Environmental Origins of Labour-Leisure Preference

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December, 2019

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  - The interplay between fundamental economic activities and human behaviour

Related Literature

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Original Affluent Society

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  - **Lower** degree of leisure preference
    - In the absence of over extraction individual short-run rationality coincides with evolutionary optimal behaviour on a group level

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  - $y_{it} = (Y^a_{it} + Y^h_{it}) / L_{it}$ – income per capita

Preference

- Preference of a representative member of group i:

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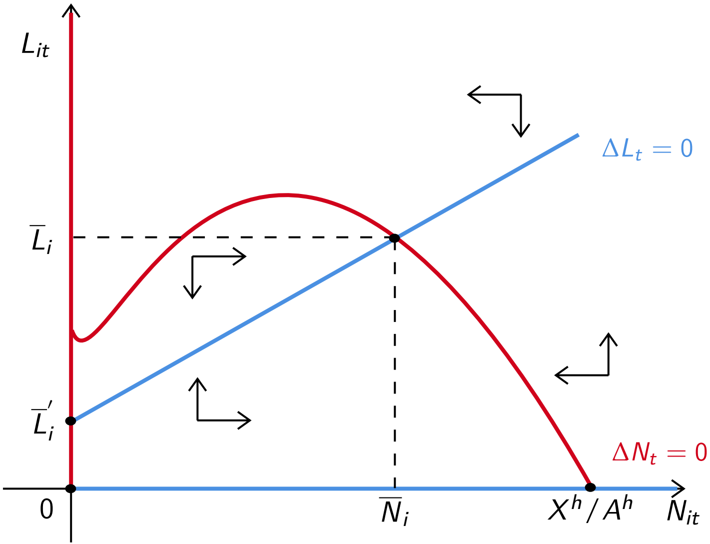
Phase Diagram



$\Delta N_t = 0$ $\Delta L_t = 0$

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  - For $\theta_i > \hat{\theta}$ – co-existence steady state is locally stable,
    - $\bar{L}_i$ is the long-run population of the group (agriculture and hunting)

Preference for Leisure & Long-Run Human Population

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$$\bar{\theta}(A^h, A^a) = \frac{\sum_i \bar{L}(\theta_i, A^h, A^a)\theta_i}{\sum_i \bar{L}(\theta_i, A^h, A^a)}.$$

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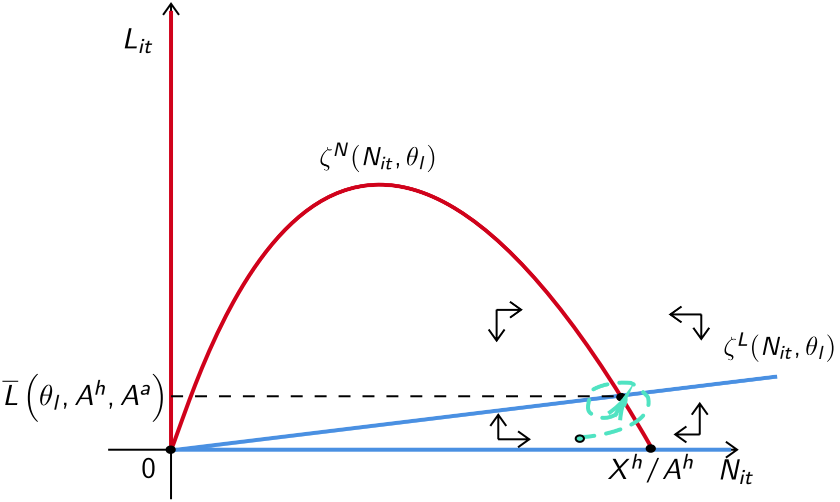
Effect of Leisure Preference in a Pure Hunting Environment



Co-evolution of human and animal population under high leisure preference.

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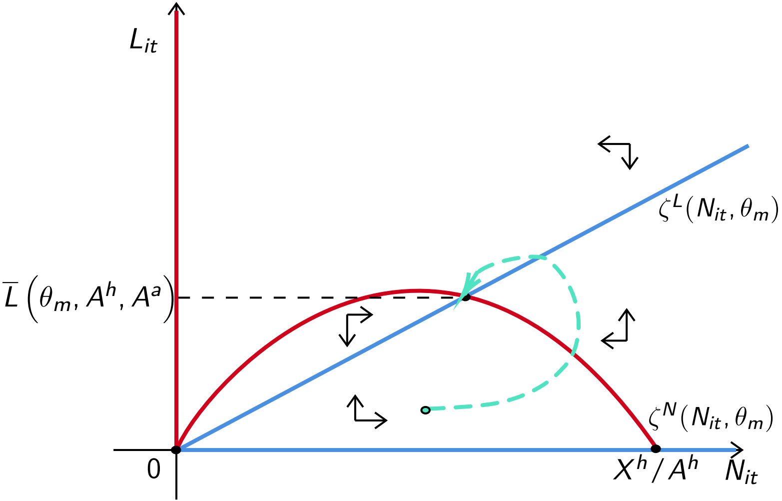
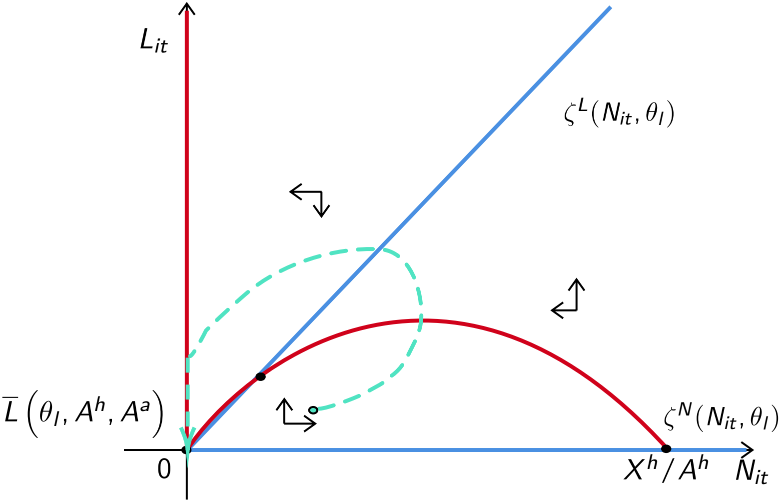


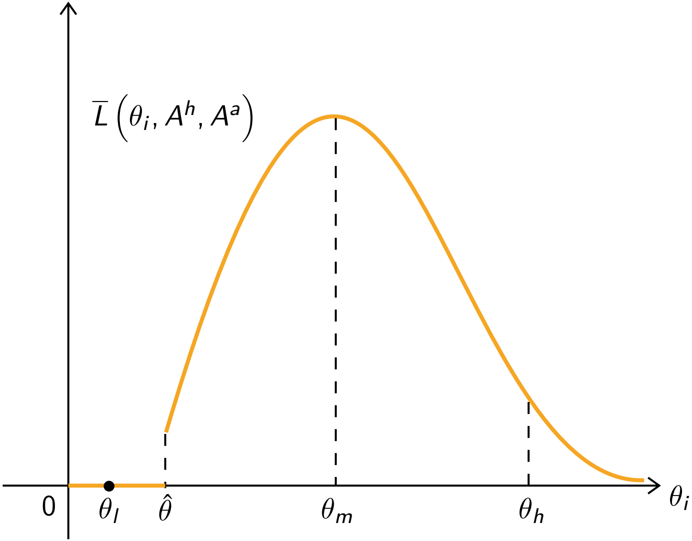
Co-evolution of human and animal population under moderate leisure preference.

Effect of Leisure Preference in a Pure Hunting Environment

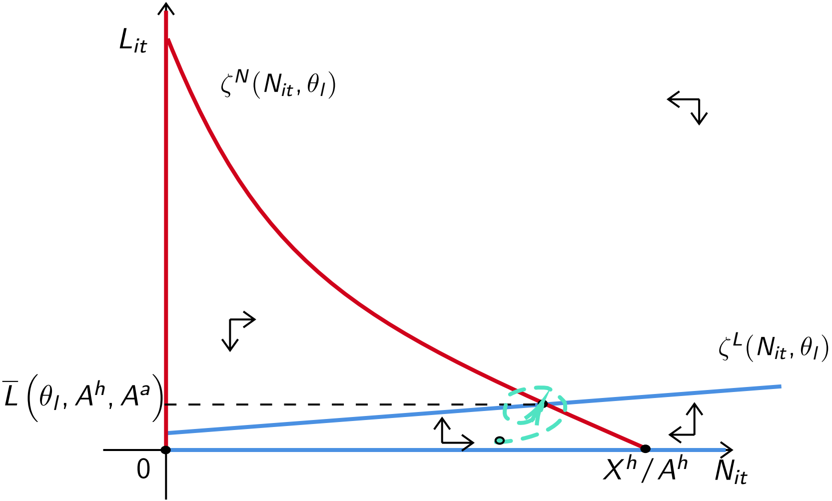


Co-evolution of human and animal population under low leisure preference.

Long-Run Population in a Pure Hunting Environment



Effect of Leisure Preference in a Mixed Environment



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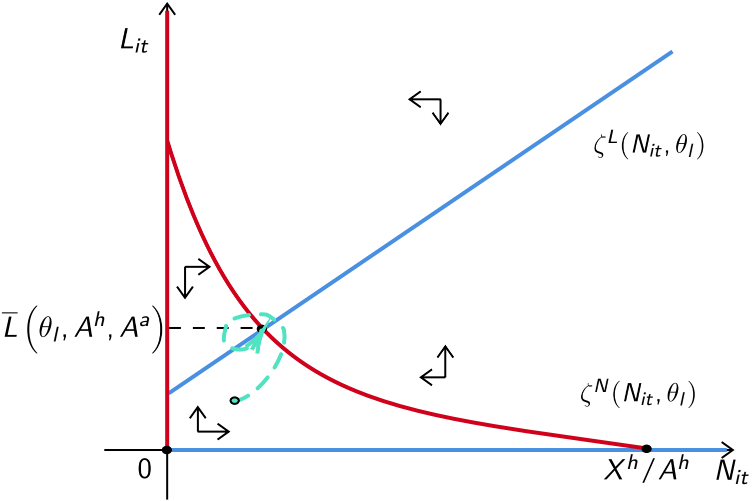

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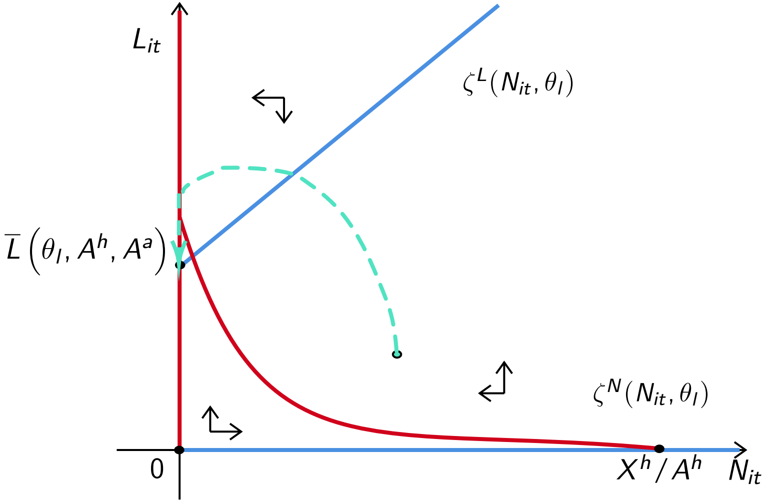

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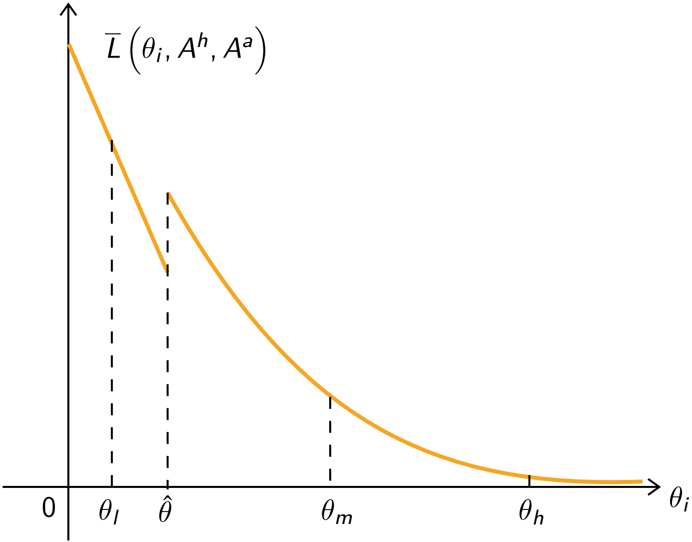
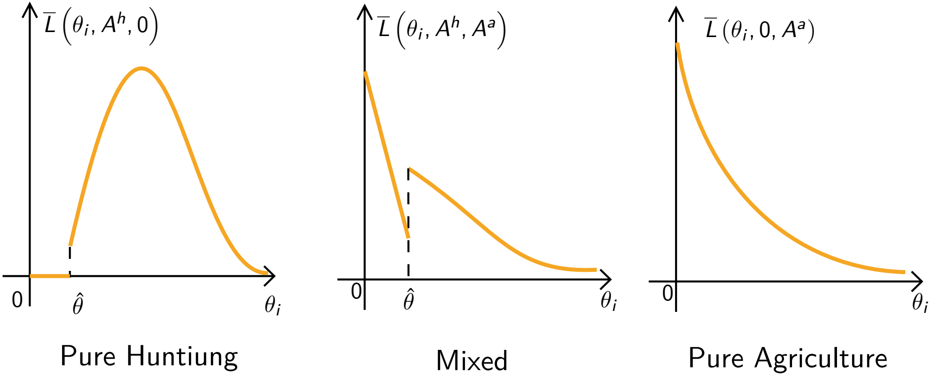


Population Distribution in Different Environments



$$\bar{\theta}(A^h, 0) \quad > \quad \bar{\theta}(A^h, A^a) \quad > \quad \bar{\theta}(0, A^a)$$

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- The relative productivity of hunting and agriculture:
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  - Sways the selection forces to favour more or less leisure-loving groups

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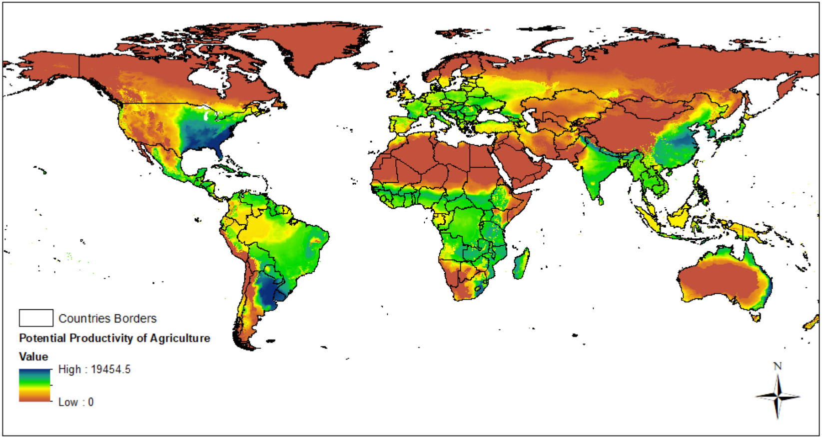
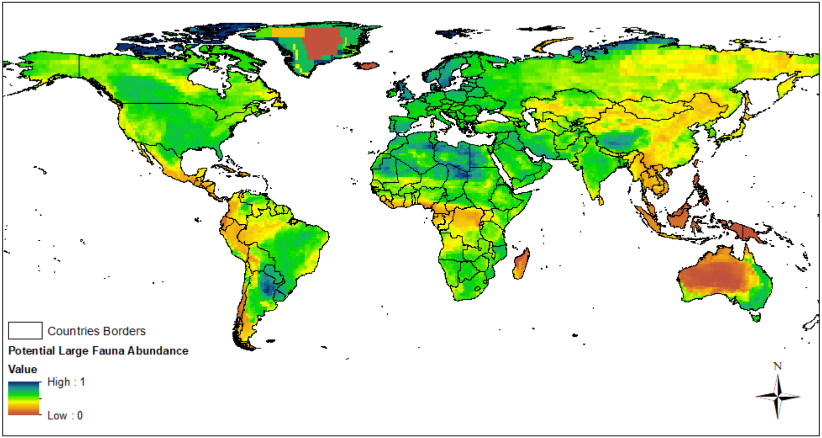
Global Distribution of Potential Agricultural Productivity



Global Distribution of Potential Large Fauna Abundance



Data: Predisposition Towards Leisure & Labour

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  - Establish that selection on unobservables is not a concern

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    - Mitigating concerns about the confounding effects of unobservables geographical factors in the parental county of origin
    - Demonstrating the importance of evolutionary processes in the pre-1500 and the post-1500 period

Empirical Model

- The linear effect of potential productivity of hunting and agriculture on predisposition towards leisure

$$\begin{aligned} leisure_{ict} &= \beta_0 + \beta_1^{hn} hunt\_prod_{ip} + \beta_1^{ag} agrc\_prod_{ip} \\ &+ \sum_j \gamma_{1j} X_{ipj} + \sum_j \gamma_{2j} Z_{ij} + \sum_c \gamma_c \delta_{ic} + \sum_t \gamma_t \delta'_{it} + \epsilon_i \end{aligned} \quad (1)$$

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- The effect would be reverse for predisposition towards labour

Empirical Model

- The linear effect of ancestral dependence on hunting relative to agriculture on predisposition towards leisure

$$
\begin{aligned}
leisure_{ict} &= \alpha_0 + \alpha_1 share\_hunt_{ip} \\
&\quad + \sum_j \psi_{1j} X_{ipj} + \sum_j \psi_{2j} Z_{ij} + \sum_c \psi_c \delta_{ic} + \sum_t \psi_t \delta'_{it} + \eta_i
\end{aligned} \tag{2}
$$

Empirical Model

- The linear effect of ancestral dependence on hunting relative to agriculture on predisposition towards leisure

$$\begin{aligned} \mathit{leisure}_{ict} &= \alpha_0 + \alpha_1 \mathit{share\_hunt}_{ip} \\ &\quad + \sum_j \psi_{1j} X_{ipj} + \sum_j \psi_{2j} Z_{ij} + \sum_c \psi_c \delta_{ic} + \sum_t \psi_t \delta'_{it} + \eta_i \end{aligned} \tag{2}$$

- Testable hypothesis: $\alpha_1 > 0$ (Reverse for predisposition towards labour)

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  - Ancestral dependence on hunting instrumented by potential productivity of hunting

Determinants of the Large-Game Hunting: SCCS

	Large-Game Hunting					
	(1)	(2)	(3)	(4)	(5)	(6)
Share of Large Mammals (Potential)	0.60***	0.65***	0.45**	0.59***	0.62***	0.69***
	(0.13)	(0.14)	(0.19)	(0.22)	(0.22)	(0.24)
Crop Yield	No	Yes	Yes	Yes	Yes	Yes
Region FE	No	No	Yes	Yes	Yes	Yes
Geographical Controls	No	No	No	Yes	Yes	Yes
Climatic Controls	No	No	No	No	Yes	Yes
Year of Observation	No	No	No	No	No	Yes
Pseudo-R^2	0.10	0.14	0.22	0.27	0.33	0.35
Observations	139	139	139	139	139	139

Relative Dependence on Hunting: Ethnographic Atlas

	Relative Dependence on Hunting					
	(1)	(2)	(3)	(4)	(5)	(6)
Share of Large Mammals (Potential)	0.01**	0.02***	0.02***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
Crop Yield		-0.05***	-0.02***	-0.02***	-0.02***	-0.02***
		(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
Region FE	No	No	Yes	Yes	Yes	Yes
Geographical Controls	No	No	No	Yes	Yes	Yes
Climatic Controls	No	No	No	No	Yes	Yes
Year of Observation	No	No	No	No	No	Yes
Adjusted-R^2	0.00	0.13	0.42	0.57	0.58	0.58
Observations	1042	1042	1042	1042	1042	1042

Preference for Leisure: 2nd-Generation Migrants (ESS)

	Importance of Having a Good Time							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share of Large Mammals (Potential)	0.12***	0.06***	0.05***	0.07***	0.07***	0.05***	0.05***	0.05***
	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Crop Yield			-0.02**	-0.05**	-0.05**	-0.07***	-0.07***	
			(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	
Crop Yield (pre-1500)								-0.08***
								(0.02)
Crop Yield Change (post-1500)								-0.04**
								(0.02)
Country FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	No	No	No	Yes	Yes	Yes	Yes	Yes
Round FE	No	No	No	No	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	No	No	Yes	Yes	Yes
YST	No	No	No	No	No	No	Yes	Yes
Adjusted-R^2	0.01	0.10	0.10	0.10	0.10	0.14	0.14	0.14
Observations	16631	16631	16631	16631	16631	16631	16631	16631

Ordered Probit | Selection on Unobservables | Alternative Cultural Dimensions | Pre-Industrial Development

Preference for Leisure: 2nd-Generation Migrants (ESS)

	Importance of Having a Good Time						
	OLS						IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependence on Hunting (Anc.)	0.06**	0.07***	0.06***	0.06***	0.04**	0.04**	0.19**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.07)
Country FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	No	No	Yes	Yes	Yes	Yes	Yes
Round FE	No	No	No	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	No	Yes	Yes	Yes
YST	No	No	No	No	No	Yes	Yes
Adjusted-R^2	0.02	0.10	0.10	0.10	0.14	0.14	0.14
Observations	16578	16578	16578	16578	16578	16578	16578
FIRST STAGE							Dependence on Hunting (Anc.)
Share of Large Mammals (Potential)							0.28***
							(0.07)
Firs-Stage F-statistics							14.94

Selection on Unobservables | Alternative Cultural Dimensions | Pre-Industrial Development

Preference for Labour: 2nd-Generation Migrants (GSS)

	Importance of Working Hard							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share of Large Mammals (Anc., Potential)	-0.09***	-0.08***	-0.06***	-0.07**	-0.14***	-0.17***	-0.23***	-0.17***
	(0.02)	(0.02)	(0.01)	(0.03)	(0.05)	(0.05)	(0.07)	(0.06)
Crop Yield (Anc.)			0.12***	0.15***	0.16**	0.18***	0.24***	
			(0.04)	(0.05)	(0.07)	(0.06)	(0.07)	
Crop Yield (Anc., pre-1500)								0.27***
								(0.08)
Crop Yield Change (Anc., post-1500)								0.07**
								(0.03)
Region FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	No	No	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	No	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	No	No	Yes	Yes	Yes
YST	No	No	No	No	No	No	Yes	Yes
Adjusted-R^2	0.02	0.02	0.03	0.02	0.04	0.05	0.05	0.05
Observations	1474	1474	1474	1474	1474	1474	1474	1474

Ordered Probit | Selection on Unobservables | Alternative Cultural Dimensions | Pre-Industrial Development

Preference for Labour: 2nd-Generation Migrants (GSS)

	Importance of Working Hard						
	OLS						IV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependence on Hunting (Anc.)	-0.09**	-0.11***	-0.17***	-0.19***	-0.21***	-0.20***	-0.34***
	(0.04)	(0.04)	(0.05)	(0.06)	(0.06)	(0.05)	(0.12)
Region FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	No	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	No	Yes	Yes	Yes
YST	No	No	No	No	No	Yes	Yes
Adjusted-R^2	0.02	0.03	0.02	0.04	0.05	0.05	0.05
Observations	1474	1474	1474	1474	1474	1474	1474
FIRST STAGE							Dependence on Hunting (Anc.)
Share of Large Mammals (Anc., Potential)							0.64***
							(0.17)
Firs-Stage F-statistics							13.83

Selection on Unobservables | Alternative Cultural Dimensions | Pre-Industrial Development

Preference for Labour: Individuals in WVS

	Importance of Working Hard						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Share of Large Mammals (Anc., Potential)	-0.03***	-0.04***	-0.03***	-0.04***	-0.04***	-0.04***	-0.04***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Crop Yield (Anc.)		0.06***	0.09***	0.07***	0.07***	0.07***	
		(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	
Crop Yield (Anc., pre-1500)							0.06***
							(0.01)
Crop Yield Change (Anc., post-1500)							0.02***
							(0.01)
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	No	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	No	Yes	Yes	Yes
YST	No	No	No	No	No	Yes	Yes
Adjusted-R^2	0.05	0.05	0.07	0.07	0.11	0.11	0.11
Observations	224509	224509	224509	224509	224509	224509	224509

Ordered Probit | Selection on Unobservables | Pre-Industrial Development

Preference for Labour: Individuals in WVS

	Importance of Working Hard					
	OLS					IV
	(1)	(2)	(3)	(4)	(5)	(6)
Dependence on Hunting (Anc.)	-0.02***	-0.02***	-0.01**	-0.01***	-0.01***	-0.16***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	Yes	Yes	Yes
YST	No	No	No	No	Yes	Yes
Adjusted-R^2	0.05	0.06	0.07	0.11	0.11	0.09
Observations	224509	224509	224509	224509	224509	224509
FIRST STAGE						Dependence on Hunting (Anc.)
Share of Large Mammals (Anc., Potential)						0.11***
						(0.01)
Firs-Stage F-statistics						22.30

Selection on Unobservables | Pre-Industrial Development

Concluding Remarks

- The evolution of predisposition towards leisure in the course of human history reflects the adaptation of humans to the differential long-run productivity of effort during the Malthusian epoch

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    - Greater potential productivity of **hunting** have **higher** predisposition towards leisure
    - Higher potential productivity of **agriculture** have a **lower** degree of leisure preference in the contemporary period
    - Greater ancestral dependence on hunting relative to agriculture have **higher** level of leisure preference

Related Literature

- Evolution of preferences in the course of human history,

  Galor and Moav (QJE 2002), Doepke and Zilibotti (QJE 2008), Galor and Michalopoulos (JET 2012), Galor and Ozak (AER 2016), Galor and Savitskiy (2018)

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- Geographical origins of cultural traits, Durante (2010), Alesina, Giuliano and Nunn (QJE 2013), Galor and Ozak (AER 2016)
- Biogeographical roots of comparative development, Diamond (1997), Ashraf and Galor (AER 2013), Spolaore and Wacziarg (JEL 2013)

Back

Original Affluent Society

- Older theories characterize hunters' life style as an 'endless quest for food'

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- The Theory portrays early society as an egalitarian utopia with 15 – 20 hour work week
- The Theory is popular, but faces significant criticisms Kaplan (2000)

Back

Ordered Probit Estimation (ESS)

	Importance of Having a Good Time							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share of Large Mammals (Potential)	0.10***	0.05***	0.05***	0.06***	0.06***	0.04***	0.04***	0.04***
	(0.03)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)
Crop Yield			-0.02*	-0.04*	-0.04*	-0.05***	-0.05***	
			(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	
Crop Yield (pre-1500)								-0.07***
								(0.02)
Crop Yield Change (post-1500)								-0.03**
								(0.01)
Region FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	No	No	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	No	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	No	No	Yes	Yes	Yes
YST	No	No	No	No	No	No	Yes	Yes
Pseudo-R^2	0.00	0.03	0.03	0.03	0.03	0.05	0.05	0.05
Observations	16631	16631	16631	16631	16631	16631	16631	16631

Back

Ordered Probit Estimation (GSS)

	Importance of Working Hard							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Share of Large Mammals (Anc., Potential)	-0.10***	-0.10***	-0.08***	-0.08***	-0.15***	-0.19***	-0.26***	-0.20***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.05)	(0.05)	(0.07)	(0.06)
Crop Yield (Anc.)			0.13***	0.16***	0.17**	0.20***	0.27***	
			(0.04)	(0.05)	(0.07)	(0.06)	(0.07)	
Crop Yield (Anc., pre-1500)								0.30***
								(0.08)
Crop Yield Change (Anc., post-1500)								0.08**
								(0.03)
Region FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	No	No	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	No	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	No	No	Yes	Yes	Yes
YST	No	No	No	No	No	No	Yes	Yes
Pseudo-R^2	0.01	0.01	0.01	0.01	0.02	0.04	0.04	0.04
Observations	1474	1474	1474	1474	1474	1474	1474	1474

Back

Ordered Probit Estimation (WVS)

	Importance of Working Hard						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Share of Large Mammals (Anc., Potential)	-0.06***	-0.07***	-0.06***	-0.08***	-0.08***	-0.08***	-0.06***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Crop Yield (Anc.)		0.10***	0.17***	0.13***	0.13***	0.13***	
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	
Crop Yield (Anc., pre-1500)							0.13***
							(0.01)
Crop Yield Change (Anc., post-1500)							0.03**
							(0.01)
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	No	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	Yes	Yes	Yes	Yes
Individual Controls	No	No	No	No	Yes	Yes	Yes
YST	No	No	No	No	No	Yes	Yes
Pseudo-R^2	0.03	0.03	0.04	0.05	0.07	0.07	0.07
Observations	224509	224509	224509	224509	224509	224509	224509

Back

Selection by Unobservables

	Labour-Leisure Preference					
	(1) ESS	(2) ESS	(3) GSS	(4) GSS	(5) WVS	(6) WVS
Share of Large Mammals (Potential)	0.06***	0.05***	-0.08***	-0.23***	-0.03***	-0.04***
	(0.02)	(0.02)	(0.02)	(0.07)	(0.00)	(0.00)
Country/Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	No	Yes	No	Yes	No	Yes
Round/Wave FE	No	Yes	No	Yes	No	Yes
Individual Controls	No	Yes	No	Yes	No	Yes
YST	No	Yes	No	Yes	No	Yes
AET		3.41		-1.44		-3.15
δ		3.50		-1.07		-5.21
β^*		0.03		-0.29		-0.05
R^2	0.10	0.15	0.03	0.10	0.05	0.11
Adjusted-R^2	0.10	0.14	0.02	0.05	0.05	0.11
Observations	16628	16628	1474	1474	224509	224509

Back ESS Back GSS Back WVS

Selection by Unobservables

	Labour-Leisure Preference					
	(1)	(2)	(3)	(4)	(5)	(6)
	ESS	ESS	GSS	GSS	WVS	WVS
Dependence on Hunting (Anc.)	0.06**	0.04**	-0.09**	-0.20***	-0.02***	-0.01***
	(0.02)	(0.02)	(0.04)	(0.05)	(0.00)	(0.00)
Country/Region FE	No	Yes	No	Yes	No	Yes
Geographical Controls	No	Yes	No	Yes	No	Yes
Round/Wave FE	No	Yes	No	Yes	No	Yes
Individual Controls	No	Yes	No	Yes	No	Yes
YST	No	Yes	No	Yes	No	Yes
AET		1.81		-1.78		8.89
δ		4.73		-1.37		16.83
β^*		0.03		-0.25		-0.01
R^2	0.02	0.15	0.03	0.10	0.04	0.11
Adjusted-R^2	0.02	0.14	0.02	0.05	0.04	0.11
Observations	16578	16578	1474	1474	224509	224509

Back ESS Back GSS Back WVS

Robustness to Cultural Dimensions (ESS)

	Alternative Cultural Dimensions				
	Obidience	Individualism	Gender	Strong Gov.	Creativity
	(1)	(2)	(3)	(4)	(5)
Share of Large Mammals (Potential)	0.01	0.02	0.02	0.00	0.00
	(0.02)	(0.01)	(0.04)	(0.01)	(0.01)
Crop Yield (pre-1500)	-0.00	-0.02	-0.04	-0.01	0.01
	(0.03)	(0.02)	(0.04)	(0.02)	(0.02)
Adjusted-R^2	0.10	0.06	0.15	0.10	0.07
Observations	16596	16664	4472	16872	16670
Dependence on Hunting (Anc.)	-0.00	0.02	0.00	-0.02*	0.01
	(0.02)	(0.02)	(0.03)	(0.01)	(0.01)
Adjusted-R^2	0.10	0.06	0.15	0.10	0.07
Observations	16601	16669	4472	16877	16675
Country FE	Yes	Yes	Yes	Yes	Yes
Geographical Controls	Yes	Yes	Yes	Yes	Yes
Round FE	Yes	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes	Yes
YST	Yes	Yes	Yes	Yes	Yes

Back

Robustness to Cultural Dimensions (GSS)

	Importance of Working Hard					
	Obidience	Individualism	Gender	Strong Gov.	Altruism	Creativity
	(1)	(2)	(3)	(4)	(5)	(6)
Share of Large Mammals (Anc., Potential)	-0.06	-0.07	-0.03	-0.01	0.11	-0.06
	(0.11)	(0.08)	(0.02)	(0.14)	(0.07)	(0.16)
Crop Yield (Anc., pre-1500)	0.08	0.04	0.02	-0.18	0.14*	0.03
	(0.08)	(0.10)	(0.03)	(0.16)	(0.08)	(0.12)
Adjusted-R^2	0.13	0.11	0.11	0.07	0.03	0.10
Observations	1474	1474	1526	2059	1783	789
Dependence on Hunting (Anc.)	0.10	-0.03	-0.02	0.04	0.06	-0.08
	(0.17)	(0.08)	(0.07)	(0.02)	(0.06)	(0.08)
Adjusted-R^2	0.07	0.10	0.11	0.11	0.03	0.13
Observations	2059	789	1474	1526	1783	1474
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
YST	Yes	Yes	Yes	Yes	Yes	Yes

Back

Robustness to Pre-Industrial Development

	Labour-Leisure Preference					
	(1) ESS	(2) ESS	(3) GSS	(4) GSS	(5) WVS	(6) WVS
Share of Large Mammals (Anc., Potential)	0.05***	0.06***	-0.22***	-0.23***	-0.05***	-0.04***
	(0.02)	(0.01)	(0.07)	(0.07)	(0.00)	(0.00)
Crop Yield (Anc.)	-0.06***	-0.05***	0.22**	0.27**	0.09***	0.06***
	(0.02)	(0.02)	(0.09)	(0.10)	(0.01)	(0.01)
Population density in 1500 CE	-0.01		0.02		-0.07***	
	(0.01)		(0.06)		(0.00)	
Urbanization rate in 1800 CE		-0.15***		-0.09		-0.08***
		(0.05)		(0.12)		(0.02)
Country/Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	Yes	Yes	Yes	Yes	Yes	Yes
Round/Wave FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
YST	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted-R^2	0.14	0.14	0.05	0.05	0.12	0.12
Observations	16628	16487	1474	1474	224509	216458

Back ESS Back GSS Back WVS

Robustness to Pre-Industrial Development

	Labour-Leisure Preference					
	(1) ESS	(2) ESS	(3) GSS	(4) GSS	(5) WVS	(6) WVS
Dependence on Hunting (Anc.)	0.04**	0.04**	-0.20***	-0.21***	-0.02***	-0.02***
	(0.02)	(0.02)	(0.07)	(0.06)	(0.00)	(0.00)
Population density in 1500 CE	-0.00		0.00		-0.05***	
	(0.02)		(0.05)		(0.00)	
Urbanization rate in 1800 CE		-0.12**		-0.05		-0.12***
		(0.05)		(0.13)		(0.02)
Country/Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Geographical Controls	Yes	Yes	Yes	Yes	Yes	Yes
Round/Wave FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	Yes	Yes	Yes	Yes	Yes	Yes
YST	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted-R^2	0.14	0.14	0.05	0.05	0.11	0.12
Observations	16578	16492	1474	1474	224509	216458

Back ESS Back GSS Back WVS

$\Delta N_{it} = 0$ Locus

- '$\Delta N_{it} = 0$' Locus is the set of all pairs, $(N_{it}, L_{it}) \geq 0$, such that the animal population is constant

$$\Delta N_{it} = 0 \Leftrightarrow \begin{cases} L_{it} = \left[1 - \left(\frac{A^h N_{it}}{X^h}\right)^{\beta}\right]^{\frac{1}{\alpha}} \frac{N_{it} + (A^a/A^h)^{\frac{1}{\alpha}} X^a}{\ell(\theta_i)} \equiv \zeta^N(N_{it}, \theta_i) \\ \\ N_{it} = 0 \quad \forall L_{it}. \end{cases}$$

- Moreover

$$\Delta N_{it} < 0 \Longleftrightarrow L_{it} > \zeta^N(N_{it}, \theta_i)$$

$$\Delta N_{it} > 0 \Longleftrightarrow L_{it} < \zeta^N(N_{it}, \theta_i)$$

Back

$\Delta L_{it} = 0$ Locus

- '$\Delta L_{it} = 0$' Locus is the set of all pairs, $(N_{it}, L_{it}) \geq 0$, such that the human population is constant

$$\Delta L_{it} = 0 \Leftrightarrow \begin{cases} L_{it} = \left\{ \frac{\gamma}{\tau} \ell(\theta_i)^{1-\alpha} \right\}^{\frac{1}{\alpha}} \left[(A^h)^{1/\alpha} N_{it} + (A^a)^{1/\alpha} X^a \right] \\ \qquad \equiv \zeta^L(N_{it}, \theta_i) \\ \\ L_{it} = 0 \quad \forall N_{it}. \end{cases}$$

- Moreover

$$\Delta L_{it} < 0 \Longleftrightarrow L_{it} > \zeta^L(N_{it}, \theta_i)$$

$$\Delta L_{it} > 0 \Longleftrightarrow L_{it} < \zeta^L(N_{it}, \theta_i)$$

Back