechi (2016); Pomponio (2002); Seri (2005); Fleming (2004).	Sallaberger (2014); Charpin (2004); Van Koppen (2000); Van Driel (2000); Lafont (2000); Westbrook (2003).
Nabada	Sallaberger and Schrakamp (2015); Sallaberger (2011); Sallaberger and Pruss (2015).	Sallaberger and Pruss (2015).
Nagar	Ur, Karsgaard and Oates (2011); Eidem, Finkel and Bonechi (2001); Archi (1998b); Archi (2014, 2015b); Charpin (2004); Eidem (2000): Ristvet and Weiss (2013).	Foster (1987); Lafont (2000); Ristvet (2008); Van Driel (2000); Sallaberger and Pruss (2015).
Nineveh	Sallaberger and Schrakamp (2015); Goodnick Westenholz (2004); Charpin (2004); Michalowski (2009); Ristvet (2017).	Foster (1982); Lafont (2000); Ristvet (2008); Van Driel (2000).
Nippur	Sallaberger and Schrakamp (2015); Robertson (1984); Zettler (1992); Marchesi and Marchetti (2011); Seri (2005); Goddeeris (2002).	Wilcke (2007); Renger (1995); Gelb et al. (1991); Cripps (2007).

Table IX: References for the proxies for political and property rights (part 1)

	1 1	
Qatna	Charpin (2004); Van Koppen (2015); Klengel (1992); Morandi Bonacossi (2014).	Charpin (2004); Van Koppen (2000); Van Driel (2000).
Qattara	Charpin (2004); Dalley (1984); Sallaberger and Schrakamp (2015); Fleming (2004).	Van Driel (2000); Dalley, Walker and Hawkins (1976).
Shashrum	Lafont (2009); Eidem (2012, 2014); Rattenborg (2016); Ahmad (2012).	Van Driel (2000); Eidem (1992).
Shubat-Enlil	Ristvet (2012a, 2012b, 2017); Sallaberger and Schrakamp (2015); Charpin (2004); Veenhof and Eidem (2008); Eidem, (2000); Ristvet and Weiss (2013).	Van Driel (2000); Milano (1996).
Shuruppak	Sallaberger and Schrakamp (2015); Pomponio and Visicato (1994); Visicato (1995).	Renger (1995); Visicato (1995); Pomponio and Visicato (1994); Cripps (2007); Gelb et al. (1991); Wilcke (2007); De Maaijer (1998).
Shush	Charpin (2004); Sallaberger and Schrakamp (2015); De Graef (2015); Potts (1999); Steinkeller (2013b, 2018); Peyronel (2018).	Basello and Giovinazzo (2018); De Graef (2018); Foster (1982); Dahl (2018).
Sippar	Sallaberger and Schrakamp (2015); Roaf (1990); Charpin (2004); Kalla (2011); Harris (1975); Seri (2005); Goddeeris (2002).	De Maaijer (1998); Goddeeris (2002); Harris (1975); Wilcke (2007).
Tuba	Archi (2015b); Catagnoti (1991); Schwartz (2014); Van Koppen (2015); Ristvet (2015).	Sallaberger (2014); Charpin (2004); Milano (1996); Archi (1998a); Catagnoti (1991, 2003).
Tuttul	Fleming (2004); Marchesi (2015b); Sallaberger and Schrakamp (2015); Durand (1990); Charpin (2004); Van Koppen (2015); Archi (2014).	Sallaberger (2014); Charpin (2004); Milano (1996); Archi (1990, 1998a); Catagnoti (2003).
Tutub	Sallaberger and Schrakamp (2015); Marchesi and Marchetti (2011); Charpin (2004).	Wilcke (2007); Renger (1995); Sallaberger and Schrakamp (2015); Gelb et al. (1991); Suleiman (1966); De Maaijer (1998).
Ugarit	Liverani (2014); Klengel (1992); Singer (1999); Yon (2006); Al-Maqdissi (2008); De Contenson (1992); Klengel (1992); Charpin and Ziegler (2003).	Heltzer (1976, 1999); Van Driel (2000).
Umma	Sallaberger and Schrakamp (2015); Roaf (1990); Ur (2014); Steinkeller (2013b); Taylor (2010).	Renger (1995); van de Mieroop (1992); Cripps (2007); Gelb et al. (1991); Wilcke (2007); De Maaijer (1998).
Ur	Molina (2015); Van de Mieroop (1992, 2015); Sallaberger and Schrakamp (2015); Marchesi and Marchetti (2011); Dahl (2007); Charpin (2004); Visicato and Westenholz (2005); Steinkeller (2013b); Seri (2005); Goddeeris (2002); Benati (2015); Lafont (2009).	Renger (1995); van de Mieroop (1992); Cripps (2007); Pettinato (1999); Gelb et al. (1991); Wilcke (2007); Benati (2015); De Maaijer (1998).
Urbilum	MacGinnis (2014); Lafont (2009); Charpin (2004); Ahmad (2012).	Ahmad (2012); MacGinnis (2014).
Urkesh	Sallaberger (2011); Steinkeller (1998); Fleming (2004); Palmisano (2018).	Foster (1982); Ristvet (2008); Van Driel (2000); Maiocchi (2011).
Uruk	Sallaberger and Schrakamp (2015); Charpin (2004); Yoffee (2005) ; Seri (2005).	Wilcke (2007); Friberg (1999); Renger (1995); Gelb et al. (1991); De Maaijer (1998); De Jong Ellis (1976).

Table X: References for the proxies for political and property rights (part 2)

Table XI: References for *Polity-Size*, *Imports* and *Public-Buildings* (part 1)

		0 / 1	0 (1)
Polity	Polity-Size	Imports	Public-Buildings
A barsal	Meyer (2011).	Anastasio et al. (2004); Pruss (2011);	Meyer (2011); Pfälzner (2011); Cooper
		Massa and Palmisano (2018); De Ryck	(2006b); Otto and Biga (2010); Einwag
		et al. (2005).	and Otto (2019).
Adab	Adams (1981); Wilson (2012);	Wilson (2002, 2012); Banks (1912);	CDLI Year Names; Frayne (1990,
	Marchetti et al. (2017, 2019).	Marchesi and Marchetti (2011);	1997); Marchetti et al. (2017, 2019);
		Pittman (2018).	Wilson (2012).
A la la kh	Rattenborg (2016); Lawrence et al.	Massa and Palmisano (2018); Yener	Frayne (1990).
	(2016).	(2015); Woolley (1955); Welton et al.	
		(2011).	
Ashnakkum	McMahon (2009); McMahon, Tunca	McMahon (2009); Massa and Palmisano	McMahon (2009); Chagar Bazar III.
	and Baghdo (2001).	(2018); Chagar Bazar II; Mallowan	
		(1937).	
Ashur	Roaf (1990); Ur (2017); Veenhof (2017).	Hauptmann and Pernicka (2004); Massa	Veenhof and Eidem (2008); Roaf
		and Palmisano (2018); Beuger (2013);	(1990); Heinrich (1984); Marchesi and
		Bär (1999, 2003); Harper et al. (1995).	Marchetti (2011).
Ebla	Matthiae (1977, 2010); Vacca (2015,	Massa and Palmisano (2018); Pinnock	Peyronel (2015); Matthiae and
	2018); Pinnock (2001).	(1986, 2006); Matthiae and Marchetti	Marchetti (2013); Pinnock (2001).
		(2013).	
Emar	Cooper (2006a); Finkbeiner (2001,	Finkbeiner (2007); Finkbeiner and	Finkbeiner (2002, 2003, 2007);
	2002, 2005, 2007); Finkbeiner and Sakal	Sakal (2003, 2010); Durand (1990).	Finkbeiner and Sakal (2010).
	(2003, 2010).		
Eridu	Wright (1981); Ramazzotti (2015).	Safar, Mustafa and Lloyd (1981);	Frayne (1990, 1998); Safar et al.
		Massa and Palmisano (2018).	(1981).

Eshnunna	OIP 53, 88, 98; Evans (2007); Vallet (2001).	OIP 53, 88, 98; Hauptmann and Pernicka (2004); Marchetti and Marchesi (2011); Massa and Palmisano (2018); Vallet, (2001); Diyala project database.	OIP 53, 88, 98; CDLI Year Names.
Gasur	Stein (2000).	Stein (2000); Starr (1937); Massa and Palmisano (2018).	Stein (2000).
Girsu	Rey (2016); Wilkinson, Ur, and Hritz (2013).	Massa and Palmisano (2018); Parrot (1948); Marchesi and Marchetti (2011); EDZARD (1997); Pittman (2018).	Rey (2016); Edzard (1997); Frayne (2008); CDLI Year Names; Marchetti and Marchesi (2011).
Gubla	Genz (2014).	Genz (2014); Massa and Palmisano (2018); Bevan (2007); El Morr et al. (2013); El Morr (2017).	Genz (2014); Charaf (2014); Makaroun Bou-Assaf (2003); Sala (2007); Pinnock (2007); Saghieh (1983).
Hama	Vacca et al. (2018); Lawrence et al. (2016).	Thuesen (1988); Massa and Palmisano (2018); Bevan (2007); Fugmann (1958).	Morandi Bonacossi (2007b).
Harran	Lawrence et al. (2016).	Anastasio (1995, 2011); Prag (1970).	Anastasio (1995, 2011); Prag (1970).
Hattam	OIP 58, 88.	OIP 58, 88; Marchesi and Marchetti (2011); Pittman (2018); Diyala project database.	OIP 58, 88.
Hazor	Ben-Tor (1993); Maeir (2000); Bryce (2009).	Massa and Palmisano (2018); Hazor V, VII.	Zuckerman (2012, 2013); Ben-Tor (1993); Zuckerman and Bechar (2017).
Isin	Adams (1981); Wilkinson, Ur and Hritz (2013); Isin I, II, III, IV.	Massa and Palmisano (2018); Hrouda (1973, 1975); Isin I, II, III, IV.	Isin I, II, III, IV; Frayne (1990); CDLI Year Names.
Kahat	Orsi (2012).	Massa and Palmisano (2018); Pecorella and Pierobon (2004).	Pierobon Benoit (2008).
Kanesh	Barjamovic et al. (2012); Barjamovic (2014); Özgüç (1986).	Massa and Palmisano (2018); Kulakoğlu (2015); Barjamovic et al. (2012); Barjamovic (2011, 2014); Özgüç (1986, 1999): Ezer (2014): Larsen (2015).	Kulakoğlu (2015, 2017); Barjamovic et al. (2012); Özgüç (1986, 1999, 2003); Kulakoğlu and Öztürk (2015).
Karkemish	Kark I, II, III; Wilkinson, Peltenburg and Barbanes Wilkinson (2016).	Marchesi (2014); Kark III; Anastasio et al. (2004); Anastasio (1995); Sconzo (2014); Falsone and Sconzo (2007);	Kark III.
Kish	Gibson (1972); Zaina (2016).	Gibson (1972); Hauptmann and Pernicka (2004); Moorey (1978); Quenet (2008); Wilkinson (2014); Massa and Palmisano (2018); Pittman (2018); Zaina (2015).	Gibson (1972); Marchesi and Marchetti (2011); Zaina (2015).
Lagash	Carter (1989-1990).	Kenoyer (1989-1990); Crawford (1972, 1974); Massa and Palmisano (2018); Hansen (1970, 1973, 1978, 1990); Bahrani (1989); Pittman (2018).	Edzard (1997); Frayne (2008); CDLI Year Names; Hansen (1983, 1992).
Larsa	Calvet (2003); Parrot (1933, 1968); Huot et al. (1989); Huot (2003); Wilkinson, Ur, and Hritz (2013).	Bjorkman (1993); Massa and Palmisano (2018); Margueron (1970, 1971); Huot (1989, 2003); Pernicka and Hauptmann (2004); Pittman (2018).	CDLI Year Names; Calvet (2003); Margueron (1970, 1971, 1982); Huot (1989, 2003, 2014); Heinrich, (1984).
Mari	Butterlin (2013); Gallet and Butterlin (2015); Lawrence et al. (2016, S1 Appendix).	Nicolini (2010); Massa and Palmisano (2018); Margueron (2004); Wilkinson (2014); Jean-Marie (1999); Pittman (2018).	Margueron (2004); CDLI year names.
Nabada	Lawrence et al. (2016).	Anastasio et al. (2004); Massa and Palmisano (2018).	Anastasio et al. (2004); Pfälzner (2001).
Nagar	Tell Brak 2; Ur, Karsgaard and Oates (2011); Ur (2012).	Tell Brak 1, 2, 4; Massa and Palmisano (2018).	Tell Brak 1, 2, 4.
Nineveh	Lawrence et al. (2016).	Massa and Palmisano (2018); Gut et al. (2001); Gut (1995); Reade (2005); Thompson and Hamilton (1932); Mallowan (1933); McMahon (1998).	Goodnick Westenholz (2004); Gut et al. (2001); Gut (1995); Reade (2005); Thompson and Hamilton (1932); Mallowan (1933); McMahon (1998).
Nippur	Gibson (1992); Nippur I, II, V; Stone (1987); Wilson (1986).	Nippur I, II, V; Massa and Palmisano (2018); Stone (1987); Wilson (1986); Pittman (2018).	Frayne (1990, 1993); CDLI Year Names; Nippur I, II, V; Stone (1987); Wilson (1986).

Table XII: References for *Polity-Size*, *Imports* and *Public-Buildings* (part 2)

Qatna	Morandi Bonacossi (2007a, 2007b); Wilkinson et al. (2013).	Morandi Bonacossi (2007b, 2008); Morandi Bonacossi et al. (2009); Massa	Iamoni and Morandi Bonacossi (2011); Morandi Bonacossi (2007a); Morandi
-		and Palmisano (2018).	Bonacossi et al. (2009).
Qattara	Oates (1970, 1972); Postgate, Oates and Oates (1997).	Postgate et al. (1997); Oates (1970, 1972, 1990); Parker (1975); Massa and Palmisano (2018)	Oates (1970, 1972); Postgate et al. (1997).
Shashrum	Battenborg (2016)	Eidem (2012, 2015)	Eidem (2015)
Shubat-Enlil	Archeosim website: Weiss (1990): Weiss	Massa and Palmisano (2018): Anastasio	Anastasio et al. (2004): Anastasio
Dirabat Bitte	et al. (2002).	et al. (2004): Anastasio (1995).	(1995).
Shuruppak	Marchetti et al. (2017): Martin (1983.	Martin (1983, 1988): Hauptmann and	Martin (1988): Heinrich (1931):
	1988); Heinrich (1931).	Pernicka (2004); Massa and Palmisano (2018); Pittman (2018); Heinrich (1931).	Marchetti et al. (2017); CDLI year names.
Shush	Potts (1999); Carter (1985).	Massa and Palmisano (2018); Potts (1999); Pittman (2018); Carter (1985); Helwing (2018).	Potts (1999); Malbran-Labat (2018).
Sippar	De Meyer (1980).	Al-Gailani and Al-Jadir (1981); Walker (1980); Walker and Collon (1980).	Frayne (2008); CDLI Year Names; Charpin (2004); Gasche and Tanret (2011).
Tuba	Schwartz (2014, 2016).	Schwartz (2016); Massa and Palmisano (2018).	Schwartz (2014, 2016).
Tuttul	Cooper (2006a); Tuttul 8; Novak (2015).	Archi (2017); Massa and Palmisano (2018); Anastasio et al. (2004); Anastasio (1995); Tuttul 5.	Tuttul 3; Finkbeiner et al. (2015); Anastasio et al. (2004).
Tutub	Adams and Nissen (1972); OIP 53, 58, 88; Gibson (1982); Sürenhagen (2011).	OIP 53, 58, 88, 98; Massa and Palmisano (2018); Marchetti and Marchesi (2011); Pittman (2018; Diyala project database).	OIP 53, 58, 88, 98; CDLI Year Names.
Ugarit	Lawrence et al. (2016).	Yon (1997, 2006, 2014); Massa and Palmisano (2018); De Contenson (1992); Schaeffer (1962).	Yon (1997, 2006); Al-Maqdissi (2008); De Contenson (1992).
Umma	Ur (2014).	Al-Mutawalli (2009, 2010); Waetzoldt (2014); Hulinek and Tuchova (2018).	CDLI Year Names; Frayne (2008); Ur (2014); Al-Mutawalli (2009, 2010); Waetzoldt (2014); Hulinek and Tuchova (2018).
Ur	Molina (2015); Wright (1981); Hammer (2019).	Massa and Palmisano (2018); Zettler and Hafford (2015); UE 2, 4-7; Hauptmann et al. (2016); Pittman (2018); Benati (2014).	Di Giacomo and Scardozzi (2012); Zettler and Hafford (2015).
Urbilum	Novacek (2014); MacGinnis (2014).	Massa and Palmisano (2018).	Al Yaqoobi, Shepperson and MacGinnis (2018); MacGinnis (2014).
Urkesh	Buccellati and Kelly-Buccellati (1997, 2000); Pfälzner (2010); Wilkinson, Ur and Hritz (2013).	De Ryck et al. (2005); Wilkinson (2014); Anastasio et al. (2004); Anastasio (1995); Hauser (2006); Massa and Palmisano (2018).	Anastasio et al. (2004); Anastasio (1995).
Uruk	Ur (2013); AUWE 4.	Massa and Palmisano (2018); Wilkinson (2014); AUWE 2; Pittman (2018).	Crüsemann et al. (2013); CDLI Year Names.
Note: 1.	Abbreviations of archaeological excavation	n reports and online data sets (see reference	es): AUWE 2 = Limper (1988); AUWE 4

Table XIII: References for Polity-Size, Imports and Public-Buildings (part 3)

Note:
1. Abbreviations of archaeological excavation reports and online data sets (see references): AUWE 2 = Limper (1988); AUWE 4 = Finkbeiner (1991); Chagar Bazar II = Tunca, McMahon, and Baghdo (2007); Chagar Bazar III = Tunca and Baghdo (2008); Hazor V = Ben-Tor and Bonfil (1997); Hazor VII = Ben-Tor, Zuckerman, Bechar and Sandhaus (2017); Isin I = Hrouda (1977); Isin II = Hrouda (1981); Isin III = Hrouda (1987); Isin IV = Hrouda and Boessneck (1992); Kark. I = Hogarth (1914); Kark. II = Woolley (1921); Kark. III = Woolley and Barnett (1952); Nippur I = McCown and Haines (1967); Nippur II = McCown, Haines and Biggs (1978); Nippur V = McMahon (2006); OIP 53 = Delougaz (1940); OIP 58 = Delougaz and Lloyd (1942); OIP 88 = Delougaz, Hill and Lloyd (1967); OIP 98 = Hill, Jacobsen and Delougaz (1990); Tell Brak 1 = Oates, Oates and McDonald (1997); Tell Brak 2 = Oates, Oates and McDonald (2001); Tell Brak 4 = Matthews (2003); Tuttul 3 = Strommenger and Kohlmeyer (2000); Tuttul 5 = Strommenger, Miglus and Kohlmeyer (2010); Tuttul 8 = Miglus and Strommenger (2002); UE 2 = Woolley (1934); UE 4 = Woolley (1956); UE 5 = Woolley (1939); UE 6 = Woolley (1974); UE 7 = Woolley and Mallowa (1976); ADEMNES = http://www.ademnes.de; Archeosim = https://archaeosim.its.yale.edu/; CDLI Mesopotamian Year Names = https://cdli.ucla.edu/tools/yearnames/yn_index.html; Diyala Project Database = http://diyala.uchicago.edu

II Constructing the Sample

The cross-section identifier of our sample is the polity, which was the basic political unit in the Mesopotamian Bronze Age history. Whether independent or not, these states evolved around one major city from which they took their name [Westenholz 2002, p. 26]. Appeared during the late fourth millennium BCE Urban Revolution, by the early third millennium BCE, they were the dominant form of political community throughout the Near East [Garfinkle 2013a, p. 95]. Each polity was governed under differently inclusive political institutions [Grafinkle 2013a, p. 107-109]. The main ruler usually managed, through the royal household and the palatial administration—scribes, military officials and governors, taxation, the provision of public goods, justice and mass economic production [Garfinkle 2013a, p. 108-109]. This power was possibly shared with the temple and the assemblies of elders and/or rising economic groups, i.e., the merchants [Garfinkle 2013a, p. 110].

III Measuring Institutions

Inclusive Political Institutions

We use *Political-Institutions* in the baseline specifications and the indicator *Constraints-on-Executive* in the Internet appendix. This score is built following the Polity IV project guidelines and captures the strength of the institutionalized constraints on the elite's decision-making power, which may be imposed by any "accountability group" in the polity (Marshall and Jaggers, 2016). Examples of accountability groups are the assembly of town elites, powerful advisors of the monarch and military elites representatives. Then, *Constraints-on-Executive* equals: 1 for polities mostly dominated by another political entity; 2 if there was no institutionalized authority; 3 if there was unlimited executive authority; 4 if there were slight limitations; 5 if there were moderate limitations; 6 if there were real constraints on the executive authority. The last five institutional instances can be described as follows:

- 2 No Institutionalized Authority: This score entails that there is no evidence of a king/ruler, religious institutions or a collective decision-making structure—i.e., assembly of elders, city council, etc.—or that there is anarchy following an occupation.
- 3 Unlimited Executive Authority: This score implies that there are no regular limi-

tations on the executive's actions distinct by threats or actuality of coups and assassinations. Typical examples are: a. lack of assemblies or councils challenging the ruler's power; b. the ruler appoints a majority of members of any accountability group and can remove them at will; c. rule by decree is repeatedly used; d. the executive power is hereditary; e. the ruler is deified; and f. the ruler covers overlordship functions.

- 4 Slight Limitations: This score is used to indicate a transition from a score of three to a score of five due, for instance, to the establishment of a "consultative assembly" or because of the consolidation of the power of the leader of another institutionalized decision-making power. Typical examples are: a. members of the elite/leaders of another institutionalized decision-making power can challenge the power of the king, administer justice and/or collect taxes; b. there are elite/elders council, or colleges of judges deciding on those cases not administered by ruler/king; c. there are powerful advisors/offices endowed with strong executive power, e.g., "vizir" in Ebla was the head of the council of notables and could lead the army; d. military power is different from the executive one; e. local/provincial governors had large amount of independence on local matters in case of states/empires, e.g., *ensi* of Lagaš during Ur III period also acting as prime ministers—*sukkal-mah*—of the empire; f. local governors gaining independence from foreign powers, e.g., the *šakkanakku* becoming the Mari's rulers after the fall of the Akkadian empire; e. executive constraining his powers by law.
- 5 Moderate Limitations: This score is assigned whenever the executive is subjected to checks from other institutionalized decision-making powers. Typical examples are: a. there is legislation and the king's power is bound by law; b. there are bodies of local elite members—e.g., city assemblies, groups of elders, or tribal leaders—who can challenge executive decisions and carry out functions such as diplomacy, war and justice, e.g., Mari period; c. the decision-making power is not held by the king/ruler but by a military chief, temple administrator and/or lower rank official; d. executive appointed by an external overlord/paramount leader or by a foreign emperor and subjected to other high rank officials, such as the military leaders and top administrators, e.g., provincial governors' power in the Akkadian and Ur III empires period.

6 Real Constraints: This score indicates the emergence of real, albeit limited, institutionalized constraints on the executive authority in a previously autocratic system. This situation is attested in some Upper Mesopotamian cases such as Urkeš, which during the early second millennium BCE was guided by a strong collective leadership, Emar and Tuttul under the *tahtamum* institutions and Assur, where the ruler was but one of the council's members (Fleming, 2004). In these scant instances, we observe strong corporate leadership as the sole institutionalized decision-making power or an assembly of household representative or tribal leaders challenging executive authority.

To construct the indicators *Political-Institutions* and *Constraints-on-Executive*, we have employed both period-specific (Sallaberger and Westenholz, 1999; Sallaberger and Schrakamp, 2015; Charpin, Edzard and Stol, 2004; Veenhof and Eidem, 2008; Potts, 1999) and polity-specific secondary sources (see tables VI-VII). Our conclusions can be summarized as follows:

- 3100 2500 BCE: While Upper Mesopotamia witnessed a period of lack of institutionalized decision-making [Ristvet 2017, p. 39], Lower Mesopotamia was fragmented into numerous city-states, initially run by the temple, then by local rulers sharing some power with the temple [Garfinkle 2013a, p. 109, figure 3.1]. Monarchic institutions emerge first in Hattam, Kish, Lagash, Ur and Uruk. Although the existence of collective decision-making bodies has been postulated for Lower Mesopotamian city-states, no precise evidence can be found in the sources [Marchesi and Marchetti 2011, p. 103]. By 2700 BCE, cities and kingdoms emerged also in Upper Mesopotamia, where kings or groups of "elders" had gained power in Abarsal, Ebla and Nabada [Ristvet 2017, p. 40]. Between 2650 and 2550 BCE moreover, Kish ruled in a somewhat autocratic fashion enjoying a certain hegemony over much of Lower Mesopotamia [Marchesi and Marchetti 2011, p. 97, 100-101]. From 2550 BCE on, the power of Kish waned, and a period of political fragmentation followed [Marchesi and Marchetti 2011, p. 102].
- 2500 2350 BCE: In both Upper and Lower Mesopotamia, the city-states transitioned, via military conquest, into territorial entities. In Upper Mesopotamia, in particular, the kingdoms of Abarsal, Ebla, Mari and Nagar were ruled by kings and elite institutions and established themselves as regional powers, interacting with a shifting number of

dependent polities and city-states [Ristvet 2017, p. 45]. Towards the end of the period (2400-2350 BCE), the rulers of Uruk consolidated much of Sumer under a single state via military conquest [Marchesi and Marchetti 2011, p. 102]. The kings achieved executive supremacy over the temple institutions in Lower Mesopotamia and assemblies of elite members in Upper Mesopotamia (Ristvet 2017, Marchesi and Marchetti, 2011).

- 2350 2000 BCE: This period was marked by the rise and fall of empires, understood as "territorial state that held political hegemony over several cities and kinship groups or tribes through military power, formed a supranational elite, and developed a sense of state ideology distinct from that of the individual communities it controlled" [Barjamovic 2013, p. 127. The Akkadian empire turned the former city-states into tributary polities, whereas the Ur III empire transformed local powers into provinces ruled by appointed governors. Decision-making was delegated by the king to the royal administration, provincial governors and army elite. Although Sargon united the South, he could only pillage the cities in the North [Ristvet 2017, p. 47], and it seems likely that Northern Mesopotamia was only integrated into the Akkadian imperial structure under the rule of Naram-Sin [Ristvet 2007, p. 47], whose control extended over the cities of Ashur, Gasur, Mari, Nagar and Sehna. Each of these cities probably had an Akkadian governor, at least from the reign of Naram-Sin [Ristvet 2017, p. 48]. After the collapse of the Akkadian state (2150 BCE), the Ur III kings managed to reestablish sovereignty over much of the regions previously controlled by Akkad. Some polities in the North—i.e., Ebla, Emar, Gubla, Kanesh, Mari, Nineveh, Tuttul, Urbilum and Urkesh—remained outside the reach of Ur and developed local royal dynasties, while many others did not provide evidence of institutionalized decision-making. Mari's governors freed themselves from Akkadian rule and attained independence.
- 2000 1750 BCE: Mesopotamian states witnessed a process of fragmentation that brought about a generalized rise in the inclusiveness of political institutions. To elaborate, from 2000 to 1800 BCE, the collapse of the Ur III empire led to the formation of several states ruled by Amorite dynasties that started to enfranchise city-based elites, mercantile groups and tribal leaders. These local powers established themselves as insti-

tutionalized decision-makers by means of formal city-based magistrates and collective bodies (Seri, 2005; Fleming, 2004). By this time, some polities—i.e., Ashur, Emar, Tuttul and Urkesh—created strong collective governance and elective officials able to impose real checks on the decisions of the rulers (Fleming, 2004). Such constraints were further strengthened by the proliferation of law codes (Westbrook, 2003).

Property Rights

According to secondary sources on the structure of the regional land tenure (Harris, 1975; De Jong Ellis, 1976; Foster, 1981, 1982, 1987: Gelb et al., 1991; Van de Mieroop, 1992; Ellickson and Thorland, 1995; Renger, 1995; Milano, 1996; Archi, 1998a; Zaccagnini, 1999; Pettinato, 1999; Van Koppen, 2000; Van Driel, 2000; Goddeeris, 2002; Wilcke, 2007; Charpin, 2004; Kupper, 2005; Cripps, 2007; Ristvet, 2008; Dercksen, 2004, 2008; Lafont, 2000; Lacambre, 2010; Sallaberger, 2014; Lauinger, 2015; Rost, 2017; Liverani, 2018; De Graef, 2018), the possible contractual forms in our sample can be ranked in terms of stronger peasants' remedies and alienation rights as explained in the following:

- Slave labor: Documented since the late fourth millennium BCE, slave labor was mainly performed by debt-slaves, who retained some legal rights, could be restored as free citizens upon payment of their debts and were mostly used as household servants and rarely employed in state-run enterprises. [Steinkeller 2015, p. 6-9]. Outright slaves were employed much more infrequently, and they were war prisoners.
- Waged labor: Initially paid with either rations of food and clothes or a share of the produce, waged peasants were later remunerated with silver, were usually unskilled and did not enjoy rights over land [D'Anna et al., 2015; Steinkeller 2015, p. 21].
- Leasing, renting and tenure-for-service contracts: Institutionalized decisionmakers allotted part of their landholdings to farmers in exchange for rents (services) within either a leasing or renting (tenure-for-service) contract. While rental took the form of yearly contracts mostly payable at the harvest, leases for fallow land endured three years for fields and five for orchards with rents payable usually in the final year [Westbrook 2003, p. 410-411]. There were four major types of rents: a fixed sum,

half or one third of the harvest plus irrigation and grazing taxes, a fixed rate per unit of land, or a rate determined by local customs (Steinkeller, 1981; 2015). The practice of renting out land seems to be attested in the Alluvium since the second quarter of the third millennium BCE (Steinkeller, 1981; 2015). Corvée labor is defined as work duties of limited duration owed by a portion of the free population to an institutionalized decision-maker in exchange for benefits such as the usufruct of land and food allocation. This system of tenure-for-service was attested since the fourth millennium and soon became the main hiring method [Steinkeller 2015, p. 9-14; Cripps 2007, p. 22-29]. Although some type of corvée was imposed to every citizen, high officials did not perform it directly but they either provided manpower or payed a monetary compensation [Cripps 2007, p. 26, 31-32]. Finally, the assigned piece of land was heritable, could be subleased and partially rented out and was alienable, possibly conditional on the placet of the original owner and provided that the corvée duties initially required continued to be fulfilled [Cripps 2007, p. 25-26].

Based on the aforementioned sources, it is possible to summarize the evolution of the strength of the property rights over land across time and polities as follows:

3100 — 2700 BCE: In Lower Mesopotamia, the temple was able to control large landholdings as revealed by the first archaic texts mentioning parcels of land [Friberg 1997-1998, figs. 2.1 and 4.1, table 4.1-4.2]. More generally, the institutionalized decision-makers held large estates and exploited them either directly through hired labor or indirectly by granting them to officials and skilled workers in return for corvée, a share of the produce or rents [Friberg 1999, p. 134-135; Cripps, 2007; Pettinato, 1999]. According to the first land contracts and cadastral documents, the "kudurrus," these members of the institutionalized decision-making authority had also obtained, by the time, *de jure* property rights to land (Gelb et al., 1991). Such tenure-for-service arrangements, known as "šuku" system, rarely prescribed alienability from 3000 to 2600 BCE (Cripps, 2007). For Upper Mesopotamia, we have no explicit evidence of enforced property rights, but it is likely that either owner-operated farming without legal protection of farmers or direct cultivation via hired labor in case of a centralized economy were the land tenure options (Friberg, 1999; Cripps, 2007; Pettinato, 1999).

- 2700 2350 BCE: In Lower Mesopotamia, the 2700 BCE appearance of the denomination "rented land" indicates that the institutionalized decision-makers started to lease out part of their holdings to farmers in exchange for rents [Pettinato, 1999; Wright 1969, p. 108-112], whereas prebendal land was entrusted to high officials, part of the ruling elite, and cultivated by teams of workers engaged in sharecropping arrangements (Pettinato, 1999). From 2600 BCE on, sale contracts for arable land and houses became more frequent (Cripps, 2007). Finally, the land farmed under the šuku system became heritable alongside service duties as well as alienable given the agreement of the landholder (Cripps, 2007). In Upper Mesopotamia, cuneiform archives appeared around 2400 BCE and indicate that high officials had *de jure* property rights over land (Catagnoti, 2003) and that the palace organized farming via sharecropping, i.e., farmers cultivated the land over which urban professionals constituting the reserve for the conscripted army had *de facto* property in return for harvest, seeds, fodder, draft animals or corvée (Milano, 1996; Sallaberger and Pruss, 2015).
- 2350 2100 BCE: The newly established Akkadian empire acquired by purchasing or seizing vast estates from former landowners, first, and distributed them to newly appointed local officials and kinsmen, in return for services and a share of the produce, later [Foster 2016, p. 90-93, 183; Ellickson and Thorland 1995, p. 360-361]. More generally, a shift to indirect exploitation of the land via leasing and renting was accompanied, in this phase, by the achievement by all the farmers of *de jure* property rights. From the reign of Naram-Sin on (2254-2218 BCE), a system of subordinate landholdings of the state domains is identifiable also in Upper Mesopotamia [Ristvet 2017, p. 48-49], where the large estates of royal administrators were redistributed as sustenance fields or rented out [Rost 2017, p. 10-11]. Hence, farming investment costs were mainly borne by tenants and lessees [Foster 2016, p. 92]. The plots organized according to the šuku system remained inheritable, alongside their work obligations [Foster 2016, p. 92], and they became freely alienable as any other type of land as suggested by the available contracts (Gelb et al., 1991).

2100 — 1750 BCE: After the fall of the Akkadian empire, Lower Mesopotamia witnesses a shift back to direct exploitation of land and the introduction of the plow-team system (Pettinato, 1968; de Maaijer, 1998). Around 2074 BCE, Šulgi "nationalized" the land of the temple and put it under the control of the provincial governors (Steinkeller, 1991), who, in turn, entrusted most of it to sharecroppers and the remainder to renters and leasers [de Maaijer, 1998; Maekawa, 1987; Zettler 1992, p. 133]. Under such šuku contracts, the plot could be inherited together with work obligations, but it could not be alienated (Gelbet al., 1991). After the fall of the Ur III empire, three types of land tenure arose: direct cultivation by the palace, rented land, plots allotted in exchange for service to the state administration or the military (Michel, 2011; 2015; Dercksen, 2004; 2008). These tenure-for-service arrangements were protected by *de jure* property rights in Kanesh and Mari and *de facto* property rights elsewhere (Van Koppen, 2000; Lafont, 2000; Lauinger, 2015; Van Driel, 2000).

Turning to Lower Mesopotamia, a distinction can be made between central Alluvium i.e., Kish, Sippar and the Diyala basin—and Sumer, e.g., Larsa, Ur and Uruk. In the former case, full *de jure* property rights—included inheritance and alienation rights were assured to buyers and to grantees, as long as their duties were fulfilled, whereas no disposal rights were recognized to tenants (Harris, 1975, Goddeeris, 2002; Suleiman, 1966). In Sumer, the land controlled by the palace was mostly cultivated indirectly by renting it out or granting it to dependents via sealed contracts kept by the central administration [De Jong Ellis 1976, p. 18]. Only occasionally, it was worked directly—i.e., eqel ekallim—by means of hired labor or sharecroppers with no private rights [Rothman] 1994, figure 5]. The land allotted to personnel in exchange for long-term service—i.e., *ilku*—was, instead, alienable only under specific circumstances, not inheritable and could be sub-leased to contractors who, in turn, signed sharecropping contracts with farmers [De Jong Ellis 1976, p. 73-77; Fiette, 2018]. This system was formalized via law codes during the reigns of Sîn-muballit and Hammurapi (De Jong Ellis, 1976), who greatly expanded the land cultivated under tenure-for-service arrangements by confiscating institutional land and seizing privately-owned plots (Rothman, 1994). Finally, the Alalakhs' royal archive and the administrative texts from Ugarit indicate that land tenure was organized in the Levant with arrangements similar to those prevailing in inland Syria during the early second millennium BCE [Heltzer, 1976, 1999; Liverani 2014, p. 325-331]. To elaborate, the royal estates were cultivated either by free farmers under sharecropping arrangements and *de jure* property rights or by palace officials under inheritable tenure-for-service contracts. Furthermore, land sales are well-attested and village communities possessed collective property rights over land (Heltzer, 1976). The shift towards stronger property rights is also attested by the introduction of law codes in Hazor (Horowitz, Oshima and Vukosavovic, 2012).

IV Measuring Farming Opacity and Historical Yields

<u>Vine</u>

Despite grapevine cultivation and wine making are attested since the Late Neolithic in the Caucasus, Taurus and Zagros mountains (McGovern, 2003), the first use of the domesticated grapevine—i.e., *vitis vinifera*—in Mesopotamia is only attested starting from the fourth millennium BCE (Miller, 2008). By the second half of the fourth millennium BCE indeed, viticulture had emerged as an integral part of food production in the Levant, together with olive, fig and date-palm breeding [Zohary 1996, p. 28]. Then, between the fourth and third millennium BCE, it was adopted well outside its natural habitat (Miller, 2008). This spread can be connected to the increased interaction between Mesopotamia and neighboring regions, mainly Anatolia and Iran, during the 3500-3200 BCE "Uruk Expansion" (Algaze, 1989, 1996). To elaborate, the grapevine became one of those expensive gifts exchanged among neighboring kings through the long-distance trade circuits passing through Mari and the Middle Euphrates [Algaze, 1996; Badler et al., 1996; Powell 1996, p. 112; Benati, 2016].

To construct *Vine*, we combine cuneiform studies with paleobotanical data on the spread of viticulture produced by the ADEMNES database, which reports for 533 Eastern Mediterranean and Near Eastern archaeological sites the presence of carbonized seeds and grapes (Riehl and Kümmel, 2005). The latter suggest that the grapevine was first domesticated at Emar and Qatna, in Syria, just after 3200 BCE, and, then, in Alalakh, Ebla, Emar, Kanesh, Nagar, Qatna, Tuba and Urkesh by the mid third millennium BCE. Next, it spread, first, in Upper and in Lower Mesopotamia later, as confirmed by the texts discovered in Mari, Qattara, Shubat-Enlil and Kanesh (Powell, 1996; Miller and Zettler, 1996; Barjamovic and Fairbairn, 2018). While the regions located between the Amanus and Euphrates were the main producers, Karkemish was the main exchange hub [Chambon 2009, p. 11-12].

<u>Historical Cereal Yields</u>

We collected evidence on yields, measured in liters of barley per ha, from secondary sources based on administrative cuneiform texts (Wright, 1969; Jacobsen, 1982; Maekawa, 1974, 1984; Richardson, 2015; Powell, 1985; Zaccagnini, 1999). The key trends are:

- 3100 2700 BCE: Data from the Jemdet Nasr and Early Dynastic I periods indicate yields averaging between 932 and 1243 l/ha of barley for Lower Mesopotamia [Englund 1998, p. 204-205; Wright 1969, p. 104; Friberg 1997-1998, p. 50]. Upper Mesopotamia did not provide written records up to around 2400 BCE.
- 2400 2350 BCE: Data from the Girsu/Lagash region suggest large yields, ranging between 2537 and 2178 l/ha of barley [Maekawa, 1974; Maekawa 1984, Appendix 16].
 Data from Ebla imply yields between 370 to 624 l/ha [Archi 1998a, p. 520; Zaccagnini 1999, p. 333-334]. Similar yields can be reconstructed from the Nabada texts, suggesting an average yield of 587 l/ha of barley [Sallaberger and Pruss 2015, p. 111].
- 2300 2210 BCE: Data from the area of Eshnunna, Girsu/Lagash and Umma (Maekawa, 1974; Hackman, 1958) indicate a marked decrease of land productivity in Lower Mesopotamia, with yields ranging between 687 and 1040 l/ha of barley. Data from Upper Mesopotamia come from the Gasur archives, indicating yields averaging between 970 to 1092 l/ha [Zaccagnini 1979, p. 855; Widell et al. 2013, p. 84].
- 2120 2000 BCE: Data from Girsu/Lagash, Nippur and Umma [Widell 2013, p. 64; Maekawa 1974, p. 9, 26; Maekawa 1984, p. 84; Jacobsen 1982, appendix 17] indicate a slight increase of productivity with yields ranging between 941 and 1600 l/ha of barley.
- 1810 1600 BCE: Data from Larsa and Sippar [Jacobsen 1982, appendixes 18-19; Richardson 2015, p. 280] indicate yields ranging between 802 and 979 l/ha of barley. In Upper Mesopotamia, yields around 1300 l/ha are attested at Mari [Lafont 2000, p. 141].

V Extra Controls

External Conflicts

To construct the variable *External-Conflicts*, we build on secondary polity-specific sources on warfare and post-2700 BCE monumental inscriptions reporting the king's deeds (Grayson, 1987; Edzard, 1997; Frayne 1990, 1993, 1997, 2008; "Mesopotamian Year Names" database available at https://cdli.ucla.edu/tools/yearnames/yn_index.html). Based on this evidence, we can identify the following stylized facts about the evolution of warfare:

- 3100 2600 BCE: Although weaponry and city fortifications were attested, direct evidence of organized conflict start to appear only at the end of the period, when the city-state of Kish conducted war campaigns against some Upper Mesopotamian polities [Steinkeller, 2013a; Ristvet 2017, p. 41-42; Peltenburg 2013, p. 241-242].
- 2600 2350 BCE: From 2600 BCE on, cuneiform texts start to provide extensive evidence about inter-state warfare among Lower Mesopotamian city-states [Sallaberger and Schrakamp 2015, p. 61-65]. At first, we are informed about a coalition of city-states under the hegemony of Kish that seemingly coordinated to fight against a Southern enemy, probably Ur [Sallaberger and Schrakamp 2015, map 3]. Then, the city-state of Lagash-Girsu conducted several war campaigns against the neighboring polity of Umma for disputes over borders (Cooper, 1983), and occasionally against Elamites and Northern polities, i.e., Kish and Mari. Information about Upper Mesopotamia appears in Ebla from around 2400 BCE (Biga, 2015). In this phase, Mari conducted several campaigns in the Middle Euphrates area (Archi, 2015b; Biga, 2015).
- 2350 2000 BCE: The period around 2350 and 2250 BCE is characterized by a marked increase in the level of warfare in Mesopotamia, starting with the expansionary campaigns of the Uruk kings, leading to the formation of a large territorial entity that encompassed most of Lower Mesopotamia [Marchesi, 2015a; Sallaberger and Schrakamp 2015, maps 5-6]. Ebla also engaged in warfare and succeeded in expanding its territorial reach through military conquest of neighboring polities, such as Abarsal (Biga, 2015; Bonechi, 2016a). The information about warfare among other Upper Mesopotamian polities is sporadic. The rise of Sargon of Akkad brought about the creation of the first territo-

rial empire in Mesopotamian history. First, he invaded the entire Lower Mesopotamia, then he moved North and Eastward and fought several campaigns against the Upper Mesopotamian and Iranian polities [Sallaberger and Schrakamp 2015, map 9]. Sargon's successors fought yearly campaigns against peripheral polities located in Upper Mesopotamian and Iran and had to face internal revolts [Sallaberger and Schrakamp 2015, maps 9-10]. During the Akkadian empire, since most campaigns were aimed to keep in check peripheral polities, the overall level of warfare felt. After the collapse of the empire (2150 BCE), the political fragmentation that followed generated, however, a new rise in warfare levels. In the period 2100-2000 BCE, the kings of Ur conducted yearly campaigns against peripheral powers located in Upper Mesopotamian, such as Shashrum and Urbilum, and Iran (Garfinkle, 2014). Finally, the kings of Susa fought against both Elamite and Mesopotamian powers (Steinkeller, 2018).

2000 — 1750 BCE: After the 2000 BCE collapse of the Ur III empire, Ur was occupied by Elamite forces. Military activities increased in the Diyala basin, where Eshnunna became the sovereign power, and in the areas controlled by Kish and Larsa (2000-1900 BCE). From 1900 BCE on, a steady rise in the severity of conflicts interested Lower and Upper Mesopotamia. Around 1850 BCE then, external conflicts are documented in Ashnakku, Gasur, Kanesh and Qatna (Palmisano, 2018; Charpin, 2004). Around 1750 BCE finally, Larsa and Eshnunna, first, and Isin and Mari later were involved in warfare (Charpin, 2004; Goddeeris, 2002). This situation was worsened by the rise to power of Samsi-Addu (1812-1780 BCE), when virtually all Upper Mesopotamian polities, starting from Shekhna and Mari, engaged in warfare [Charpin 2004, p. 128-192]. These conflicts reached a peak with the invasion of the Elamite emperor, then defeated by a coalition lead by Mari and Babylon, and the subsequent conquest of Larsa, Eshnunna and Mari by Hammurabi of Babylon [Charpin 2004, p. 213-232].

Internal Conflicts

To construct the variable *Internal-Conflicts*, we consider citizens' uprisings against the institutionalized decision-making power and conflicts between subject and ruling—and possibly external to the sample—polities. Yoffee and Seri (2019) provide an extensive review

of these clashes. We supplemented their analysis with the sources that we employed to construct *External-Conflicts*. Our analysis can be summarized as follows:

- 3100 2500 BCE: Although destruction layers have been interpreted as evidence for uprisings—e.g., Uruk around 3100 BCE [Yoffee and Seri 2019, p. 189], no evidence of internal conflicts can be found in the sources for the period 3100-2500 BCE.
- 2500 2000 BCE: Around 2450 BCE, the written sources start to provide evidence of sporadic internal conflicts, such as the killing of a king of Umma by his citizens after a lost battle [Marchesi 2015a, p. 149]. A significant series of revolts is, instead, attested during the Akkadian period, e.g., successful revolt of Sargon, a kinsman of the king of Kish [Westenholz 1999, p. 36]. More generally, royal inscriptions attest that the formerly independent city-states of Lower Mesopotamia repeatedly revolted against the Akkadian power [Yoffee and Seri 2019, p. 189]. All the revolts were, however, repressed and the empire endured [Yoffee and Seri 2019, p. 189]. Upper Mesopotamian polities, on the other hand, remained loyal to the power of the Akkadian kings.
- 2000 1750 BCE: A new wave of revolts was experience at the end of Ur III period (2000 BCE), when vassal polities in Lower Mesopotamia revolted against Ur and freed themselves from the empire [Yoffee and Seri 2019, p. 190]. The resulting political agreements fostered internal conflicts leading to new revolts between 1900 and 1750 BCE [Yoffee and Seri 2019, p. 190-191]. Larsa, for instance, experienced citizens' uprisings connected to natural disasters and famine [Charpin 2004, p. 102]. In Mari, Tuttul, Shekhna, and Qatna instead, Amorite tribes often revolted against the ruling elites [Charpin 2004, p. 170-186]. Finally, the powerful kingdom of Aleppo/Yamhad experienced revolts led by rebellious members of the royal family and mercenary groups [Charpin 2004, p. 354; Veenhof and Eidem 2008, p. 332]. Finally, after the creation of the Upper Mesopotamian kingdom, Samsi-Addu had to deal with numerous revolts led by vassal powers and rebellious nomadic groups [Charpin 2004, p. 170-175].

Polity Size

To calculate the variable *Polity-Size*, we rely on the estimates of the settled area obtained by measuring the area encircled by defensive walls—i.e. "shotgun method" (Hansen, 2006), the distribution of pottery sherds through surface collection and scraping [Colantoni 2017, p. 103-106, or the remains of urbanization through drone or satellite imagery and geophysical surveys [Algaze 2017, p. 29 n. 4; Colantoni 2017, p. 95-97]. The resulting figures can be converted in population estimates through ethnographic parallels with modern mud-brick buildings (Widell et al., 2013). To illustrate, Mesopotamian cities were composed of tightly packed neighborhoods and the residential space could take up to 90-95% of the total urban space [Colantoni 2017, p. 99; Stone 2017, figure 1 and table 3]. Hence, an expansion of the settled area of a polity implies an increase of its urbanization level (Lawrence et al., 2016). A case in point is Uruk that between 3200 and 2700 BCE grew from 250 to 400 ha with a projected population jump from 37,500 to 60,000 inhabitants, i.e., employing as a rate of conversion the present-day value of 150 people per ha [Algaze 2018, p. 26-27]. These are conservative estimates since satellite imagery suggests that a population density between 170 and 600 people per ha [Stone 2017, p. 581]. Estimates of the settled areas are obtained from polity-specific secondary sources (see tables VIII-X). These figures are consistent with patterns proposed by Ur (2013) and Ristvet (2017) and based on archaeological survey data. Overall, the evidence on urbanization can be be summarized as follows:

- 3100 2550 BCE: Lower Mesopotamian polities already achieved, around 3100 BCE, urban status and considerable size with an average surface of 46 ha and peaks of 400 and 130 ha in the cases of Uruk and Girsu, respectively [Ur 2013, p. 137-139]. These figures jumped around 2900 BCE, first, and around 2550 BCE later [Ur 2013, p. 139-142], i.e., from an average of 66 ha to 111 ha. Kish and Umma reached 100 ha, whereas Adab and Lagash attained 455 and 400 ha. Between 3100 and 2800 BCE, Upper Mesopotamia was, instead, de-urbanized, with polities averaging 7-8 ha and only Shekhna, Harran and Hama gaining the status of towns [Ristvet 2017, p. 38-40]. Between 2800 and 2550 BCE, the area experienced a trend towards urbanization, usually dubbed as "secondary urbanism," with polities reaching up to 19 ha on average and Shekhna, Abarsal an Hazor excdeeding 20 ha [Ristvet 2017, p. 40-44].
- 2550 2350 BCE: This was the period of maximum urbanization [Ur 2013, p. 141-143].
 While the Lower Mesopotamian polities reached between 2550 and 2350 BCE a surface

of 110-120 ha, the Upper Mesopotamian ones achieved an average surface of 27 ha, with Ebla, Shekhna and Urkesh reaching 56, 90 and 135 ha [Ristvet 2017, p. 44-47].

2350 — **1750** BCE: After 2350 BCE, Lower Mesopotamia experienced a dramatic depopulation and the average settlement area dropped from 120 to 90 ha around 2150 BCE and between 64 and 70 ha around 2000 BCE. In particular, Adab (Lagash) dropped from 455 to 100 ha (400 to 100 ha). The only polity that experiences growth in this phase is seemingly Shush, attaining 46 ha around 2100 BCE. A new comeback of urbanization, with an average settlement area of 82 ha, is experienced around 1900 BCE, followed by a new drop—i.e., 69 ha—attested around the 1750 BCE [Ur 2013, p. 146]. To illustrate, Ur, Larsa and Umma achieved 120, 200 and 260 ha, respectively, whereas Shuruppak and Hattam were abandoned and Lagash, Eridu, Eshunna and Uruk dropped to 10, 9, 10 and 30 ha, respectively. Upper Mesopotamia displayed, instead, a certain continuity between 2100 and 1950 BCE with the average settlement area dropping to 18 ha, Urkesh peaking 100 ha and Abarsal, Harran, Tuba and Nabada being abandoned [Ristvet 2017, p. 47-50]. The next two centuries witnessed an acceleration, first, and a long stagnation later. To illustrate, Harran, Ashnakku and Tuba were resettled, Ebla, Shekhna, Kanesh, Qatna, Hazor and Karkemish reached 60, 81, 170, 110, 90 and 40 ha, respectively, and Urkesh shrank to 18 ha [Ristvet 2017, p. 50].

Imports

To get the variable *Imports*, we have followed Wilkinson (2014) and Massa and Palmisano (2018), and we have selected a range of durable items that, according to archaeological records, were, over the entire sample, unavailable locally and, thus, required by the elites. These can be divided into four categories: 1. stones; 2. metals; 3. exotic goods; and 4. balance weights. The stone items that we consider are chipped stones, used as blades, soft stones, used for decorated artifacts and containers, precious stones, used for jewelry, and both personal items and art pieces. For what concerns metals we collected evidence about copper, gold, lead, silver and tin which were the main metals used in Bronze Age Mesopotamia. Turning to exotic goods, we considered ivory and shells. Regarding balance weights, we evaluate widgets used in various daily-life activities to weigh tradable goods [Massa and
Palmisano 2018, p. 66]. We have collected our data from the Massa and Palmisano's (2018) data set available at http://discovery.ucl.ac.uk/10027581/, Quenet (2008) and polity-specific secondary sources (see tables VIII-X). The key patterns we uncover are:

- 3100 2500 BCE: Up to 2900 BCE, trade in Greater Mesopotamia was limited. The polities most involved in long-distance exchanges are Girsu, Shuruppak, Tutub, Ur and Uruk in the Alluvium. In Upper Mesopotamia instead, only Gubla, a Mediterranean harbor, was importing a significant amount of precious goods. The period 2850-2650 BCE marks an intensification of trade. Between 2600 to 2500 BCE moreover, exchanges sharply rose in Lower Mesopotamia and, especially, in Eshnunna, Hattam, Lagash, Kish, Tutub, Umma, Ur and Uruk. Over the same period, Upper Mesopotamia witnessed similar growth rates especially in Ebla, Kanesh, Nabada and Shekhna.
- 2500 2350 BCE: Trade expanded in the entire Greater Mesopotamia, experiencing a take-off in the Southern polities of Adab, Ashur, Eshnunna, Girsu, Kish, Lagash, Mari, Nippur, Tuttul, Tutub, Umma and Ur. In Upper Mesopotamia, the extent of exchange remained stable except for the spikes in Ebla, Nabada, Nagar and Shekhna.
- 2350 2000 BCE: The trends of Lower and Upper Mesopotamia bifurcated. On the one hand, Lower Mesopotamia experienced a fall in the levels of trade, especially in the "Gutian" period between 2150 and 2100 BCE. Notably, an account reports that "the enemy hordes [...] had closed off the roads and caused tall grass to grow up along the roads of the land" [Hamblin 2006, p. 106]. After the establishment of the Ur III empire (2100 BCE), the extent of trade reverted to the pre-2150 BCE level. On the other hand, Upper Mesopotamia experienced, between the 2350 and the 2150 BCE, a take-off. High levels of imports are attested in Ebla, Nabada, Nagar, Qattara, Shekhna and Urkesh. Next and between 2150 and 2000 BCE, the fertile Crescent witnessed a sharp fall in the level of imports, first, and a slow recovery later. Large levels of imports are attested, at the end of the period, in Ebla, Kanesh, Nagar and Qattara.
- 2000 1750 BCE: Lower Mesopotamia reached a stable equilibrium between 2000 and 1850 BCE with large levels of imports attested in Ashur, Eshnunna, Isin, Kish, Larsa,

Nippur, Tutub and Ur. In Upper Mesopotamia instead, the period 2000-1800 BCE witnessed a steady growth in imported materials, reaching a peak around 1750 BCE in Alalakh, Ebla, Kanesh, Nagar, Qatna, Shekhna [Palmisano 2018, figure 3.7].

<u>Merchant Institutions</u>

To construct the variable *Merchant-Institutions*, we have gathered information on those formal institutions easing the acquisition by the merchant ranks of a stable political power.

Despite the large farming productivity, early states, such as Egypt and the Mesopotamian city-states, lacked relevant inputs, like stones and/or metals, and demanded precious commodifies for the elites' conspicuous consumption [Kristiansen 2018, p. 87]. These consumption features pushed the more peripheral regions rich of stones, metals and luxury goods to setup, during the fourth millennium, primordial long-distance commercial networks (Kristiansen, 2018; Algaze, 2008). These far-flung exchanges, however, significantly shrunk at the end of the fourth millennium BCE to revive again almost a millennium afterwards during the second urbanization wave (Massa and Palmisano, 2018). Although most scholars agree on the fact that these archaic long-distance trades consisted of state-run exchanges of low-bulk/high-value items that were required by palatial elites (Massa and Palmisano, 2018; Crawford, 2013), novel information from the Ebla state archives suggests that existence of a stable cooperation between institutionalized decision-makers and private traders in the exchange of substantial volumes of raw materials and finished products such as metals, olive oil, textiles and timber (Winters, 2019; Benati and Bonechi, 2019). Already around 2400/2300 BCE in Syria indeed, long-distance trades were regulated by political treaties and supported by institutional infrastructures such as ports, specialized trading communities, trading quarters, markets, armed escorts and so forth [Winters, 2019; Yoffee and Barjamovic, 2018, p. 821. To elaborate, already at the end of third millennium BCE, emergent merchant families contracted with the temple and/or palace and, in some cases, became part of the ruling elite [Yoffee and Barjamovic 2018, p. 821; Garfinkle, 2012].

This mixture of trade and politics, however, bears no comparison with the institutional evolution fueled by the exchanges that, starting from the 2000 BCE, integrated the resourcesrich Mediterranean and Anatolian peripheries with the Mesopotamian polities through the action of nomadic and semi-nomadic communities and because of the diffusion of metals in virtually all households [Kristiansen 2018, p. 88-89; Greenfield, 2013; Barjamovic 2018, p. 122-123]. These trade flows were channeled by two major interlocking circuits—Old Assyrian and Old Babylonian trade networks—structured around connecting nodes and organized by communities of private traders that relied upon free agents and foreign commercial settlements [Barjamovic 2018, p. 124-125]. The Old Assyrian trade network linked merchants in Ashur to their representatives in Kanesh [Liverani 2014, p. 213], which, in turn, were related to a commercial network extending throughout Anatolia [Barjamovic 2018, p. 128]. Texts from the city of Sippar imply, furthermore, the existence of a Babylonian network linking Sippar to the Southern and Eastern ports, like Eshnunna and Susa, through institutions similar to those employed within the Old Assyrian trade network [Barjamovic 2018, p. 125]. Similarly, there were permanently settled Sippar merchants in Susa [Barjamovic 2018, p. 125]. To illustrate, Sippar operated as hub for both the routes that brought tin across the Zagros and down along the Diyala River and the itineraries that brought copper from Dilmun along the Euphrates River through Mari into Syria [Barjamovic 2018, p. 125].

Different from the fourth and third millennium exchange circuits, the Old Assyrian and Old Babylonian trade networks were organized around merchant organizations which managed, together with the institutionalized decision-makers, the provision of the public goods supporting trade—i.e., construction and maintenance of trade routes and defensive systems and the diffusion of inter-polity agreements—and eased, in this way, the establishment of powerful merchant families as the third institutionalized decision-making power [Van de Mieroop, 2015; Barjamovic, 2018; Yoffee and Barjamovic 2018, p. 816]. The mix of the collapse of the Ur III empire and the intensified inter-polity interaction greatly facilitated this process by paving the way for the rise of the karum [Postgate 1992, p. 300]. Constituted by urban elites, it represented both a guild and a chamber of affairs regulating trade, and it possessed its own quarter or port quay [Palmisano 2018, p. 22; Harris 1975, p. 257-269]. As aforementioned, the karum liaised with the other institutionalized decision-makers assuring political and legal power to the rising merchant households [Postgate 1992, p. 300]. In Ashur for instance, the same individuals acted as commercial agents, financial intermediaries and oligarchs [Yoffee and Barjamovic 2018, p. 818]. Other cities, such as Emar, Tuttul and Sippar, specialized in overland trade and displayed similar oligarchic institutions [Yoffee and Barjamovic 2018, p. 817; Fleming, 2004; Harris, 1975]. The karums in our sample were created, first, in Ashur, Eshnunna, Kanesh and Larsa [Barjamovic 2018, p. 125; Palmisano, 2018], and in Babylon, Karkemish, Kish and Sippar later (Kraus, 1982; Goddeeris, 2002).

Young King

To obtain the variable Young-King, we proceed as follows. First, we estimate the average kings' life expectancy through the figures suggested by the bible for the kings of Judah (6000-1000 BCE), who lived under conditions similar to those experienced by the kings of ancient Mesopotamia, i.e., 52 ± 15.29 [Griffin 2008, table 1]. This estimate is consistent with large evidence from coeval burials (Bretschneider, 2005; Curchin, 1980; Kontopoulos, 2018). Second, we follow Snell (1982), and we assume that each king's reign endured as long as his life expectancy since kingship was hereditary and kings died mainly of natural causes. Only in a limited number of cases indeed, they passed away in battles, during uprising and as a result of palatial conspiracies and coup d'etat, etc. [Snell 1982, p. 94-95]. Consistent with this anecdotal evidence, the average length of the reigns of the Mesopotamian kings of the third and second millennium BCE is, according to royal inscriptions (Liverani, 2014; Sallaberger and Schrakamp, 2015; Marchesi and Marchetti, 2011; Edzard, 1997; Grayson et al., 1987; Frayne, 1990, 1993, 1997, 2008; http://cdli.ox.ac.uk/wiki/rulers_of_mesopotamia). 16.28 years, which is similar to the estimate one obtains for medieval European kings Snell 1982, p. 90. Third, we obtain the age at coronation as the difference between a like expectancy of 52 and the average reign length if positive and the difference between 67 and the average reign length, otherwise. The patterns revealed by this three-step procedure are:

- 3100 2500 BCE: Data on rulers are scant for a twofold reason. First, they emerged in Lower Mesopotamia only around 2700 BCE (Steinkeller, 2018). Second, between 2700 and 2550 BCE, royal inscriptions are mainly concerned with cultic items [Marchesi and Marchetti 2011, 90-91, table 15a]. Archaeological and textual data suggest, however, that, from 2600 BCE, conflicts intensified (Peltenburg, 2013; Richardson, 2011).
- 2500 2000 BCE: From 2500 BCE on, royal deeds were recorded more extensively, and royal chronologies became better documented [Marchesi and Marchetti 2011, table 15b].
 Adab, Girsu, Mari, Shush, Umma and Ur-Uruk provide the richest documentation

[Sallaberger and Schrakamp 2015, p. 26-27, 67-104; De Graef, 2015; Steinkeller, 2018]. Ebla was ruled by a long local dynasty, first, and, from 2400 BCE on, by Syrian kingdoms (Bonechi, 2002; Archi, 2015, 2015b). Turning to the Akkadian and the Ur III empires, information on the kings' ascents to throne are more reliable [Sallaberger and Schrakamp 2015, p. 105-136 and http://cdli.ox.ac.uk/wiki/rulers_of_mesopotamia].

2000 — 1750 BCE: The collapse of the major empires was followed by political fragmentation but the evidence on royal dynasties diffusion is more reliable and homogeneous [http://cdli.ox.ac.uk/wiki/rulers_of_mesopotamia; Charpin 2004, p. 45-55; Liverani 2014, table 11.1; "Mesopotamian Year Names" data set]. The only gap in the documentation is registered in Upper Mesopotamia between 2000 and 1800 BCE because of local disruptions [Ristvet and Weiss, 2013; Charpin 2004, p. 153-193].

VI Public Good Provision

Army

To construct *Army*, we relied on secondary sources on army organization (Hamblin, 2006; Stillman and Tallis, 1984; Gernez, 2017; Abrahami and Battini, 2008) and polity-specific administrative documents and archaeological evidence indicating the establishment of conscription mechanisms for raising troops and the presence of a standing army (see table VI). Throughout Mesopotamian history, a key contractual relationship was the corvée [Steinkeller 2015a, p. 9-14], a work duty of limited duration owed to an institutionalized decision-maker by the population and mainly employed to complete public projects, such as the construction of palaces, temples and fortifications, and to provide public goods, such as the maintenance of irrigation systems and military services [Steinkeller 2015a, p. 9]. During the Early Dynastic period, warfare was an occasional activity and manpower was also used for civil engineering [Richardson 2011, p. 34]. Thus, besides few elite members, the military in the Early Bronze Age was made up of peasants temporarily called away from their lands for war or defense. Crucially, corvée labor for public projects was remunerated with land allotments and provisions [Stol 1995, p. 295], and it constituted an occasion of political empowerment for the citizenry (Richardson, 2011). For the soldier, the benefits

of these arrangements included not only landholding, but access to irrigation, draft-animal power and a share of the war booty (Richardson, 2011). The institutionalized decisionmakers, moreover, could benefit from creating clients and promoting loyalism among soldiers [Richardson 2011, p. 21]. Not only is the public distribution of war booty attested from the Akkadian period [Richardson 2011, p. 28-30], but bonuses became customary from the Ur III period [Richardson 2011, p. 28-30]. A letter concerning Hammurabi of Babylon reveals, for instance, that he honored soldiers by taking meals in their company and rewarding them with golden rings and fine garments. Similarly, Utuhegal, king of Uruk, summoned a city council to obtain the citizens' approval to wage war against the Gutians since the "Sumerian kings had to rely on the support of their citizens for war" [Hamblin 2006, p. 106].

Despite their key social role, corvée could be avoided by corresponding to the institutionalized policy making power a sum of silver, by hiring substitutes or by royal exemption [Stol 1995, p. 297-298; Steinkeller 2015b, p. 141]. In Pre-Sargonic times, for instance, Enmetena, a ruler of Lagaš, freed the populations of Bad-Tibira, Larsa and Uruk from the obligation to perform corvée for Lagaš [Steinkeller 2015b, p. 241]. Similar exemptions from conscripted labor are documented more frequently during the Isin-Larsa and Old Babylonian periods [Steinkeller 2015b, p. 241; Hamblin 2006, p. 95]. The main conclusions of our analysis are:

- 3100 2650 BCE: While the evidence about the period 3100-2900 BCE is scant, more information is available for the following years. By then, the intensification of warfare due to the diffusion of bronze weapons and fortifications eased the rise of armies under royal power [Richardson 2011, p. 17-18; Gernez 2017, p. 94-140; Peltenburg, 2013].
- 2650 2350 BCE: The first clear evidence of a conscription system based on the allocation of "šuku" land by the institutionalized decision-maker is found between 2650 and 2550 BCE at Šuruppak in Lower Mesopotamia [Selz 2010, p. 14-15]. The textual evidence refers to groups of sixty military officers working as overseers and affiliated with the cities of Adab, Lagaš, Nippur, Umma and Uruk [Selz 2013, p. 220]. Similar systems are, then, attested at Ebla, Girsu-Lagash, Mari, Nabada and Nagar [Prentice 2010, p. 37-40; Archi, 2000; Sallaberger and Pruss 2015, p. 78]. From 2550 BCE on moreover, major kingdoms in the entire Mesopotamia could organize conscripted armies and

all types of metal weapons were diffused in Greater Mesopotamia [Hamblin 2006, p. 48-72; Gernez 2017, p. 167]. Excavations at the royal cemeteries of Kiš and Ur revealed, in fact, weapons, chariots and pictorial representations of war scenes on cylinder seals, furniture pieces and musical instruments [Marchesi and Marchetti 2011; Gernez 2017, p. 94-113]. The evidence coming from Ebla and Mari is similar. Together with conscription mechanisms, a core of professional soldiers in permanent duty seems established by 2500/2400 BCE [Bonechi, 2016a; Selz 2010, p. 14-15].

- 2350 2000 BCE: During the Akkadian period, military action moved closer to the center [2350-2150 BCE; Richardson 2011; Gernez 2017, p. 118-121]. Sargon of Akkad was proud that 5,400 fighting men "ate before him daily" [Hamblin 2006, p. 75; Selz 2010, p. 13]. This is consistent with the constitution of a professional army, which, in turn, was composed of a core group of officials and professional soldiers supplemented by conscripted farmers coming from the tributary polities [Foster 1993, p. 27]. Both professional and conscripted soldiers were remunerated with land allocations Abrahami 2008, p. 5], food provisions and a share of the booty [Richardson 2011, p. 28-30]. Conscription mechanisms survived the collapse of the Akkadian empire in Lagash-Girsu [Lafont 2009, p. 7]. During the Ur III period moreover, the military sector had a similarly composition [Lafont 2009, figure 2]. The professional soldiers were state officials paid with land allocations and food rations and, when not employed in war, they worked as bodyguards, messengers, constables or seasonal laborers (Lafont, 2009). Outside the empire, evidence of sizable armies comes from Shush [Hamblin 2006, p. 105]. The information on Upper Mesopotamia is again more limited, but the frequent conflicts between the Akkadian kings, on the one hand, and both Ebla and Mari, on the other hand, and between the Ur III kings, on the one hand, and Urbilum, Shashrum, and Shush, on the other hand, indicate that some polities had standing military armies.
- 2000 1750 BCE: The collapse of the Ur III empire brought about political fragmentation and endemic warfare in Greater Mesopotamia [Hamblin 2006, p. 154]. Next, the Amorite dynasties started to conscript tribal populations as mercenary in exchange for a pay and formal political allegiances [Hamblin 2006, p. 158-159]. Hence, standing

military organizations became, from 1900 BCE on, well-attested in Upper Mesopotamia and ubiquitous in Lower Mesopotamia polities [Hamblin 2006, p. 192, 200; Harris 1975, p. 86-115; Goddeeris 2002, p. 339-343]. They were composed of mercenaries, professional troops and drafted soldiers [Hamblin 2006, p. 192]. While drafted soldiers were conscripted from the citizenry involved in tenure-to-service contracts [Harris 1975, p. 89-93; Goddeeris 2002, p. 339-340], professional soldiers received an amount of land proportional to their rank, e.g., one general was given a large estate of 190 ha, while common soldiers were awarded single-family plots [Hamblin 2006, p. 194]. Finally, mercenaries were usually recruited from nomad tribes [Hamblin 2006, p. 194]. Military services were usually seasonal but could be extended in case of need [Hamblin 2006, p. 193]. Compensation for military service took also the form of clothing, food, weapons, silver wages, slaves and a share of the war booty [Hamblin 2006, p. 194]. Interestingly, most of the contexts in which soldiers appear in the Code of Hammurabi have to do with the disposition of their lands, mostly prohibiting their sale or transfer, but also protecting them from seizure and making them inheritable as long as their original military duties were performed [Richardson 2011, p. 22; Hamblin 2006, p. 194].

Public Buildings

To construct the variable *Public-Buildings* we have collected evidence from polity-specific secondary sources (see tables VIII-X). Although public and ritual buildings are attested since the 5th millennium BCE [Anastasio 2011, p. 88-89], it is only with the transition from village to urban societies that the newborn cities started to host the seat of the political power and the center of the cultic authorities (Heinz, 2013; Stone, 2013; Butterlin, 2018). From the Early Dynastic period indeed, we start to clearly distinguish architectural typologies of public buildings with precise religious and secular functions, such as temples and palaces [Anastasio 2011, p. 91-99]. The general patterns that we can observe are:

3050 — 2650 BCE: Until the later Early Dynastic period, excavated data indicate lack of public buildings except for temples [Stone 2013, p. 157]. In Lower Mesopotamia, significant concentrations of temples are documented at Nippur and Tutub, whereas most polities seem to be endowed with only one sanctuary. Upper Mesopotamia, on the other hand, seems almost devoid of public buildings.

- 2650 2400 BCE: Mesopotamian urban sites started to develop complex public buildings as part of the process of institutional development that saw, among the most important factors, the emergence of kingship and the first palatial structures [Stone 2013, p. 162-164]. In Lower Mesopotamia, most of the polities displayed multiple sanctuaries and palaces, e.g., Girsu (15), Kish (5) and Mari (9). Similarly, Upper Mesopotamia is characterized by a mix of a more intense urbanization and the diffusion of public buildings especially in Abarsal (7), Ebla (5), Gubla (5) and Nabada (6).
- 2400 2200 BCE: The formation of the Akkadian empire halted the diffusion of public buildings in the entire Greater Mesopotamia. While in Lower Mesopotamia some new buildings appeared in Eshnunna (3), Nippur (3) and Tutub (3), in Upper Mesopotamia a similar dynamics interested only Gubla (4), Nagar (5) and Shekhna (4).
- 2200 2000 BCE: The rise of the Ur III empire provoked a bifurcation between Upper and Lower Mesopotamian polities. While the latter witnessed a novel impulse in the provision of public buildings—e.g., Mari (6) and Ur (9) [Stone 2013, p. 169], the former displayed a further drop with only Ebla accumulating nine new buildings.
- 2000 1750 BCE: The Isin-Larsa period, first, and the formation of the Old Babylonian empire later, induced and acceleration in Lower Mesopotamia—with Eshnunna (6), Larsa (5), Mari (6) and Ur (6) being the leading polities [Stone 2013, p. 169-176]—and an even sharper rise in Upper Mesopotamia, i.e., Ebla (9), Hazor (3) and Kanesh (3).

References (Not Listed in the Main Text)

Abrahami, Philippe. 2008. "L'armée d'Akkad." In: Les Armées Du Proche-Orient Ancien (3e-1er Mill. Av. J.-C.): Actes Du Colloque International Organisé à Lyon Les 1er et 2 Décembre 2006, Maison de l'Orient et de La Méditerranée (BAR S1855). Philippe Abrahami and Laura Battini (eds.), Oxford, UK: David Brown Book.

Abrahami, Philippe, and Laura Battini. 2008. Les Armées Du Proche-Orient Ancien (3e-1er Mill. Av. J.-C.): Actes Du Colloque International Organisé à Lyon Les 1er et 2 Décembre 2006, Maison de l'Orient et de La Méditerranée (BAR S1855). Oxford, UK: John and Erica Hedges.

Adams, Robert Mcc., and Hans J. Nissen. 1972. *The Uruk Countryside*. Chicago, IL: University of Chicago Press.

Ahmad, Kozak M. 2012. The Beginnings of Ancient Kurdistan (c. 2500-1500 BC) A Historical and Cultural Synthesis. MA Dissertation, Leiden, NL.

Al-Gailani Werr, Lamia, and Walid al-Jadir. 1981. "Seal Impressions from Sippar." Sumer, 37: 129-144.

Algaze, Guillermo. 1989. "The Uruk Expansion: Cross-Cultural Exchange in Early Mesopotamian Civilization." *Current Anthropology*, 30: 571-608.

Algaze, Guillermo. 1993. The Uruk World System. The Dynamics of Expansion of Early Mesopotamian Civilization. Chicago, IL: University of Chicago Press.

Algaze, Guillermo. 1996. "Fourth Millennium B.C. Trade in Greater Mesopotamia: Did It Include Wine?" In: *The Origins and Ancient History of Wine*, Patrick E. McGovern, Stuart J. Fleming, and Solomon H. Katz (eds.), Newark, NJ: Gordon & Breach.

Algaze, Guillermo. 2008. Ancient Mesopotamia at the Dawn of Civilization. The Evolution of an Urban Landscape. Chicago, IL: University of Chicago Press. Algaze, Guillermo. 2017. "Demographic Trends in Early Mesopotamian Urbanism." In: Overturning Certainties in Near Eastern Archaeology. A Festschrift in Honor of K. Aslıhan Yener, Çidem Maner, Mara T. Horowitz, and Allan S. Gilbert (eds.), Leiden, NL: Brill.

Algaze, Guillermo. 2018. "Entropic Cities: The Paradox of Urbanism in Ancient Mesopotamia." *Current Anthropology*, 59: 23-54.

Al-Maqdissi, Michel. 2008. "Ras Shamra Au Bronze Moyen. Travaux 1929-1974 (Ier-XXXVe Campagnes de Fouilles)." In: *Ougarit au Bronze moyen et au Bronze récent*, Yves Calvet and Marguerit Yon (eds.), Lyon, FR: Maison de l'Orient et de la Méditerranée Jean Pouilloux.

Al-Mutawalli, Nawala. 2009. "Jokha (Umma), Excavations Results of the First and Second Seasons 1999-2000." *Sumer*, 54: 53-75.

Al-Mutawalli, Nawala. 2010. "Administrative Cuneiform Texts from Umma in the Iraq Museum - Excavations of the Shara Temple (1999-2000)." *Sumer*, 55: 45-86.

Al-Yaqoobi, Dara, Mary Shepperson, and John MacGinnis. 2018. "Excavations on the Fortifications of the Citadel of Erbil." In: *Proceedings of the 10th International Congress* on the Archaeology of the Ancient Near East, Barbara Horejs et al. (eds.), Wiesbaden, DE: Harrassowitz.

Anastasio, Stefano. 1995. The Archaeology of Upper Mesopotamia: An Analytical Bibliography for the Pre-Classical Periods. Turnhout, BE: Brepols.

Anastasio, Stefano. 2011. Costruire Tra i Due Fiumi. Introduzione All'edilizia in Mesopotamia Tra Neolitico Ed Età Del Ferro. Firenze, IT: Museo e Istituto Fiorentino di Preistoria "Paolo Graziosi."

Anastasio, Stefano, Marc Lebeau, and Martin Sauvage. 2004. Atlas of Preclassical Upper Mesopotamia (Subartu 13). Turnhout, BE: Brepols.

Archi, Alfonso. 1990. "Tuttul-Sur-Balih à l'âge d'Ebla." In: *De la Babylonie à la Syrie* en passant par Mari. Mélanges offerts à Monsieur J.-R. Kupper à l'occasion de son 70e anniversaire. Önhan Tunca (ed.), Liège, FR: Universitè de l'Etat à Liège. Archi, Alfonso. 1998a. "Proprietà Terriera e Messa a Coltura Dei Terreni Nella Siria Del III Millennio a.C." In: *Atti del convegno geografico internazionale 'I valori dell'agricoltura nel tempo e nello spazio'*. Maria G. Grillotti Di Giacomo and Lidia Moretti (eds.), Genova, IT: Brigati.

Archi, Alfonso. 1998b. "The Regional State of Nagar According to the Texts of Ebla."In: About Subartu: Studies Devoted to Upper Mesopotamia (Subartu 4). Marc Lebeau (ed.),Turnhout, BE: Brepols.

Archi, Alfonso. 2000. "Men at War in the Ebla Period. On the Unevenness of the Written Documentation." In: Why Should Someone Who Knows Something Conceal It? Cuneiform Studies in Honor of David I. Owen on His 70th Birthday. Alexandra Kleinerman and Jack Sasson (eds.), Rockville, MD: Bethesda CDL Press.

Archi, Alfonso. 2006. "Aalalah Al Tempo del Regno Di Ebla." In: *Tra Oriente e Occidente: Studi in Onore di Elena di Filippo Balestrazzi*. Daniele Morandi Bonacossi et al. (eds.), Padova, IT: Sargon.

Archi, Alfonso. 2010. "Hamath, Niya and Tunip in the 3rd Millennium BC According to the Ebla Documents." *Studi Micenei ed Egeo-Anatolici*, 52: 33-39.

Archi, Alfonso. 2014. "La situation géopolitique de la Syrie avant de l'expansion d'Akkad." In: Mari, ni Est, ni Ouest. Actes du colloque 'Mari, ni Est ni Ouest' tenu les 20-22 octobre 2010 à Damas, Syrie (Supplément Syria II). Pascal Butterlin et al. (eds.), Beyrouth, LB: Ifpo.

Archi, Alfonso. 2015b. "The Chronology of Ebla and Synchronisms with Abarsal, Tuttul, Nagar and Nabada, Mari, Kish." In: *ARCANE III. History & Philology*. Walther Sallaberger and Ingo Schrakamp (eds.), Turnhout, BE: Brepols.

Archi, Alfonso. 2017. "Religious Duties for a Royal Family: Basing the Ideology of Social Power at Ebla." *Journal of Near Eastern Studies*, 76: 293-306.

Astour, Michael C. 2002. "A Reconstruction of the History of Ebla (Part 2)." *Eblaitica: Essays on the Ebla Archives and Eblaite Languages*, 4: 57-196. Badler, Virginia R., Patrick E. McGovern, and David L. Glusker. 1996. "Chemical Evidence for a Wine Residue from Warka (Uruk) Inside a Late Uruk Period Spouted Jar." *Baghdader Mitteilungen*, 27: 39-43.

Baetschmann, Gregori, Kevin E. Staub, and Rainer Winkelmann. 2015. "Consistent Estimation of the Fixed Effects Ordered Logit Model." *Journal of the Royal Statistical Society: Series A*, 178: 685-703.

Bahrani, Zainab. 1989. The Administrative Building at Tell Al Hiba. PhD Dissertation, New York University, NY.

Banks, Edgar J. 1912. Bismya, or the Lost City of Adab. A Story of Adventure, of Exploration, and of Excavations among the Ruins of the Oldest of the Buried Cities of Babylonia. New York, NY: P. Sons.

Barjamovic, Gojko. 2011. A Historical Geography of Anatolia in the Old Assyrian Period. Copenhagen, DK: Museum Tusculanum Press.

Barjamovic, Gojko. 2014. "The Size of Kanesh and the Demography of Early Middle Bronze Age Anatolia." In: *Current Research at Kültepe-Kanesh. An Interdisciplinary and Integrative Approach to Trade Networks, Internationalism, and Identity (JCS Supplement* 4), Levent Atici et al. (eds.), Atlanta, GA: Lockwood Press.

Barjamovic, Gojko, Thomas Hertel, and Mogens T. Larsen. 2012. Ups and Downs at Kanesh: Chronology, History and Society in the Old Assyrian Period (PIHANS 120). Leiden, NL: Nederlands Instituut voor het Nabije Oosten.

Basello, Gian Pietro, and Grazia Giovinazzo. 2018. "Elamite Administration." In: *The Elamite World*, Javier Alvarez-Mon, Gian Pietro Basello, and Yasmina Wicks (eds.), London, UK: Routledge.

Benati, Giacomo. 2014. The Early Dynastic Period at Ur: Chronology, Stratigraphy, Architecture and Materials from the Trial Pits, the Royal Cemetery and the Ziqqurat Terrace. PhD Dissertation, University of Turin, IT. Benati, Giacomo. 2015. "Re-Modeling Political Economy in Early 3rd Millennium BC Mesopotamia: Patterns of Socio-Economic Organization in Archaic Ur (Tell Al-Muqayyar, Iraq)." *Cuneiform Digital Library Journal*, 2015: 1-37.

Benati, Giacomo, and Marco Bonechi. 2019. "The Fiscal Structure of the Ebla State in Early Bronze Age Syria." In: *Taxation and Management of Resources in the Ancient Near East*, Sergio Alivernini and Jana Mynarova (eds.), Prague, CZ: Charles University Prague Press.

Ben-Tor, Ammon. 1993. "Hazor." In: *The New Encyclopedia of Archaeological Excavations in the Holy Land. Volume 2*, Ephraim Stern (ed.), Jerusalem, IL: Israel Exploration Society & Carta.

Ben-Tor, Ammon, and Ruhama Bonfil. 1997. Hazor, V. An Account of the Fifth Season of Excavation, 1968. Text and Illustrations. Jerusalem, IL: Israel Explorations Society.

Ben-Tor, Ammon, Sharon Zuckerman, Shlomit Bechar, and Debora Sandhaus. 2017. Hazor VII. The 1990-2012 Excavations. The Bronze Age. Jerusalem, IL: Israel Exploration Society.

Beuger, Claudia. 2013. Die Keramik Der Älteren Ischtar-Tempel in Assur von Der Zweiten Hälfte Des 3. Bis Zur Mitte Des 2. Jahrtausends v. Chr. (WVDOG 138). Wiesbaden, DE: Harrassowitz.

Bevan, Andrew. 2007. Stone Vessels and Values in the Bronze Age Mediterranean. Cambridge, UK: Cambridge University Press.

Biga, Maria Giovanna. 2014. "Karkemish in the Ebla Texts: Some New Data." In: Karkemish. An Ancient Capital on the Euphrates (OrientLab 2). Nicolò Marchetti (ed.), Bologna, IT: AnteQuem.

Biga, Maria Giovanna. 2015. "The Geographical Scope of Ebla: Commerce and Wars. Some Remarks." In: ARCANE III. History & Philology, Walther Sallaberger and Ingo Schrakamp (eds.), Turnhout, BE: Brepols. Bjorkman, Judith K. 1993. "The Larsa Goldsmith's Hoards-New Interpretations." *Jour*nal of Near Eastern Studies, 52: 1-23.

Bonechi, Marco. 1992. "Relations Amicales Syro-Palestiniennes: Mari et Hasor Au XVIIIe Siècle Av. J.C." In: *Florilegium marianum 1: Recueil d'études en l'honneur de Michel.* Jean-Marie Durand (ed.), Paris, FR: SEPOA.

Bonechi, Marco. 1997. "II Millennium Ebla Kings." Revue d'Assyriologie, 91: 33-38.

Bonechi, Marco. 2002. "The Dynastic Past of the Rulers of Ebla." Ugarit Forschungen, 33: 53-64.

Bonechi, Marco. 2016a. "Strife in Early Bronze Syria. Lexical, Prosopographical, and Historical Notes on the Ebla Texts." In: Kakkêka rukusma ("Ceins tes armes!"): 2e Rencontre d'Histoire militaire du Proche-Orient Ancien (Lyon, 17-18 octobre 2013) (Revue internationale d'Histoire Militaire Ancienne No. 3/2016), Philippe Abrahami and Catherine Wolff (eds.), Paris, FR: Klincksieck.

Bonechi, Marco. 2016b. "Thorny Geopolitical Problems in the Palace G Archives. The Ebla Southern Horizon. Part One: The Middle Orontes Basin." In: Le Fleuve Rebelle Géographie Historique du Moyen Oronte d'Ebla è l'Époque Médiévale. Actes du Colloque International Tenu les 13 et 14 Dècembre 2012 à Nanterre (MAE) et à Paris (INHA), Dominique Parayre (ed.). Beyrouth, LB: Ifpo.

Bretschneider, Joachim. 2005. "Life and Death in Nabada." *Scientific American - Special Editions*, 15: 52-59.

Bryce, Trevor. 2009. The Routledge Handbook of The Peoples and Places of Ancient Western Asia. The Near East from the Early Bronze Age to the Fall of the Persian Empire. London, UK: Routledge.

Buccellati, Giorgio, and Marylin Kelly-Buccellati. 1997. "Urkesh. The First Hurrian Capital." *The Biblical Archaeologist*, 60: 77-96.

Buccellati, Giorgio, and Marylin Kelly-Buccellati. 2000. "The Royal Palace of Urkesh. Report on the 12th Season at Tell Mozan/Urkesh: Excavations in Area AAA, June- October 1999." *Mitteilungen Der Deutschen Orient-Gesellschaft Zu Berlin*, 132: 133-184.

Butterlin, Pascal. 2013. "Les Villes Suméro-Akkadiennes et Leur Arrière-Pays: La Cité-État Introuvable. Études Proto-Urbaines 2." In: *Topoi, Supplément 12 Villes et campagnes aux rives de la Méditerranée ancienne Hommages à Georges Tate.* Gerard Charpentier and Vincent Puech (eds.), Lyon, FR: Maison de l'orient méditerranéen.

Butterlin, Pascal. 2018. Les Bâtisseurs de Mémoire En Mésopotamie (7000-3000 Av. J.-C.). Paris, FR: Picard.

Bär, Jurgen. 1999. "Djemdet Nasr' in Assur?" In: *Munuscula Mesopotamica. Festschrift* für Johannes Renger (AOAT 267), Barbara Böck, Eva Cancik-Kisrschbaum, and Thomas Richter (eds.), Munster, DE: Ugarit Verlag.

Bär, Jurgen. 2003. Die Älteren Ischtar-Tempel in Assur, Stratigraphie, Architektur Und Funde Eines Altorientalischen Heiligtums von Der Zweiten Hälfte Des 3. Jahrtausends Bis Zur Mitte Des 2. Jahrtausends v. Chr. (WVDOG 105). Saarbrucken, DE: Saarbrucker Druckerei und Verlag.

Calvet, Yves. 2003. "Batimenst Paléobabyloniens à Larsa." In: *Larsa: travaux de 1987 et 1989*, Jean-Loius Huot (ed.), Beyrouth, LB: Institut français d'archéologie du Proche-Orient.

Carter, Elizabeth. 1985. "Notes on Archaeology and the Social and Economic History of Susiana." *Paléorient*, 11: 43-48.

Carter, Elizabeth. 1989-1990. "A Surface Survey of Lagash, Al-Hiba, 1984." Sumer, 46: 60-63.

Catagnoti, Amalia. 1991. "Le Royaume de Tuba et Ses Cultes." In: *Florilegium mari*anum: Recueil d'études en l'honneur de Michel Fleur, Jean-Marie Durand (ed.), Paris, FR: SEPOA. Catagnoti, Amalia. 2003. "Ebla." In: A History of Ancient Near Eastern Law, Raymond Westbrook (ed.), Boston, IL: Brill.

Chambon, Gregory. 2009. Les Archives Du Vin à Mari (Florilegium Marianum 11; Mémoires de NABU 12). Paris, FR: SEPOA.

Charaf, Hanan. 2014. "The Northern Levant (Lebanon) during the Middle Bronze Age."
In: The Oxford Handbook of the Archaeology of the Levant c. 8000-332 BCE, Anna E.
Killebrew and Margreet Steiner (eds.), Oxford, UK: Oxford University Press.

Charpin, Dominique. 2004. "Histoire Politique Du Proche-Orient Amorrite (2002-1595)." In: *Mesopotamien: Die altbabylonische Zeit (OBO 160/4)*, Dominique Charpin, Dietz O. Edzard, and Marten Stol (eds.), Fribourg-Göttingen, DE: Academic Press-Vandenhoeck & Ruprecht.

Charpin, Dominique, and Nele Ziegler. 2003. Mari et Le Proche-Orient à l'époque Amorrite: Essai d'histoire Politique (Florilegium Marianum V; Mémoires de NABU, 6). Paris, FR: Editions Recherche sur les civilisations.

Charpin, Dominique, Dietz O. Edzard, and Marten Stol. 2004. Mesopotamien: Die Altbabylonische Zeit (OBO 160/4). Fribourg-Göttingen, DE: Academic Press-Vandenhoeck & Ruprecht.

Cooper, Jerrold S. 1983. Reconstructing History from Ancient Inscriptions: The Lagash-Umma Border Conflict (SANE 2/1). Malibu, CA: Undena.

Cooper, Lisa. 2006a. "The Demise and Regeneration of Bronze Age Urban Centers in the Euphrates Valley of Syria." In: *After Collapse: The Regeneration of Complex Societies*, Glenn M. Schwartz and John J. Nichols (eds.), Tucson, AZ: University of Arizona Press.

Cooper, Lisa. 2006b. *Early Urbanism on the Syrian Euphrates*. New York, NY: Routledge.

Cooper, Lisa. 2010. "States of Hegemony: Early Forms of Political Control in Syria during the 3rd Millennium BC." In: *Development of Pre-State Communities in the Ancient Near-East*, Diane Bolger and Louise C. Maguire (eds.), Oxford, UK: Oxbow Books. Crawford, Harriet. 2013. "Trade in the Sumerian World." In: *The Sumerian World*, Harriet Crawford (ed.), London, UK: Routledge.

Crawford, Vaughn E. 1972. "Excavations in the Swamps of Sumer." *Expedition*, 14: 13-20.

Crawford, Vaughn E. 1974. "Lagash." Iraq, 36: 29-35.

Crüsemann, Nicola, Margarete van Ess, Markus Hilgert, and Beate Salje. 2013. Uruk. 5000 Jahre Megacity. Petersberg, DE: Michael Imhof Verlag.

Curchin, Leonard. 1980. "Old Age in Sumer: Life Expectancy and Social Status of the Elderly." *Florilegium*, 2: 61-70.

Dahl, Jacob. 2007. The Ruling Family of Ur III Umma. A Prosopographical Analysis of an Elite Family in Southern Iraq 4000 Years Ago (PIHANS 108). Leiden, NL: Nederlands Instituut voor het Nabije Oosten.

Dahl, Jacob. 2018. "Labor Administration in Proto-Elamite Iran." In: What's in a Name? Terminology related to Work Force and Job Categories in the Ancient Near East (AOAT 440), Agnes Garcia-Ventura (ed.), Münster, DE: Ugarit Verlag.

Dalley, Stephanie. 1984. Mari and Karana. Two Old Babylonian Cities. London, UK: Routledge.

Dalley, Stephanie, Christopher B. Walker, and John D. Hawkins. 1976. Old Babylonian Tablets from Tell Al Rimah. London, UK: British School of Archaeology in Iraq.

D'Anna, Maria B., Carolin Jauß and J. Cale Johnson. 2015. "Food and Urbanization. Material and Textual Perspectives on Alimentary Practice in Early Mesopotamia: Introduction." *Origini*, 37: 7-14.

De Contenson, Henry. 1992. Prehistoire de Ras Shamra. Ras Shamra-Ougarit VIII. Paris, FR: Editions Recherche sur les civilisations. De Graef, Katherine. 2015. "Susa in the Late 3rd Millennium: From a Mesopotamian Colony to an Independent State (MC 2110-1980)." In: *ARCANE III. History & Philology*, Walther Sallaberger and Ingo Schrakamp (eds.), Turnhout, BE: Brepols.

De Graef, Katherine. 2018. "In Susa's Fields. On the Topography of Fields in Old Babylonian Administrative Documents from Susa." In: *Topography and Toponymy in the Ancient Near East: Perspectives and Prospects.* Jan Tavernier (ed.), Leuven, BE: Peeters.

De Jong Ellis, Maria. 1976. Agriculture and the State in Ancient Mesopotamia: An Introduction to Problems of Land Tenure (Occasional Publications of the Babylonian Fund, 1). Philadelphia, PA: Babylonian Fund - University Museum.

Delougaz, Pinhas. 1940. The Temple Oval at Khafajah (OIP 53). Chicago, IL: The Oriental Institute.

Delougaz, Pinhas, and Seton Lloyd. 1942. Sargonid Temples in the Diyala Region (OIP 58). Chicago, IL: University of Chicago Press.

Delougaz, Pinhas, Harold D. Hill, and Seton Lloyd. 1967. Private Houses and Graves in the Diyala Region (OIP 88). Chicago, IL: The Oriental Institute.

De Graef, Katherine. 2015. "Susa in the Late 3rd Millennium: From a Mesopotamian Colony to an Independent State (MC 2110-1980)." In: *ARCANE III. History & Philology*, Walther Sallaberger and Ingo Schrakamp (eds.), Turnhout, BE: Brepols.

De Graef, Kathrine. 2018. "In Susa's Fields. On the Topography of Fields in Old Babylonian Administrative Documents from Susa." In: *Topography and Toponymy in the Ancient Near East: Perspectives and Prospects*, Jan Tavernier (ed.), Leuven, BE: Peeters.

De Maaijer, Remco. 1998. "Land Tenure in Ur III Lagaš." In: Landless and Hungry? Access to Land in Early and Traditional Societies: Proceedings of a Seminar Held in Leiden, 20-21 June 1996 (CNWS Publications, 67), Bernard Haring and Remco de Maaijer (eds.), Leiden, NL: Research School of Asian, African, and Amerindian Studies. De Meyer, Leon. 1980. *Tell Ed-Der, Tome III. Sounding at Abû Habbah (Sippar)*. Leuven, Be: Peeters.

De Meyer, Leon. 1984. *Tell Ed-Der, Tome IV. Progress Reports (Second Series)*. Leuven, BE: Peeters.

Dercksen, Jan G. 2004. "Same Elements of Old Anatolian Society in Kaniš." In: Assyria and Beyond. Studies Presented to Mogens Trolle Larsen (PIHANS 100). Jan G. Dercksen (ed.), Leiden, NL: Nederlands Instituut voor het Nabije Oosten.

Dercksen, Jan G. 2008. "Observations on Land Use and Agriculture in Kanesh." In: *Old Assyrian Studies in Memory of Paul Garelli (PIHANS 112)*. Cecile Michel (ed.), Leiden, NL: Nederlands Instituut voor het Nabije Oosten.

De Ryck, Ivan, Annemie Adriaens, and Freddy Adams. 2005. "An Overview of Mesopotamian Bronze Metallurgy during the 3rd Millennium BC." *Journal of Cultural Heritage*, 6: 261-268.

Di Giacomo, Giacomo, and Giuseppe Scardozzi. 2012. "Multitemporal High-Resolution Satellite Images for the Study and Monitoring of an Ancient Mesopotamian City and Its Surrounding Landscape: The Case of Ur." *International Journal of Geophysics*, 2012: 1-14.

Durand, Jean Marie 1990. "La Cité-Etat d'Imar à l'époque Des Rois de Mari." *MARI*, 6: 39-92.

Durand, Jean Marie. 2018. "Les Textes d'Ébla 'Paléobabylonienne." In: *Ebla and Beyond. Ancient Near Eastern Studies after Fifty Years of Discoveries at Tell Mardikh Proceedings of the International Congress Held in Rome, 15th–17th December 2014.* Paolo Matthiae, Frances Pinnock, and Marta D'Andrea (eds.), Wiesbaden, DE: Harrassowitz.

Edzard, Dietz O. 1997. *Gudea and His Dynasty (RIME 3/1)*. Toronto, CA: University of Toronto Press.

Eidem, Jesper. 1992. *Tell Shemshara Archives 2. The Administrative Texts.* Copenhagen, DE: Royal Danish Academy of Sciences and Letters.

Eidem, Jesper. 2000. "Northern Jezira in the 18th Century BC: Aspects of Geo-Political Patterns." In: La Djéziré et l'Euphrate syriens de la protohistoire à la fin du IIe millénaire av., J.-C. Olivier Rouault and Marcus Wäfler (eds.), Turnhout, BE: Brepols.

Eidem, Jesper. 2008. "Old Assyrian Trade in Northern Syria. The Evidence from Tell Leilan." In: Anatolia and the Jazira during the Old Assyrian Period (PIHANS 11), Jan G. Dercksen (ed.), Louvain, BE: Peeters.

Eidem, Jesper. 2012. "Šušarra. Ancient Town in N-E Iraq." *Reallexikon Der Assyriologie* Und Vorderasiatischen Archäologie, 13: 360-62.

Eidem, Jesper. 2014. "The Kingdom of Shamshi-Adad and Its Legacies." In: *Constituent, Confederate, and Conquered Space. The Emergence of the Mittani State (TOPOI Berlin Studies of the Ancient World 17)*, Eva Cancik-Kirschbaum, Nicole Brisch and Jesper Eidem (eds.), Berlin, DE: De Gruyter.

Eidem, Jesper. 2015. "The NINO Archaeological Project on the Rania Plain 2013-2014." Annual Report NINO/NIT, 2013-2014: 2-9.

Eidem, Jesper, Irving Finkel, and Marco Bonechi. 2001. "The Third-Millennium Inscriptions." In: *Excavations at Tell Brak. Vol. 2: Nagar in the Third Millennium BC*. David Oates, Joan Oates and Helen McDonald (eds.), Oxford, UK: British School of Archaeology in Iraq.

Einwag, Berthold, and Adelheid Otto. 2019. "The Inventory of the Temple at Tell Bazi." In: Ancient Near Eastern Temple Inventories in the Third and Second Millennia BCE. Integrating Archaeological, Textual, and Visual Sources. Jean M. Evans and Elisa Roßberger (eds.), Gladbeck, DE: PeWe Verlag.

Ellickson, Robert, and Charles Thorland. 1995. "Ancient Land Law: Mesopotamia, Egypt, Israel." *Chicago-Kent Law Review*, 71: 321-411.

El Morr, Ziad, Florence Cattin, David Bourgarit, Yannick Lefrais, and Patrick Degryse. 2013. "Copper Quality and Provenance in Middle Bronze Age I Byblos and Tell Arqa (Lebanon)." *Journal of Archaeological Science*, 40: 4291-4305. El Morr, Ziad. 2017. "Metals and Society in Middle Bronze Age Byblos." In: *Material Chains in Late Prehistoric Europe and the Mediterranean. Time, Space and Technologies of Production*, Alexis Gorgues, Katharina Rebay-Salisbury, and Roderick B. Salisbury (eds.), Bordeaux, FR: Ausonius.

Evans, Jean M. 2007. "The Square Temple at Tell Asmar and the Construction of Early Dynastic Mesopotamia, ca. 2900-2350 B.C.E." *American Journal of Archaeology*, 111: 599-632.

Ezer, Sabahattin. 2014. "Kültepe-Kanesh in the Early Bronze Age." In: Current Research at Kültepe-Kanesh. An Interdisciplinary and Integrative Approach to Trade Networks, Internationalism, and Identity (JCS Supplement 4), Levent Atici et al. (eds.), Atlanta, GE: Lockwood Press.

Falsone, Gioacchino, and Paola Sconzo. 2007. "The 'Champagne-Cup' Period at Carchemish. A Review of the Early Bronze Age Levels on the Acropolis Mound and the Problem of the Inner Town." In: *Euphrates Valley River Settlement. The Carchemish Sector in the Third Millennium B.C. (Levant Supplementary Series 5)*, Edgar Peltenburg (ed), Oxford, UK: Oxbow Books.

Fiette, Baptiste. 2018. "Le Domaine Royal de Hammurabi de Babylone. Apports de La Documentation Cunéiforme à l'histoire Agraire." *Histoire et Sociétés Rurales*, 49: 9-53.

Finkbeiner, Uwe. 1991. Uruk. Kampagne 35-37, 1982-1984. Die Archäologische Oberflächenuntersuchung (Survey) (AUWE 4). Mainz am Rhein, DE: Von Zabern.

Finkbeiner, Uwe. 2001. "Emar 1999 - Bericht Uber Die 3. Kampagne Der Syrisch-Deutschen Ausgrabungen." *Baghdader Mitteilungen*, 32: 41-110.

Finkbeiner, Uwe. 2002. "Emar 2001 - Bericht Uber Die 4. Kampagne Der Syrisch-Deutschen Ausgrabungen." *Baghdader Mitteilungen*, 33: 109-46.

Finkbeiner, Uwe. 2005. "Neue Ausgrabungen in Emar, Syrien: Kampagnen 1996-2002."
In: Colloquium Anatolicum IV. Meltem Dogan-Alparslan (ed.), Istanbul, TR: Türk Eskiçag
Bilimleri Enstitüsü Yayinlari.

Finkbeiner, Uwe. 2007. "A Room Inventory of Early Bronze IV from Emar." In: From Relative Chronology to Absolute Chronology: The Second Millennium BCE in Syria-Palestina, Paolo Matthiae et al. (eds.), Roma, IT: Accademia Nazionale dei Lincei.

Finkbeiner, Uwe, and Ferhan Sakal. 2003. "Emar 2002 - Bericht Über Die 5. Kampagne Der Syrisch-Deutschen Ausgrabungen." *Baghdader Mitteilungen*, 34: 9-117.

Finkbeiner, Uwe, and Ferhan Sakal. 2010. Emar after the Closure of the Tabqa Dam. The Syrian-German Excavations 1996 - 2002. Volume I: Late Roman and Medieval Cemeteries and Environmental Studies (Subartu 25). Turnhout, BE: Brepols.

Finkbeiner, Uwe, Mirko Novak, Ferhan Sakal, and Paola Sconzo. 2015. *Middle Euphrates* (ARCANE IV). Turnhout, BE: Brepols.

Foster, Benjamin R. 1981. "Administration of State Land at Sargonic Gasur." Oriens Antiquus, 21: 39-48.

Foster, Benjamin R. 1982. Administration and Use of Institutional Land in Sargonic Sumer (Mesopotamia 9), Copenhagen, DK: Akademisk Forlag.

Foster, Benjamin R. 1987. "People, Land and Produce at Sargonic Gasur." In: *General Studies and Excavations at Nuzi 9/1 (SCCNH 2)*, David I. Owen and Martha A. Morrison (eds.), Winona Lake, IN: Eisenbrauns.

Foster, Benjamin R. 1993. "Management and Administration in Sargonic Mesopotamia." In: Akkad, the First World Empire: Structure, Ideology, Traditions, Mario Liverani (ed.), Padova, IT: Sargon.

Frayne, Douglas R. 1990. Old Babylonian Period (2003-1595 BC) (RIME 4). Toronto, CA: University of Toronto Press.

Frayne, Douglas R. 1993. Sargonic and Gutian Periods (2334-2113 BC) (RIME 2). Toronto, CA: University of Toronto Press.

Frayne, Douglas R. 1997. Ur III Period (2112-2004 BC) (RIME 3/2). Toronto, CA: University of Toronto Press.

Frayne, Douglas R. 2008. *Presargonic Period (2700-2350 BC) (RIME 1)*. Toronto, CA: University of Toronto Press.

Friberg, Jöran. 1997-1998. "Round and Almost Round Numbers in Proto-Literate Metro-Mathematical Field Texts." *Archiv Für Orientforschung*, 44-45: 1-58.

Friberg, Jöoran. 1999. "Review Article. Counting and Accounting in the Proto-Literate Middle East: Examples from Two New Volumes of Proto-Cuneiform Texts." *Journal of Cuneiform Studies*, 51: 107-137.

Fugmann, Ejnar. 1958. Hama: Fouilles et Recherches de La Fondation Carlsberg, 1931-1938, II.1: L'Architecture Des Périodes Pré-Hellénistiques (Nationalmuseets Skrifter, Større Beretninger, 4). København, DK: Nationalmuseet.

Gallet, Yves, and Pascal Butterlin. 2015. "Archaeological and Geomagnetic Implications of New Archaeomagnetic Intensity Data from the Early Bronze High Terrace 'Massif Rouge' at Mari (Tell Hariri, Syria)." Archaeometry, 57: 1-14.

Garfinkle, Steve. 2012. Entrepreneurs and Enterprise in Early Mesopotamia: A Study of Three Archives from the Third Dynasty of Ur (2112-2004 BCE). Rockville, MD: Bethesda CDL Press.

Garfinkle, Steve. 2014. "The Economy of Warfare in Southern Iraq at the End of the Third Millennium BC." In: *Krieg und Frieden im Alten Vorderasien. 52e Rencontre Assyriologique Internationale International Congress of Assyriology and Near Eastern Archaeology Münster, 17.-21. Juli 2006 (AOAT 401)*, Hans Neumann et al. (eds.), Münster, DE: Ugarit Verlag.

Gasche, Hermann, and Michel Tanret. 2011. "Sippar. B. Archäologisch." *Reallexikon* Der Assyriologie Und Vorderasiatischen Archäologie, 12: 537-547.

Genz, Hermann. 2014. "The Northern Levant (Lebanon) during the Early Bronze Age." In: *The Oxford Handbook of the Archaeology of the Levant c. 8000-332 BCE*, Ann E. Killebrew and Margreet Steiner (eds.), Oxford, UK: Oxford University Press. Gernez, Guillame. 2017. Les Armes Du Proche-Orient Ancien. Des Origines à 2000 Av. J.-C.. Arles, FR: Errance.

Gibson, McGuire. 1972. The City and the Area of Kish. Miami, FL: Field Research Project.

Gibson, McGuire. 1982. "A Re-Evaluation of the Akkad Period in the Diyala Region on the Basis of Recent Excavations at Nippur and in the Hamrin." *American Journal of Archaeology*, 86: 531-538.

Gibson, McGuire. 1992. "Patterns of Occupation at Nippur." In: *Nippur at the Centennial. Papers Read at the 35e Rencontre Assyriologique Internationale (Philadelphia, 1988)* (Occasional Publications of the Samuel Noah Kramer Fund, 14), Maria De Jong- Ellis (ed.), Philadelphia, PA: The University Museum of Archaeology and Anthropology, University of Pennsylvania.

Goddeeris, Anne. 2002. Economy and Society in Northern Babylonia in the Old Babylonian Period (OLA 109). Leuven, BE: Peeters.

Goodnick, Westenholz, Joan. 2004. "The Old Akkadian Presence in Nineveh: Fact or Fiction." *Iraq*, 66: 7-18.

Grayson, A. Kirk. 1987. Assyrian Rulers of the Third and Second Millennia BCE (to 1115 BC) (RIMA 1). Toronto, CA: University of Toronto Press.

Greenberg, Raphael. 1997. "Area A. The Early Bronze Age." In: *Hazor V. An Account* of the Fifth Season of Excavation, 1968. Text and Illustratios, Ammon Ben-Tor and Ruhama Bonfil (eds.), Jerusalem, IL: Israel Exploration Society, Hebrew University of Jerusalem.

Greenberg, Raphael. 1997. "The Early Bronze Age Phases in Area L." In: *Hazor V.* An Account of the Fifth Season of Excavation, 1968. Text and Illustratios, Ammon Ben-Tor and Ruhama Bonfil (eds.), Jerusalem, IL: Israel Exploration Society, Hebrew University of Jerusalem. Griffin, John P. 2008. "Changing Life Expectancy Throughout History." Journal of the Royal Society of Medicine, 101: 577.

Gut, Renate. 1995. Das Prähistorische Ninive: Zur Relativen Chronologie Der Frühen Perioden Nordmesopotamiens (Baghdad Forschungen 19). Mainz am Rhein, DE: Von Zabern.

Gut, Renate, Julian Reade, and Rainer M. Boehmer. 2001. "Ninive: Das Späte 3 Jahrtausend v. Chr." In: *Beiträge zur Vorderasiatischen Archäologie Winfned Orthmann gewidmet.* Jan-Walke Meyer, Mirko Novák, and Alexander Pruss (eds.), Frankfurt am Main, DE: Johann Wolfgang Goethe-Universität, Archäologisches Institut.

Hackman, George G. 1958. Sumerian and Akkadian Administrative Texts from Predynastic Times to the End of the Akkad Dynasty (Babylonian Inscriptions from the Collection of James B. Nies, 8). New Haven, CT: Yale University Press.

Hammer, Emily. 2019. "The City and Landscape of Ur: An Aerial, Satellite, and Ground Reassessment." *Iraq*, 81: 173-206.

Hansen, Donald P. 1970. "Al-Hiba, 1968-1969, a Preliminary Report." Artibus Asiae, 32: 243-258.

Hansen, Donald P. 1973. "Al-Hiba, 1970-1971: A Preliminary Report." Artibus Asiae, 35: 62-78.

Hansen, Donald P. 1978. "Al-Hiba. A Summary of Four Seasons of Excavation, 1968-1976." *Sumer*, 34: 72-83.

Hansen, Donald P. 1983. "Lagaš. B. Archäologisch." Reallexikon Der Assyriologie Und Vorderasiatischen Archäologie, 6: 422-430.

Hansen, Donald P. 1992. "Royal Building Activity at Sumerian Lagash in the Early Dynastic Period." *The Biblical Archaeologist*, 55: 206-211.

Hansen, Donald P. 1990. "The Sixth Season at Al-Hiba." Maršipri, 3: 1-2.

Hansen, Mogens H. 2006. The Shotgun Method: The Demography of the Ancient Greek City-State Culture. Columbia, MI: University of Missouri Press.

Harper, Prudence O., Evelyn Klengel-Brandt, Joan Aruz, and Kim Benzel. 1995. *Discoveries at Ashur on the Tigris. Assyrian Origins*. Antiquities in the Vorderasiatisches Museum, Berlin. New York, NY: The Metropolitan Museum of Art.

Harris, Rivkah. 1975. Ancient Sippar. A Demographic Study of an Old-Babylonian City (1894-1595 B.C.) (PIHANS 36). Leiden, NL: Nederlands Historisch-Archaeologisch Instituut te Istanbul.

Hauptmann, Harald, and Ernst Pernicka. 2004. Die Metallindustrie in Mesopotamien von Den Anfängen Bis Zum 2. Jahrtausend v.Chr. (Orient-Archäologie, 3). Rahden Westfahlen, DE: Leidorf.

Hauptmann, Andreas, Sabine Klein, Susan La Niece, Moritz Jansen, Kim Benzel, Barbara Armbruster, Eveline Salzman, 2016. "The Royal Tombs of Ur, Mesopotamia: New Investigations, New Results from the Examination of Metal Artifacts and other Archaeological Finds. Workshop at the Deutsches Bergbau-Museum Bochum, May 2015." *Metalla Supplement*, 22: 75-145.

Hauser, Rick. 2006. Reading Figurines: Animal Representations in Terra Cotta from Royal Building AK at Urkesh (Tell Mozan). Malibu, CA: Undena.

Heinrich, Ernst. 1931. Fara; Ergebnisse Der Ausgrabungen Der Deutschen Orient-Gesellschaft in Fara Und Abu-Hatab 1902/03. Staatliche. Berlin, DE: Staatliche Museen zu Berlin.

Heinrich, Ernst. 1984. Die Palaste Im Alten Mesopotamien (Denkmaler Antiker Architektur 15). Berlin, DE: De Gruyter.

Heinz, Marlies. 2013. "Public Buildings, Palaces and Temples." In: *The Sumerian World*. Harriet Crawford (ed.), London, UK: Routledge.

Heltzer, Michael. 1976. The Rural Community in Ancient Ugarit. Wiesbaden, DE: Harrassowitz.

Heltzer, Michael. 1999. "The Economy of Ugarit." In: *Handbook of Ugaritic Studies*, Wilfred G. E. Watson and Nicolas Wyatt (eds.), Leiden, NL: Brill.

Helwing, Barbara. 2018. "Metals and Mining." In: *The Elamite World*, Javier Alvarez-Mon, Gian Pietro Basello, and Yasmina Wicks (eds.), London, UK: Routledge.

Hill, Harold D., Torkild Jacobsen, and Pinhas Delougaz. 1990. Old Babylonian Public Buildings in the Diyala Region (OIP 98). Chicago, IL: The Oriental Institute of the University of Chicago.

Hogarth, David G. 1914. Carchemish: Report on the Excavations at Djerabis on Behalf of the British Museum, Part I: Introductory. London, UK: The Trustees of the British Museum.

Horowitz, Wayne, and Takayoshi Oshima. 2006. *Cuneiform in Canaan. Cuneiform Sources from the Land of Israel in Ancient Times.* Jerusalem, IL: Israel Explorations Society.

Horowitz, Wayne, Takayoshi Oshima, and Filip Vukosavovic. 2012. "Hazor 18: Fragments of a Cuneiform Law Collection from Hazor." *Israel Exploration Journal*, 62: 158-176.

Hrouda, Barthel. 1973. "Zusammenfassender Vorbericht Liber Die Ergebnisse Der 1. Kampagne in Ishan Bahriyats Isin." *Sumer*, 29: 37-45.

Hrouda, Barthel. 1975. "Vorläufiger Bericht Über Die Ergebnisse Der 2 Augrabungen Kampagne in Ishan Bahriyat-Isin." *Sumer*, 31: 25-32.

Hrouda, Barthel. 1977. Isin - Išān Bahrīyāt I. Die Ergebnisse Der Ausgrabungen 1973-1974. Munchen, DE: Verlag der Bayerischen Akademie der Wissenschaften.

Hrouda, Barthel. 1981. Isin - Išān Bahrīyāt II. Die Ergebnisse Der Ausgrabungen 1975-1978. Munchen, DE: Verlag der Bayerischen Akademie der Wissenschaften. Hrouda, Barthel. 1987. Isin - Išān Bahrīyāt III. Die Ergebnisse Der Ausgrabungen 1983-1984. Munchen, DE: Verlag der Bayerischen Akademie der Wissenschaften.

Hrouda, Barthel, and Joachim Boessneck. 1992. Isin - Išān Bahrīyāt IV. Die Ergebnisse Der Ausgrabungen, 1986-1989. Munchen, DE: Verlag der Bayerischen Akademie der Wissenschaften.

Hulinek, Drahoslav, and Eva H. Tuchová. 2018. Preliminary Report. Archaeological Project SAHI - Tell Jokha, 2017 (Season 2). Unpublished.

Huot, Jean-Louis. 1989. Larsa, Travaux de 1985 (Mémoire No. 83). Paris, FR: Editions Recherche Sur Les Civilisations.

Huot, Jean-Louis, Axelle Rougeulle, and Joel Suire. 1989. "La Structure Urbaine de Larsa. Une Approche Provvisoire." In: *Larsa. Travaux de 1985 ("Mémoire" no. 83)*, Jean-Louis Huot (ed.), Paris, FR: Editions Recherche Sur Les Civilisations.

Huot, Jean-Louis. 2003. *Larsa: Travaux de 1987 et 1989 (BAH 165)*. Beirut, LB: Institut français d'archéologie du Proche-Orient.

Huot, Jean-Louis. 2014. L'E.Babbar de Larsa Aux IIe et Ier Millénaire (Fouilles de 1974 à 1985). Beyrouth, LB: Presses de l'Ifpo.

Iamoni, Marco, and Daniele Morandi Bonacossi. 2011. "The Middle Bronze Age I-III Pottery Sequence from the Italian Excavations at Mishrifeh/Qatna, Syria. Archaeological Contexts and Ceramic Evidence." *Berytus*, 53-54: 181-212.

Ishikida, Miki Y. 1999. "The Ilkum Institution in the Provincial Administration of Larsa during the Reign of Hammurapi (1792-1750 B.C.)." *Orient*, 24: 61-88.

Jacobsen, Thorkild. 1982. Salinity and Irrigation Agriculture in Antiquity (BiMes 14). Malibu, CA: Undena.

Jean-Marie, Marylou. 1999. Tombes et Nécropoles de Mari (BAH 153; MAM 5). Beyrouth, LB: Institut Français d'archéologie du Proche-Orient. Kalla, Gabor. 2011. "Sippar. A. I. Im 3. Und 2. Jahrtausend." Reallexikon Der Assyriologie Und Vorderasiatischen Archäologie, 12: 528-533.

Kenoyer, Jonathan M. 1989-1990. "Shell Artifacts from Lagash, Al-Hiba." *Sumer*, 46: 64-66.

Klengel, Horst. 1992. Syria 3000 to 300 B.C. A Handbook of Political History. Berlin, DE: Akademie Verlag.

Kontopoulos, Grigorios I. 2018. "Getting Old in Ancient Egypt." The Ancient Near East Today, 6.

Kraus, Fritz R. 1982. "Karum', Ein Organ Städtischer Selbstverwaltung Der Altbabylonischen Zeit." In: Les pouvoirs locaux en Mesopotamie et dans les regions adjacentes: colloque organise par l'Institut des Hautes Etudes de Belgique: 28 et 29 janvier 1980, Andre Finet (ed.), Bruxelles, BE: Institut de Haute Etudes de Belgique.

Kristiansen, Kristian. 2018. "The Rise of Bronze Age Peripheries and the Expansion of International Trade 1950-1100 BC." In: *Trade and Civilisation: Economic Networks and Cultural Ties from Prehistory to the Early Modern Era*, Kristian Kristiansen, Thomas Lindkvist and Janken Myrdal (eds.), Cambridge, UK: Cambridge University Press.

Kulakoğlu, Fikri. 2015. "Current Research at Kultepe." In: Proceedings of the 1st Kültepe International Meeting. Kültepe, 19-23 September 2013. Studies dedicated to Kutle Emre (KIM 1; Subartu XXXV), Fikri Kulakoğlu and Cecile Michel (eds.), Turnhout, BE: Brepols.

Kulakoğlu, Fikri. 2017. "Early Bronze Age Monumental Structures at Kültepe." In: Proceedings of the 2nd Kültepe International Meeting. Kültepe, 26-30 July 2015. Studies dedicated to Klaas Veenhof (KIM 2; Subartu XXXIX), Fikri Kulakoğlu and Gojko Barjamovic (eds.), Turnhout, BE: Brepols.

Kulakoğlu, Fikri, and Güzel Oztürk. 2015. "New Evidence for International Trade in Bronze Age Central Anatolia: Recently Discovered Bullae at Kültepe-Kanesh." *Antiquity Project Gallery*, 89: 343-432. Kupper, Jean-Robert. 1982. "Les Pouvoirs Locaux Dans Le Royaume de Mari." In:
Les pouvoirs locaux en Mesopotamie et dans les regions adjacentes: colloque organise par l'Institut des Hautes Etudes de Belgique: 28 et 29 janvier 1980. Andrè Finet (ed.). Bruxelles,
BE: Institut de Haute Etudes de Belgique.

Kupper, Jean-Robert. 1992. "Karkémish aux IIIème et IIème Millénaires avant notre ère." *Akkadica*, 79-80: 16-23.

Kupper, Jean-Robert. 2005. "Un Contrat Paléo-Syrien de Tell Mardikh." *Akkadica*, 126: 45-49.

Lacambre, Denis, and Onhan Tunca. 1999. "Histoire de La Vallée de l'Euphrate Entre Le Barrage de Tišrin et Karkemiš." In: Archaeology of the Upper Syrian Euphrates, the Tishrin Dam Area: Proceedings of the International Symposium held at Barcelona, January 28th-30th, 1998, Gregorio Del Olmo Lete and Juan-Luis Montero Fenollós (eds.), Barcelona, ES: AUSA.

Lacambre, Denis. 2010. "L'administration de Chagar Bazar (Ašnakkum) à l'époque de Samsī-Addu." In: City Administration in the Ancient Near East, Proceedings of the 53e Rencontre Assyriologique Internationale (23th-28th July 2007, Moscow & St Petersburg, Russia), Leonid E. Kogan et al. (eds.), Winona Lake, IN: Eisenbrauns.

Lafont, Bertrand. 2000. "Irrigation Agriculture in Mari." In: *Rainfall and Agriculture* in Northern Mesopotamia. Proceedings of the Third MOS Symposium (MOS Studies 3; PI-HANS 88), Remco A. Jas (ed.), Leiden, NL: Nederlands Historisch-Archaeologisch Instituut te Istanbul.

Lafont, Bertrand. 2009. "The Army of the Kings of Ur: The Textual Evidence." Cuneiform Digital Library Journal, 5: 1-25.

Lafont, Bertrand, and Raymond Westbrook. 2003. "Neo-Sumerian Period (Ur III)." In: A History of Ancient Near Eastern Law, Raymond Westbrook (ed.), Boston, MA: Brill.

Larsen, Mogens T. 2015. Ancient Kanesh: A Merchant Colony in Bronze Age Anatolia. Cambridge, UK: Cambridge University Press. Lauinger, Jacob. 2015. Following the Man of Yamhad: Settlement and Territory at Old Babylonian Alalah. Leiden, NL: Brill.

Lawrence, Dan, Graham J. Philip, Hannah Hunt, Lisa Snape-Kennedy, and Tony J. Wilkinson. 2016. "Long Term Population, City Size and Climate Trends in the Fertile Crescent: A First Approximation." *Plos One*, 11: 1-16.

Limper, Klaudia. 1988. Uruk: Perlen, Ketten, Anhänger: Grabungen 1912-1985 (AUWE
2). Mainz am Rhein, DE: Von Zabern.

Liverani, Mario. 2018. Paradiso e Dintorni. Il Paesaggio Rurale Dell'Antico Oriente. Roma-Bari, IT: Laterza.

MacGinnis, John. 2014. A City from the Dawn of History. Erbil in the Cuneiform Sources. Oxford, UK: Oxbow Books.

MacGinnis, John. 2018. "The Ancient History of the City of Erbil, Ab Urbe Condita to the Coming of Alexander." In: *Etudes Mesopotamiennes - Mesopotamian Studies: No.1*, Vincent Deroche, Maria Grazia Masetti-Rouault, and Christophe Nicolle (eds.), Oxford, UK: Archaeopress.

Maeir, Ariel M. 1997. "Tomb 1181: A Multiple-Interment Burial Cave of the Transitional Middle-Bronze Age IIA-B." In: *Hazor V. An Account of the Fifth Season of Excavation, 1968*, Ammon Ben-Tor and Ruhama Bonfil (eds.), Jerusalem, IL: Israel Explorations Society.

Maeir, Ariel M. 2000. "The Political and Economic Status of MB II Hazor and MB II Trade: An Inter- and Intra-Regional View." *Palestine Exploration Quarterly*, 132: 37-58.

Maekawa, Kazuya. 1974. "Agricultural Production in Ancient Sumer: Chiefly from Lagash Material." *Zinbun*, 13: 1-60.

Maekawa, Kazuya. 1984. "Cereal Cultivation in the Ur III Period." Bulletin on Sumerian Agriculture, 1: 73-96.

Maekawa, Kazuya. 1987. "The Management of Domain Land in Ur III Umma: A Study of BM 110116." Zinbun, 22: 25-81.

Maiocchi, Massimo. 2011. "A Hurrian Administrative Tablet from Third Millennium Urkesh." Zeitschrift Für Assyriologie Und Vorderasiatische Archäologie, 101: 191-203.

Makaroun Bou-Assaf, Y. 2003. "Organisation Architecturale à Byblos (Liban) Au Bronze Ancien." In: *The Bronze Age in the Lebanon*, Manfred Bietak and Ernst Czerny (eds.), Wien, AT: Verlag der Österreichischen Akademie der Wissenschaften.

Malbran-Labat, Florence. 2018. "Elamite Royal Inscriptions." In: *The Elamite World*, Javier Alvarez-Mon, Gian Pietro Basello and Yasmina Wicks (eds.). New York, NY: Routledge.

Mallowan, Max E. L. 1933. "The Prehistoric Sondage of Nineveh, 1931-1932." *Liverpool* Annals of Archaeology and Anthropology, 20: 127-77.

Mallowan, Max E. L. 1937. "The Excavations at Tall Chagar Bazar and an Archaeological Survey of the Habur Region. Second Campaign, 1936." *Iraq*, 4: 91-177.

Marchesi, Gianni. 2014. "Karkemish Nel Bronzo Medio." In: Karkemish. An Ancient Capital on the Euphrates (OrientLab 2), Nicolò Marchetti (ed.), Bologna, IT: AnteQuem.

Marchesi, Gianni. 2015a. "Toward a Chronology of Early Dynastic Rulers in Mesopotamia." In: *ARCANE III. History & Philology*, Walther Sallaberger and Ingo Schrakamp (eds.), Turnhout, BE: Brepols.

Marchesi, Gianni. 2015b. "History and Philology." In: *ARCANE IV. Middle Euphrates*, Uwe Finkbeiner et al. (eds.), Turnhout, BE: Brepols.

Marchetti, Nicolò, Berthold Einwag, Abbas Al-Hussainy, Giampaolo Luglio, Gianni Marchesi, Adelheid Otto, Giulia Scazzosi, Elena Leoni, Marco Valeri, and Federico Zaina. 2017. "QADIS. The Iraqi-Italian 2016 Survey Season in the South-Eastern Region of Qadisiyah." Sumer, 63: 63-92.

Marchetti, Nicolò, Abbas Al-Husainy, Giacomo Benati, Giampaolo Luglio, Giulia Scazzosi, Marco Valeri, and Federico Zaina. 2019. "The Rise of Urbanized Landscapes in Mesopotamia: The QADIS Integrated Survey Results and the Interpretation of Multi-Layered Historical Landscapes." *Zeitschrift für Assyriologie und vorderasiatische Archäologie*, 109: 214-237.

Margueron, Jean Claude. 1970. "Larsa. Rapport Préliminaire Sur La Quatrième Campagne." *Syria*, 47: 261-277.

Margueron, Jean Claude. 1971. "Larsa. Rapport Préliminaire Sur La Cinquième Campagne." *Syria*, 48: 271-287.

Margueron, Jean-Claude. 1982. Recherches Sur Le Palais Mésopotamiens de l'Age Du Bronze (Bibliothèque Archéologique et Historique 107). Paris, FR: Geuthner.

Margueron, Jean Claude. 2004. Mari. Métropole de l'Euphrate Au IIIe et Au Debut Du IIe Millénaire Av. J.-C. Paris, FR: Picard/ERC.

Margueron, Jean Claude. 2014. Mari: Capital of Northern Mesopotamia in the Third Millennium. The Archaeology of Tell Hariri on the Euphrates. Oxford, UK: Oxbow Books.

Marshall, Monty G., and Keith Jaggers. 2016. Polity IV Project, Political Regime Characteristics and Transitions 1800-2011, Dataset Users Manual. Unpublished.

Martin, Harriet P. 1983. "Settlement Patterns at Shuruppak." Iraq, 45: 24-31.

Martin, Harriet P. 1988. Fara: A Reconstruction of the Ancient City of Shuruppak. Birmingham, UK: Martin.

Matthews, Roger J. 2003. Excavations at Tell Brak. Vol. 4: Exploring an Upper Mesopotamian Urban Centre, 1994-1996. Cambridge and London, UK: British School of Archaeology in Iraq.

Matthiae, Paolo. 1977. "Le Palais Royal Protosyrien d'Ébla: Nouvelles Recherches Archéologiques à Tell Mardihk En 1976." *Comptes rendus des séances de l'Académie des Inscriptions et Belles-Lettres*, 121: 148-174.

Matthiae, Paolo. 2010. Ebla. La Città Del Trono. Torino, IT: Einaudi.

Matthiae, Paolo, and Nicolò Marchetti. 2013. Ebla and Its Landscape. Early State Formation in the Ancient Near East. Walnut Creek, CA: Left Coast Press.

McCown, Donald E., and Richard C. Haines. 1967. Nippur I. Temple of Enlil, Scribal Quarter, and Soundings (OIP 78). Chicago, IL: The University of Chicago Press.

McCown, Donald E., and Richard C. Haines, and Robert D. Biggs. 1978. *Nippur, II. The North Temple and Sounding E (OIP 97)*. Chicago, IL: The Oriental Institute University Press.

McGovern, Patrick E. 2003. Ancient Wine: The Search for the Origins of Viticulture. Princeton, NJ: Princeton University Press.

McMahon, Augusta. 1998. "The Kuyunjik Gully Sounding, Nineveh, 1989 & 1990 Seasons." *Al-Rafidan*, 19: 1-32.

McMahon, Augusta. 2006. Nippur V: The Early Dynastic to Akkadian Transition; The Area WF Sounding at Nippur (OIP 129). Chicago, IL: The Oriental Institute University Press.

McMahon, Augusta. 2009. Once There Was a Place. Settlement Archaeology at Chagar Bazar, 1999-2002. London, UK: British Institute for the Study of Iraq.

McMahon, Augusta, Onhan. Tunca, and Abdul Massih Baghdo. 2001. "New Excavations at Chagar Bazar, 1999-2000." *Iraq*, 63: 201-222.

Meyer, Jan-Walke. 2011. "City Planning." In: *ARCANE I*, Jezirah. Marc Lebeau (ed.), Turnhout, BE: Brepols.

Michalowski, Piotr. 2009. "Assur During the Ur III Period." In: *Here & There. Across the Ancient Near East. Studies in Honour of Krystyna Lyczkowska*, Olga Drewnowska (ed.), Warsaw, PL: Agade.

Michalowski, Piotr. 2010. "Networks of Authority and Power in Ur III Times." In: From the 21st Century BC to the 21st Century AD. Proceedings of the International Conference on Sumerian Studies Held in Madrid 22-24 July 2010, Steve Garfinkle and Manuel Molina (eds.), Winona Lake, IN: Eisenbrauns.

Michel, Cecile. 2011. "The Private Archives from Kaniš Belonging to Anatolians." Altorientalische Forschungen, 38: 94-115.

Michel, Cecile. 2015. "L'organisation Du Palais de Kaneš d'après La Documentation Textuelle." In: Séminaire d'Histoire et d'Archéologie des Mondes Orientaux (SHAMO), 2012 – 2013. De la maison à la ville dans l'Orient ancien: bâtiments publics et lieux de pouvoir, Cecile Michel (ed.), Paris, FR: CNRS.

Miglus, Peter A., and Eva Strommenger. 2002. *Stadtbefestigungen. Häuser Und Tempel. Tall Bi'a / Tuttul VIII (WVDOG 103)*, Saarbrücken: Saarbrücker Druckerei und Verlag.

Milano, Lucio. 1996. "Ebla: Gestion Des Terres et Gestion dDes Resources Alimentaires." In: *Mari, Ebla et les Hourrites, dix ans de travaux, premiére partie; Actes du colloque international (Amurru 1)*, Jean-Marie Durand (ed.), Paris, FR: Editions Recherche sur les Civilisations.

Miller, Naomi F., and Richard L. Zettler. 1996. "Searching for Wine in the Archaeological Record of Ancient Mesopotamia of the Third and Second Millennia BC." In: *The Origins and Ancient History of Wine*, Patrick E. McGovern, Stuart J. Fleming, and Solomon H. Katz (ed.), Newark, NJ: Gordon & Breach.

Molina, Manuel. 2015. "Ur. A. I. Philologisch. Im 3. Jahrtausend." Reallexikon Der Assyriologie Und Vorderasiatischen Archäologie, 14: 355-361.

Morandi Bonacossi, Daniele. 2007a. "The Chronology of the Royal Palace of Qatna Revisited. A Reply to a Paper by Mirko Novák, Egypt and the Levant 14, 2004." *Egypt and the Levant*, 17: 221-240.

Morandi Bonacossi, Daniele. (ed.). 2007b. Urban and Natural Landscapes of an Ancient Syrian Capital Settlement and Environment at Tell Mishrifeh/Qatna and in Central-Western Syria (Studi Archeologici Su Qatna 1). Udine, IT: Forum.
Morandi Bonacossi, Daniele. 2008. "Excavations on the Acropolis of Mishrifeh, Operation J. A New Early Bronze Age III - Iron Age III Sequence for Central Inner Syria. Part 1: Stratigraphy, Chronology and Architecture." *Akkadica*, 129: 55-127.

Morandi Bonacossi, Daniele. 2014. "The Northern Levant (Syria) during the Middle Bronze Age." In: *The Oxford Handbook of the Archaeology of the Levant c. 8000-332 BCE*, Ann E. Killebrew and Margreet L. Steiner (eds.), Oxford, UK: Oxford University Press.

Morandi Bonacossi, Daniele, Monica Da Ros, Giancarlo Garna, Marco Iamoni, and Matteo Merlino. 2009. "The 'Eastern Palace' and the Residential Achitecture of Area T at Mishrifeh/Qatna. Preliminary Report on the 2006-2008 Excavation Campaigns of the Italian Component of the Syro-Italian Archaeological Project." *Mesopotamia*, 44: 61-112.

Moorey, Peter R. S. 1978. Kish Excavations 1923-1933: With a Microfiche Catalogue of the Objects in Oxford Excavated by the Oxford-Field Museum, Chicago, Expedition to Kish in Iraq, 1923-1933. Oxford, UK: Clarendon Press.

Nicolini, Gérard. 2010. Les Ors de Mari (MAM 7; BAH 192). Beyrouth, LB: Ifpo.

Novacek, Karel. 2014. "Arbil, Iraqi Kurdistan: The 'Longue Durée' of the City According to New Data." In: *Proceedings of the 8th International Congress on the Archaeology of the Ancient Near East (8 ICAANE), April 30—May 4, 2012 Warsaw. Volume 2,* Piotr Bielinski et al. (eds.), Wiesbaden, DE: Harrassowitz.

Novak, Mirko. 2015. "Urbanism and Architecture." In: *ARCANE IV. Middle Euphrates*, Uwe Finkbeiner et al. (eds.), Turnhout, BE: Brepols.

Oates, David. 1970. "The Excavations at Tell Al Rimah, 1968." Iraq, 32: 1-26.

Oates, David. 1972. "The Excavations at Tell Al Rimah, 1971." Iraq, 34: 77-86.

Oates, David. 1990. "Innovations in Mud-Brick: Decorative and Structural Techniques in Ancient Mesopotamia." *World Archaeology*, 21: 388-406. Oates, David, Joan Oates, and Helen McDonald. 1997. The Excavations at Tell Brak 1: The Mitanni and Old Babylonian Periods. Cambridge/London, UK: McDonald Institute for Archaeological Research/British School of Archaeology in Iraq.

Oates, David, Joan Oates, and Helen McDonald. 2001. The Excavations at Tell Brak 2: Nagar in the Third Millennium BC. Cambridge/London, UK: McDonald Institute for Archaeological Research/British School of Archaeology in Iraq.

Ober, Josiah. 2015. The Rise and Fall of Classical Greece. Princeton, NJ: Princeton University Press.

Orsi, Valentina. 2012. "Tell Barri Before Kahat." In: Seven Generations Since the Fall of Akkad (Studia Chaburensia 3), Harvey Weiss (ed.), Wiesbaden, DE: Harrassowitz.

Otto, Adelheid, and Maria G. Biga. 2010. "Thoughts about the Identification of Tall Bazi with Armi of the Ebla Texts." In: *Proceedings of the 6th International Congress of the Archaeology of the Ancient Near East: 5 May - 10 May 2008, Università degli Studi di Roma "La Sapienza"*, Paolo Matthiae et al. (eds.), Wiesbaden, DE: Harrassowitz.

Ozgüç, Tahsin. 1986. "New Observations on the Relationship of Kultepe with Southeast Anatolia and North Syria during the Third Millennium B.C." In: *Ancient Anatolia. Aspects* of Change and Cultural Development, Essays in Honor of Machteld J. Mellink, Jeanny V. Canby et al. (eds.), Madison, WI: University of Wisconsin Press.

Ozgüç, Tahsin. 1999. The Palaces and Temples of Kültepe-Kaniš/Neša (Türk Tarih Kurumu Yayınları V/46). Ankara, TR: Türk Tarih Kurumu.

Ozgüç, Tahsin. 2003. Kültepe Kaniš/Neša: The Earliest International Trade Center and the Oldest Capital City of the Hittites. Istanbul, TR: The Middle Eastern Culture Center in Japan.

Parker, Barbara. 1975. "Cylinder Seals from Tell Al Rimah." Iraq, 37: 21-38.

Parrot, André. 1933. "Les Fouilles de Tello et de Senkéréh-Larsa, Campagnes 1932-1933." Revue d'Assyriologie et d'Archéologie Orientale, 30: 175-182. Parrot, André. 1948. *Tello. Vingt Campagnes Des Fouilles (1877-1933)*. Paris, FR: Albin Michel.

Parrot, André. 1968. "Les Fouilles de Larsa, Deuxième et Troisième Campagnes, 1967." Syria, 45: 205-239.

Pecorella, Paolo E., and Raffaella Pierobon Benoit. 2004. Tell Barri - Kahat. La Campagna Del 2001. Relazione Preliminare (Ricerche e Materiali Del Vicino Oriente Antico 2). Firenze, IT: Firenze University Press.

Pettinato, Giovanni. 1968. "Il Tempio Stato e l'economia Della Seconda Dinastia di Lagaš." Oriens Antiquus, 7: 39-50.

Pettinato, Giovanni. 1999. "La Proprietà Fondiaria Nella Mesopotamia Di 3. Millennio Dal Periodo Di Gemdet Nasr Alla 3a. Dinastia Di Ur." In: Landwirtschaft im Alten Orient. Ausgewälte Vorträge der XLI. Rencontre Assyriologique Internationale, Berlin, 4.-8.7.1994 (BBVO 18), Horst Klengel and Joannes M. Renger (eds.), Berlin, DE: Reimer Verlag.

Peyronel, Luca. 2015. "Defensive Buildings at Ebla (Syria) during the Middle Bronze Age (c. 2000-1600 Bc)." Les Annales Archéologiques Arabes Syriennes, 57-58: 191-204.

Peyronel, Luca. 2018. "The Old Elamite Period." In: *The Elamite World*, Javier Alvarez-Mon, Gian Pietro Basello, and Yasmina Wicks (eds.), New York, NY: Routledge.

Pfälzner, Peter. 2001. Haus Und Haushalt: Wohnformen Des 3. Jtsds. v.Chr. in Nordmesopotamien (Damaszener Forschungen 9). Mainz am Rhein, DE: Von Zabern.

Pfälzner, Peter. 2010. "Introduction and Synthesis: Urban Development and Ecology at Tell Mozan." In: Development of the Environment, Subsistence and settlement of the City of Urkeš and Its Region (Studien zur Urbanisierung Nordmesopotamiens: Serie A, Ausgrabungen 1998-2001 in der Zentralen Oberstadt von Tall Mozan / Urkeš 3), Katleen Deckers et al. (eds.), Wiesbade, DE: Harrassowitz.

Pfälzner, Peter. 2011. "Architecture." In: *ARCANE I. Jezirah*, Marc Lebeau (ed.), Turnhout, BE: Brepols. Pierobon Benoit, Raffaella. 2008. "Tell Barri: Dai Sumeri Ai Neobabilonesi. Nuovi Dati." In: Tell Barri - Storia di un Insediamento Antico tra Oriente e Occidente, Atti della Conferenza Tenuta a Napoli il 24-25/11/2005 (La Parola del Passato 63/2008), Raffaella Pierobon Benoit (ed.), Napoli, IT: Macchiaroli.

Pinnock, Frances. 1986. "The Lapis Lazuli Trade in the Third Millennium B.C. and the Evidence of the Royal Palace G of Ebla." In: *Insight Through Images: Studies in Honor of Edith Porada (Bibliotheca Mesopotamica, 21)*, Marylin Kelly-Buccellati (ed.), Malibu, CA: Undena.

Pinnock, Frances. 2001. "The Urban Landscape of Old Syrian Ebla." *Journal of Cuneiform Studies*, 53: 13-33.

Pinnock, Frances. 2006. "Ebla and Ur: Relations, Exchanges and Contacts Between Two Great Capitals of the Near East." *Iraq*, 68: 85-92.

Pinnock, Frances. 2007. "Byblos and Ebla in the 3rd Millennium BC. Two Urban Patterns in Comparison." In: *Byblos and Jericho in the Early Bronze I. Social Dynamics* and Cultural Interactions (ROSAPAT 4), Lorenzo Nigro (ed.), Roma: Università degli Studi di Roma "La Sapienza" Press.

Pittman, Holly. 2018. "Dark Soft Stone Objects." In: ARCANE Interregional VolumeII. Artefacts, Marc Lebeau (ed.), Turnhout, BE: Brepols.

Pomponio, Francesco. 2002. "Funzionari Di Mari e Di Ebla." In: Anatolia antica. Studi in memoria di Fiorella Imparati (Eothen 11), Stefano De Martino and Franca Pecchioli Daddi (eds.), Firenze, IT: LoGisma.

Pomponio, Francesco, and Giuseppe Visicato. 1994. Early Dynastic Administrative Tablets of Šuruppak (Series Maior - Istituto Universitario Orientale Di Napoli, Seminario Di Studi Asiatici, 6). Naples, IT: Istituto Universitario Orientale.

Postgate, Carolyn, David Oates, and Joan Oates. 1997. Excavations at Tell Al Rimah: The Pottery. London, UK: Aris and Philips. Potts, Dan T. 1999. The Archaeology of Elam. Formation and Transformation of an Ancient Iranian State. Cambridge, UK: Cambridge University Press.

Powell, Marvin A. 1985. "Salt, Seed, and Yields in Sumerian Agriculture. A Critique of the Theory of Progressive Salinization." Zeitschrift Für Assyriologie Und Vorderasiatische Archäologie, 75: 7-38.

Prag, Kay. 1970. "The 1959 Deep Sounding at Harran in Turkey." Levant, 2: 63-94.

Prentice, Rosemary. 2010. The Exchange of Goods and Services in Pre-Sargonic Lagaš (AOAT 368), Munster, DE: Ugarit Verlag.

Pruss, Alexander. 2011. "Figurines and Model Vehicles." In: *ARCANE I. Jezirah*, Marc Lebeau (ed.), Turnhout, BE: Brepols.

Quenet, Philippe. 2008. Les Échanges Du Nord de La Mésopotamie Avec Ses Voisins Proche-Orientaux Au IIIe Millénaire (ca. 3100-2300 Av. J. C.) (Subartu 22), Turnhout, BE: Brepols.

Ramazzotti, Marco. 2015. "The Iraqi-Italian Archaeological Mission at the Seven Mounds of Eridu (AMEr)." *Scienze Dell'Antichità*, 21: 3-29.

Rattenborg, Rune. 2016. The Scale and Extent of Political Economies of the Middle Bronze Age Jazirah and the Bilad Al-Šam (c. 1800-1600 BCE). PhD Dissertation, Durham University, UK.

Reade, Julian. 2005. "The Ishtar Temple at Nineveh." Iraq, 67: 347-390.

Renger, Joannes M. 1995. "Institutional, Communal, and Individual Ownership or Possession of Arable Land in Ancient Mesopotamia from the End of the Fourth to the End of the First Millennium B.C." *Chicago-Kent Law Review*, 71: 269-319.

Rey, Sebastien. 2016. For the Gods of Girsu: City-State Formation in Ancient Sumer. Oxford, UK: Archaeopress. Richardson, Seth. 2015. "Building Larsa: Labor Value, Scale and Scope-of-Economy in Ancient Mesopotamia." In: *Labor in the Ancient World (The International Scholars Conference on Ancient Near Eastern Economies, 5)*, Piotr Steinkeller and Michael Hudson (eds.), Dresden, DE: ISLET-Verlag.

Riehl, Simone, and Christian Kümmel. 2005. Archaeobotanical database of Eastern Mediterranean and Near Eastern Sites. http://www.ademnes.de.

Ristvet, Lauren. 2008. "Legal and Archaeological Territories of the Second Millennium BCE in Northern Mesopotamia." *Antiquity*, 82: 585-599.

Ristvet, Lauren. 2012a. "The Development of Underdevelopment? Imperialism, Economic Exploitation and Settlement Dynamics on the Khabur Plains, ca. 2300-2200 BC." In: Seven Generations Since the Fall of Akkad (Studia Chaburensia 3), Harvey Weiss (ed.), Wiesbaden, DE: Harrassowitz.

Ristvet, Lauren. 2012b. "Resettling Apum: Tribalism and Tribal States in the Tell Leilan Region, Syria." In: Looking North: The Socio-Economic Dynamics of the Northern Mesopotamian and Anatolian Regions during the Late Third and Early Second Millennium BC (Studien zur Urbanisierung Nordmesopotamiens Serie D, 1), Nicola Laneri, Peter Pfälzner and Stefano Valentini (eds.), Wiesbaden, DE: Harrassowitz.

Ristvet, Lauren. 2015. *Ritual, Performance, and Politics in the Ancient Near East.* Cambridge, UK: Cambridge University Press.

Ristvet, Lauren, and Harvey Weiss. 2013. "The Hābūr Region in the Old Babylonian Period." In: Archéologie et Histoire de la Syrie I. La Syrie de l'époque néolithique à l'âge du fer (Schriften zur Vorderasiatischen Archäologie 1,1), Wilfred Orthmann, Paolo Matthiae and Michel Al-Maqdissi (eds.), Wiesbaden, DE: Harrassowitz.

Roaf, Michael. 1990. Cultural Atlas of Mesopotamia and the Ancient Near East. New York, NY: Facts on File.

Robertson, John F. 1984. "The Internal Political and Economic Structure of Old Babylonian Nippur: The Guennakkum and His 'House." *Journal of Cuneiform Studies*, 36: 145-190.

Rost, Stephanie. 2017. "Water Management in Mesopotamia from the Sixth till the First Millennium B.C." *Wiley Interdisciplinary Reviews: Water*, 4: 1-23.

Rothman, Mitchell S. 1994. "Palace and Private Agricultural Decision-Making in the Early 2nd Millennium B.C. City-State of Larsa, Iraq." In: *The Economic Anthropology of the State*, Elizabeth M. Brumfiel (ed.), Lanham, MD: University Press of America.

Safar, Fuad, Mohammad Ali Mustafa, and Seton Lloyd. 1981. *Eridu*. Baghdad, IQ: Ministry of Culture and Information, State Organization of Antiquities and Heritage.

Saghieh, Muntaha. 1983. Byblos in the Third Millennium BC: A Reconsideration of the Stratigraphy and Study of Cultural Connections. Warminster, UK: Aris and Philips.

Sala, Maura. 2007. "Early Shrines at Byblos and Tell Es-Sultan/Ancient Jericho in the Early Bronze I (3300-3000 BC)." In: *Byblos and Jericho in the Early Bronze I. Social Dynamics and Cultural Interactions (ROSAPAT 4)*, Lorenzo Nigro (ed.), Roma, IT: Università degli Studi di Roma "La Sapienza" Press.

Sallaberger, Walther. 2011. "History and Philology." In: *ARCANE I. Jezirah*, Marc Lebeau (ed.). Turnhout, Be: Brepols.

Sallaberger, Walther. 2014. "Urban Organizations for Offerings, Overland Traffic and the Euphrates Trade at Pre-Sargonic Mari." In: *Mari, ni Est, ni Ouest. Actes du colloque 'Mari, ni Est ni Ouest' tenu les 20-22 octobre 2010 à Damas, Syrie (Supplément Syria II)*, Pascal Butterlin et al. (eds.), Beyrouth, LB: Ifpo.

Sallaberger, Walther, and Alexander Pruß. 2015. "Home and Work in Early Bronze Age Mesopotamia: 'Ration Lists' and 'Private Houses' at Tell Beydar/Nadaba." In: Labor in the Ancient World: A Colloquium held at Hirschbach (Saxony), April 2005 (The International Scholars Conference on Ancient Near Eastern Economies, 5), Piotr Steinkeller and Michael Hudson (eds.), Dresden, DE: ISLET-Verlag.

Sallaberger, Walther, and Ingo Schrakamp. 2015. ARCANE III. History & Philology. Turnhout, BE: Brepols.

Sallaberger, Walther, and Aage Westenholz. 1999. Mesopotamien. Akkade-Zeit Und Ur III-Zeit (Annäherungen 3. OBO 160/3). Fribourg-Göttingen, DE: Academic Press-Vandenhoeck & Ruprecht.

Salvini, Mirjo. 1998. "Kahat Nella Documentazione Cuneiforme. Repertorio delle Fonti." In: Tell Barri/Kahat 2. *Relazione sulle Campagne 1980-1993 a Tell Barri/Kahat, nel Bacino del Habur (Siria)*. Paolo E. Pecorella (ed.), Roma, IT: CNR.

Schaeffer, Claude F. A. 1962. Ugaritica 4: Découvertes Des 18. et 19. Campagnes 1954-1955, Fondaments Préhistoriques d'Ugarit et Nouveaux Sondages Études Anthropologiques, Poteries, Grecques et Monnais Islamiques de Ras-Shamra et Environs. Paris, FR: Geuthner.

Scheidel, Walther. 2013. "Studying the State." In: *The Oxford Handbook of the State* in the Ancient Near East and Mediterranean, Peter F. Bang and Walther Scheidel (eds.), Oxford, UK: Oxford University Press.

Schwartz, Glenn M. 2014. "Umm Al-Marra, Tall." Reallexikon Der Assyriologie Und Vorderasiatischen Archäologie, 14: 316-318.

Schwartz, Glenn M. 2016. "Umm El-Marra (Aleppo)." In: A History of Syria in One Hundred Sites, Youssef Kanjou and Akira Tsuneki (eds.), Oxford, UK: Oxbow Books.

Sconzo, Paola. 2014. "The Grave of the Court Pit': A Rediscovered Bronze Age Tomb from Carchemish." *Palestine Exploration Quarterly*, 146: 3-16.

Selz, Gebhard J. 2010. "He Put in Order the Accounts [...]' Remarks on the Early Dynastic Background of the Administrative Reorganizations in the Ur III State." In: *City Administration in the Ancient Near East, Proceedings of the 53e Rencontre Assyriologique* Internationale (23th-28th July 2007, Moscow & St Petersburg, Russia), Leonid E. Kogan et al. (eds.), Winona Lake, IN: Eisenbrauns.

Selz, Gebhard J. 2013. "Trade Posts and Encampments as Corner Stones of Exchange."
In: Patterns of Urban Societies (Acta Antiqua Mediterranea et Orientalia, Band 2), Thomas
R. Kammerer and Sabine Rogge (eds.), Munster, DE: Ugarit Verlag.

Seri, Andrea. 2005. Local Power in Old Babylonian Mesopotamia. London, UK: Equinox.

Singer, Itamar. 1999. "A Political History of Ugarit." In: *Handbook of Ugaritic Studies*, Wilfred G. E. Watson and Nicolas Wyatt (eds.), Leiden, NL: Brill.

Snell, Daniel C. 1982. "Plagues and Peoples in Mesopotamia." *Journal of Ancient Near Eastern Society*, 14: 89-96.

Starr, Richard F. S. 1937. Nuzi: Report on the Excavation at Yorgan Tepa near Kirkuk, Iraq, Conducted by Harvard University in Conjunction with the American Schools of Oriental Research and the University Museum of Philadelphia, 1927-193 (2 Vols.). Cambridge, MA: Harvard University Press.

Stein, Diana L. 2000. "Nuzi. B. Archäologisch." Reallexikon Der Assyriologie Und Vorderasiatischen Archäologie, 9: 639-647.

Stein, Gil J. 1999. *Rethinking World-Systems. Diasporas, Colonies and Interaction in Uruk Mesopotamia.* Tucson, AZ: The University of Arizona Press.

Steinkeller, Piotr. 1981. "The Renting of Fields in Early Mesopotamia and the Development of the Concept of 'Interest' in Sumerian." *Journal of the Economic and Social History* of the Orient, 24: 113-145.

Steinkeller, Piotr. 1991. "The Administrative and Economic Organization of the Ur III State: The Core and the Periphery." In: *The Organization of Power: Aspects of Bureaucracy in the Ancient Near East (SAOC 46)*, McGuire Gibson and Robert D. Biggs (eds.), Chicago, IL: The Oriental Institute of the University of Chicago.

Steinkeller, Piotr. 1998. "The Historical Background of Urkesh and the Hurrian Beginnings in Northern Mesopotamia." In: Urkesh and the Hurrians. Studies in Honor of Lloyd Cotsen (Bibliotheca Mesopotamica 26), Giorgio Buccellati and Marylin Kelly-Buccellati (eds.), Malibu, CA: Undena.

Steinkeller, Piotr. 2013a. "An Archaic 'Prisoner Plaque' from Kiš." *Revue d'assyriologie* et d'archéologie Orientale, 107: 131-157.

Steinkeller, Piotr. 2013b. "Puzur-Inšušinak at Susa: A Pivotal Episode of Early Elamite History Reconsidered." In: Susa and Elam. Archaeological, Philological, Historical and Geographical Perspectives. Proceedings of the International Congress Held at Ghent University, December 14-17, 2009, Kathrine De Graef and Jan Tavernier (ed.), Leiden, NL: Brill.

Steinkeller, Piotr. 2013c. "Trade Routes and Commercial Networks in the Persian Gulf during the Third Millennium BC." In: *Collection of Papers Presented to the Third International Biennial Conference of the Persian Gulf (History, Culture, Civilization)*, Cyrus Faizee (ed.), Tehran, IR: University of Tehran Press.

Steinkeller, Piotr. 2015a. "Introduction. Labor in the Early States: An Early Mesopotamian Perspective." In: Labor in the Ancient World: A Colloquium held at Hirschbach (Saxony), April 2005 (The International Scholars Conference on Ancient Near Eastern Economies, 5), Piotr Steinkeller and Michael Hudson (eds.), Dresden, DE: ISLET-Verlag.

Steinkeller, Piotr. 2015b. "The Employment of Labor on National Building Projects in the Ur III Period." In: Labor in the Ancient World: A Colloquium held at Hirschbach (Saxony), April 2005 (The International Scholars Conference on Ancient Near Eastern Economies, 5), Piotr Steinkeller and Michael Hudson (eds.), Dresden, DE: ISLET-Verlag.

Steinkeller, Piotr. 2018. "The Birth of Elam in History." In: *The Elamite World*, Javier Alvarez-Mon, Gian Pietro Basello and Yasmina Wicks (eds.), New York, NY: Routledge.

Stillman, Nigel, and Nigel Tallis. 1984. Armies of the Ancient Near East, 3000 BCE to 539 BC, Organisation, Tactics, Dress and Equipment. London, UK: Wargames Research Group.

Stol, Marten. 1995. "Old Babylonian Corvée (Tupšikkum)." In: *Studio Historiae Ardens:* Ancient Near Eastern Studies Presented to Philo H.J. Houwink ten Cate on the Occasion of his 65th Birthday (PIHANS 74), Theo van den Hout and Johan De Roos (eds.). Istanbul, TR: Nederlands Historisch-Archaeologisch Instituut te Istanbul.

Stone, Elizabeth C. 1987. *Nippur Neighborhoods (SAOC 44)*. Chicago, IL: The Oriental Institute of the University of Chicago.

Stone, Elizabeth C. 2013. "The Organisation of a Sumerian Town: The Physical Remains of Ancient Social Systems." In: *The Sumerian World*, Harriet Crawford (ed.), London, UK: Routledge.

Stone, Elizabeth C. 2017. "How Many Sumerians per Hectare?" In: At the Dawn of History. Ancient Near Eastern Studies in Honour of J. N. Postgate, Yagmur Heffron, Adam Stone, and Martin Worthington (eds.), Winona Lake, IN: Eisenbrauns.

Strommenger, Eva, and Kay Kohlmeyer. 2000. Ausgrabungen in Tall Bi'a/Tuttul, 3: Die Schichten Des 3. Jahrtausends v. Chr. Im Zentralhugel E (WVDOG 101), Saarbrücken, DE: Saarbrücker Druckerei und Verlag.

Strommenger, Eva, Peter A. Miglus, and Kay Kohlmeyer. 2010. Ausgrabungen in Tall Bi'a/Tuttul, 5. Altorientalische Kleinfunde (WVDOG 126). Wiesbaden, DE: Harrassowitz.

Styring, Amy et al. 2017. "Isotope Evidence for Agricultural Extensification Reveals How the World's First Cities Were Fed." *Nature Plants*, 17076: 1-11.

Suleiman, Amer. 1966. A Study of Land Tenure in the Old Babylonian Period with Special Reference to the Diyala Region, Based on Published and Unpublished Texts. PhD Dissertation, London, UK: SOAS.

Sürenhagen, Dietrich. 2011. "Urban Centers and Rural Sites in the Diyala Region during Early Dynastic I and II. Some Thoughts on Material Culture, Stratigraphy, and Relative Chronology." In: *Between the Cultures. The Central Tigris Region from the 3rd* to the 1st Millennium BC. Papers read at the symposium at Heidelberg January 22nd-24th, 2009. (HSAO 14), Peter A. Miglus and Simone Mühl (eds.), Heidelberg, DE: Heidelberger Orientverlag.

Taylor, Jon. 2010. "Hazannum: The Forgotten Mayor." In: City Administration in the Ancient Near East, Proceedings of the 53e Rencontre Assyriologique Internationale (23th-28th July 2007, Moscow & St Petersburg, Russia), Leonid E. Kogan et al. (eds.), Winona Lake, IN: Eisenbrauns.

Thompson, Reginald C., and Richard W. Hamilton. 1932. "The British Museum Excavations on the Temple of Ishtar at Nineveh, 1930-31." *Liverpool Annals of Archaeology and Anthropology*, 19: 78-79.

Thuesen, Ingolf. 1988. Hama. Fouilles et Recherches de La Fondation Carlsberg 1931-1938. I. The Pre- and Protohistoric Periods (Nationalmuseets Skrifter Storre Beretringer XI). København, DK: Nationalmuseet.

Tunca, Onhan, Augusta McMahon, and Abdul Massih Baghdo. 2007. Chagar Bazar (Syrie) II: Les Vestiges "Post-Akkadiens" Du Chantier D et Études Diverses. Leuven, BE: Peeters.

Tunca, Önhan and Abdul Massih Baghdo (eds.). 2008. Chagar Bazar (Syrie) III. Les Trouvailles Épigraphiques et Sigillographiques Du Chantier I (2000-2002). Leuven, BE: Peeters.

Ur, Jason. 2012. "Spatial Scale and Urban Evolution at Tell Brak and Hamoukar at the End of the 3rd Millennium BC." In: Looking North: The Socio-Economic Dynamics of the Northern Mesopotamian and Anatolian Regions during the Late Third and Early Second Millennium BCE (Studien zur Urbanisierung Nordmesopotamiens Serie D, 1), Nicola Laneri, Peter Pfälzner and Stefano Valentini (eds.), Wiesbaden, DE: Harrassowitz.

Ur, Jason. 2013. "Patterns of Settlement in Sumer and Akkad." In: *The Sumerian World*, Harriet Crawford (ed.), London, UK: Routledge.

Ur, Jason. 2014. "Umma. B. Archäologische." *Reallexikon Der Assyriologie Und Vorderasiatischen Archäologie*, 14: 327-330. Ur, Jason. 2017. "The Topography of Nineveh." In: Nineveh, the Great City. Symbol of Beauty and Power (Papers on Archaeology of the Leiden Museum of Antiquities 13), Lucas
P. Petit and D. Morandi Bonacossi (eds.), Leiden, NL: Sidestone Press.

Ur, Jason, Philip Karsgaard, and Joan Oates. 2011. "The Spatial Dimensions of Early Mesopotamian Urbanism: The Tell Brak Suburban Survey, 2003-2006." *Iraq*, 73:1-19.

Vacca, Agnese. 2015. "Recherches Sur Les Périodes Pré- et Proto-Palatiale d'Ebla Au Bronze Ancien III-IVA1." In: *Studies on The Archaeology Of Ebla After 50 Years Of Discoveries (Les Annales Archéologiques Arabes Syriennes Vol. 57-58)*, Paolo Matthiae et al. (eds.), Damascus, LB: Ministère de la Culture, Direction Génerale des Antiquetées et des Musées.

Vacca, Agnese. 2018. "Some Reflections about the Chora of Ebla during the EB III and IVA1 Periods." In: *Pearls of the Past. Studies on Near Eastern Art and Archaeology in Honour of Frances Pinnock (marru 8)*, Marta D'Andrea et al. (eds.), Münster, DE: Zaphon.

, Vacca, Agnese, George Mouamar, Marta D'Andrea, and Steven Lumsden. 2018. "A

Fresh Look at Hama in an Inter-Regional Context. New Data from Phase J Materials in the National Museum of Denmark." *Studia Eblaitica*, 4: 17-58.

Vallet, Regis. 2001. "Khafadjé ou les métamorphoses d'un quartier urbain au IIIe millénaire." In: *Etudes Mesopotamiennes, Recueil de textes offert à J-L Huot*, Catherine Breniquet and Christine Kepinski (eds.), Paris, FR: Editions Recherche sur les civilisations.

Van de Mieroop, Marc. 1992. Society and Enterprise in Old Babylonian Ur (BBVO 12). Berlin, DE: Reimer Verlag.

Van Driel, Govert. 2000. "The Mesopotamian North: Land Use, an Attempt." In: *Rain-fall and Agriculture in Northern Mesopotamia. Proceedings of the Third MOS Symposium (MOS Studies 3; PIHANS 88).* Remco M. Jas (ed.), Leiden, NL: Nederlands Historisch-Archaeologisch Instituut te Istanbul.

Van Koppen, Frans. 2000. "The Organisation of Institutional Agriculture in Mari." Journal of the Economic and Social History of the Orient, 44: 451-504. Van Koppen, Frans. 2015. "Qatna in Altsyrischer Zeit." In: *Qatna and the Networks of* Bronze Age Globalism. Proceedings of an International Conference in Stuttgart and Tübingen in October 2009. Qatna Studien Supplementa 2, Peter Pfälzner and Michel Al-Maqdissi (eds.), Wiesbaden, DE: Harrassowitz.

Veenhof, Klaus R. 2017. "The Old Assyrian Period (20th-18th Century BCE)." In: A Companion to Assyria, Eckart Frahm (ed.), New York: Wiley-Blackwell.

Veenhof, Klaas R., and Jesper Eidem. 2008. Mesopotamia: The Old Assyrian Period (Annäherungen 5. OBO 160/5). Fribourg-Göttingen, DE: Academic Press-Vandenhoeck & Ruprecht.

Visicato, Giuseppe. 1995. The Bureaucracy of Suruppak. Administrative Centres, Central Offices, Intermediate Structures, and Hierarchies in the Economic Documentation of Fara (Abhandlungen Zur Literatur Alt-Syrien-Palastinas Und Mesopotamiens 10). Münster, DE: Ugarit Verlag.

Visicato, Giuseppe, and Aage Westenholz. 2005. "An Early Dynastic Archive from Ur Involving the Lugal." *Kaskal*, 2: 55-78.

Waetzoldt, Hartmut. 2014. "Umma A. Philologisch - Umma A. Philological." *Reallexikon* Der Assyriologie Und Vorderasiatischen Archäologie, 14: 318-327.

Walker, Christopher B. 1980. "Some Assyrians at Sippar in the Old Babylonian Period." Anatolian Studies, 30: 15-22.

Walker, Christopher B., and Dominique Collon. 1980. "Hormuzd Rassam's Excavations for the British Museum at Sippar in 1881-1882." In: *Tell ed-Der, III: Sounding at Abu Habbah (Sippar)*, Leon de Meyer (ed.), Leuven, BE: Peeters.

Weiss, Harvey. 1990. "Tell Leilan 1989: New Data for Mid-Third Millennium Urbanization and State Formation." *Mitteilungen Der Deutschen Orient-Gesellschaft Zu Berlin*, 122: 193-218. Weiss, Harvey, Francesca de Lillis Forest, Dominique de Moulins, Jesper Eidem, Thomas Guilderson, Ulla Kasten, Torben Larsen, Lucia Mori, Lauren Ristvet, Elena Rova, and Wilma Wetterstrom. 2002. "Revisiting the Contours of History at Tell Leilan." Les Annales Archéologiques Arabes Syriennes, 45: 59-74.

Welton, Linn, Stephen Batiuk, and Timothy P. Harrison. 2011. "Tell Tayinat in the Late Third Millennium: Recent Investigations of the Tayinat Archaeological Project, 2008-2010." *Akkadica*, 37: 147-185.

Widell, Magnus. 2013. "Sumerian Agriculture and Land Management." In: *The Sumerian World*, Harriet Crawford (ed.), London, UK: Routledge.

Wilkinson, Tony J., Jason Ur, and Carrie Hritz. 2013. "Settlement Archaeology of Mesopotamia." In: *Models of Mesopotamian Landscapes. How Small-Scale Processes Contributed to the Growth of Early Civilizations*, Tony J. Wilkinson, McGuire Gibson and Magnus Widell (eds.), Oxford, UK: Archaeopress.

Wilkinson, Tony J., Edgar Peltenburg, and Eleonor Barbanes Wilkinson. 2016. Carchemish in Context. The Land of Carchemish Project, 2006-2010. Oxford, UK: Oxbow Books.

Wilson, Karen. 1986. "Nippur: The Definition of a Mesopotamian Gamdat Nasr Assemblage." In: *Gamdat Nasr. Period or Regional Style? Papers given at a Symposium held in Tübingen November 1983 (Beihefte zum Tubinger Atlas des Vorderen Orients Reihe B, 62)*, Uwe Finkbeiner and William Röllig (eds.), Wiesbaden, DE: Reichert Verlag.

Wilson, Karen. 2002. "The Temple Mound at Bismaya." In: Leaving no Stones Unturned: Essays on the Ancient Near East and Egypt in Honor of Donald P. Hansen, Erica Ehrenberg (ed.), Winona Lake, IN: Eisenbrauns.

Wilson, Karen. 2012. Bismaya, Recovering the Lost City of Adab (OIP 138). Chicago,IL: The Oriental Institute of the University of Chicago.

Woolley, Charles L. 1921. Carchemish: Report on the Excavations at Jerablus on Behalf of the British Museum, Part 2: The Town Defences. London, UK: The Trustees of the British Museum.

Woolley, Charles L. 1934. The Royal Cemetery. A Report on the Predynastic and Sargonid Graves Excavated Between 1926 and 1934 (Ur Excavations 2). London, UK: The Trustees of the Two Museums.

Woolley, Charles L. 1939. The Ziggurat and Its Surroundings (Ur Excavations 5). London, UK: The Trustees of the Two Museums.

Woolley, Charles L. 1955. Alalakh. An Account of the Excavations at Tell Atchana in the Hatay, 1937-1949. London, UK: The Society of Antiquaries.

Woolley, Charles L. 1956. The Early Periods: A Report on the Sites and Objects Prior in Date to the Third Dynasty of Ur Discovered in the Course of Excavations (Ur Excavations 4). London, UK: The Trustees of the Two Museums.

Woolley, Charles L. 1974. The Buildings of the Third Dynasty (Ur Excavations 6). London, UK: The Trustees of the Two Museums.

Woolley, Charles L., and Richard D. Barnett. 1952. Carchemish III. Report on the Excavations at Jerablus on Behalf of the British Museum, Part 3: The Excavations in the Inner Town; The Hittite Inscriptions. London, UK: The Trustees of the British Museum.

Woolley, Charles L., and Max E. L. Mallowan. 1976. *The Old Babylonian Period (Ur Excavations 7)*. T. Mitchell (ed.). London: British Museum Publications.

Wright, Henry T. 1969. The Administration of Rural Production in Ancient Mesopotamia (Anthropological Papers - University of Michigan, Museum of Anthropology, Vol. 38). Ann Arbor, MI: University of Michigan.

Wright, Henry T. 1981. "The Southern Margins of Sumer: Archaeological Survey of the Area of Eridu and Ur." In: *Heartland of Cities. Surveys of Ancient Settlement and Land* *Use on the Central Floodplain of the Euphrates*, Robert M. Adams (ed.), Chicago, IL: The University of Chicago Press.

Yener, Kutlu A. 2015. "A Monumental Middle Bronze Age Apsidal Building at Alalakh 2015." In: NOSTOI. Indigenous Culture, Migration and Integration in the Aegean Islands and Western Anatolia during the Late Bronze and Early Iron Age, Nicholas C. Stampolidis, Cigdem Maner and Kostantinos Kopanias (eds.), Istanbul, TR: Koç University Press Yayınları.

Yoffee, Norman. 1998. "The Economics of Ritual at Late Old Babylonian Kish." *Journal* of the Economic and Social History of the Orient, 41: 312-343.

Yoffee, Norman. 2013. "Towards a Biography of Kish: Notes on Urbanism and Comparison." In: *Literature as Politics, Politics as Literature Essays on the Ancient Near East in Honor of Peter Machinist*, David S. Vanderhooft and Abraham Winitzer (eds.), Winona Lake, IN: Eisenbrauns.

Yon, Marguerite. 1997. "Ugarit." In: *The Oxford Encyclopedia of Archaeology in the Near East, vol. 5.*, Eric M. Meyers (ed.), Oxford, UK: Oxford University Press.

Yon, Marguerite. 2006. The City of Ugarit at Tell Ras Shamra, Winona Lake, IN: Eisenbrauns.

Yon, Marguerite. 2014. "Ugarit (Ougarit). D. Archäologisch." Reallexikon Der Assyriologie Und Vorderasiatischen Archäologie, 13: 291-295.

Zaccagnini, Carlo. 1979. "Notes on the Nuzi Surface Measures." In: *Festschrift für Claude F. A. Schaeffer zum 80. Geburstag am 6. März 1979*, Kurt Bergerhof, Manfred Dietrich and Oswald Loretz (eds.), Neukirchen-Vluyn, DE: Butzon & Bercker Kevelaer.

Zaccagnini, Carlo. 1999. "Economic Aspects of Land Ownership and Land Use in Northern Mesopotamia and Syria from the Late 3rd Millennium to the Neo-Assyrian Period." In: *Urbanization and Land Ownership in the Ancient Near East*, Michael Hudson and Baruch Levine (eds.), Cambridge, MA: Peabody Museum, Harvard University. Zaina, Federico. 2015. Stratigraphy, Chronology and Architecture of the Earliest Phases at Kish in Central Mesopotamia: From the Jemdet Nasr to the Ur III Period (3100-2000 BC). PhD Dissertation, Università degli Studi di Roma "La Sapienza."

Zaina, Federico. 2016. "Tell Ingharra-East Kish in the 3rd Millennium BC: Urban Development, Architecture and Functional Analysis." In: *Proceedings of the 9th International Congress on the Archaeology of the Ancient Near East: June 9-13, 2014, University of Basel. Volume 1*, Rolf A. Stucky, Oscar Kaelin and Hans-Peter Mathys (eds.), Wiesbaden, DE: Harrassowitz.

Zettler, Richard L. 1992. The Ur III Temple of Inanna at Nippur. The Operation and Organization of Urban Religious Institutions in Mesopotamia in the Late Third Millennium B.C (BBVO 11). Berlin, DE: Reimer.

Zettler, Richard L., and William B. Hafford. 2015. "Ur. B. Archäologisch." *Reallexikon Der Assyriologie Und Vorderasiatischen Archäologie*, 14: 367-385.

Zuckerman, Sharon. 2012. "The Temples of Canaanite Hazor." In: Temple Building and Temple Cult. Architecture and Cultic Paraphernalia of Temples in the Levant (2.-1. Mill. B.C.E.), Jens Kamlah (ed.), Wiesbaden, DE: Harrassowitz.

Zuckerman, Sharon. 2013. "Hazor in the Early Bronze Age." *Near Eastern Archaeology*, 76: 68-73.

Zuckerman, Sharon, and Shlomit Bechar. 2017. "The Early Bronze Age (Strata XX-XIX)." In: *Hazor VII. The 1990-2012 Excavations. The Bronze Age.* Jerusalem, IL: The Israel Exploration Society.