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Long-run Welfare Development in Africa -- An Anthropometric Study on the Influence of Colonialism and Slavery



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Why this project?

- quantitative economic history of Africa one of the greatest challenges of our time
 - amount of quantitative sources on economic development is small
 - measurement quality even for the period after WWII is not always high
- on the other hand, African economic development is one of the most crucial issues for today's economics
- study of long-run relationships can contribute to the understanding of long-term processes in Africa and other world regions
- and in particular the assessment of influence of colonialism and slavery

Core questions

- How can we measure anthropometric welfare in 358 country-birth decade units?
- was there an influence of colonialism on African anthropometric welfare?
- were the colonized Africans shorter, even after controlling for a number of different variables?
- did slavery have a sustained effect, reducing welfare in those countries that suffered most from slave-hunts?
- did those effects sustain even after slavery ended, as Nunn (2008) recently argued?

Why heights?

- Net nutrition and height: explore „white spots“
- Heights correlated with life expectancies, and health: well, with some exceptions
- Interesting: mostly correlated with income and real wages, sometimes not
- Deviations: market integration? Inequality? Leisure?
- Implications for labour productivity, demography, health systems, LDCs...

Height and mortality risk

Source: Alter (2004)

Norway: age 40-59

Ardenennes: age 20 in 1806-50, mortality till 1899

Swedish:conscript age 1969-70 – mortality till 1988

Whitehall: London civil servants age 40-64 in 1967-69 – mortality till 1987

US Physicians: age 40-84 – cardiov. mortality till 1988

Similar: Costa (1993). No difference tall vs. short:
Kannam et al 1994,
Framingham Heart Study

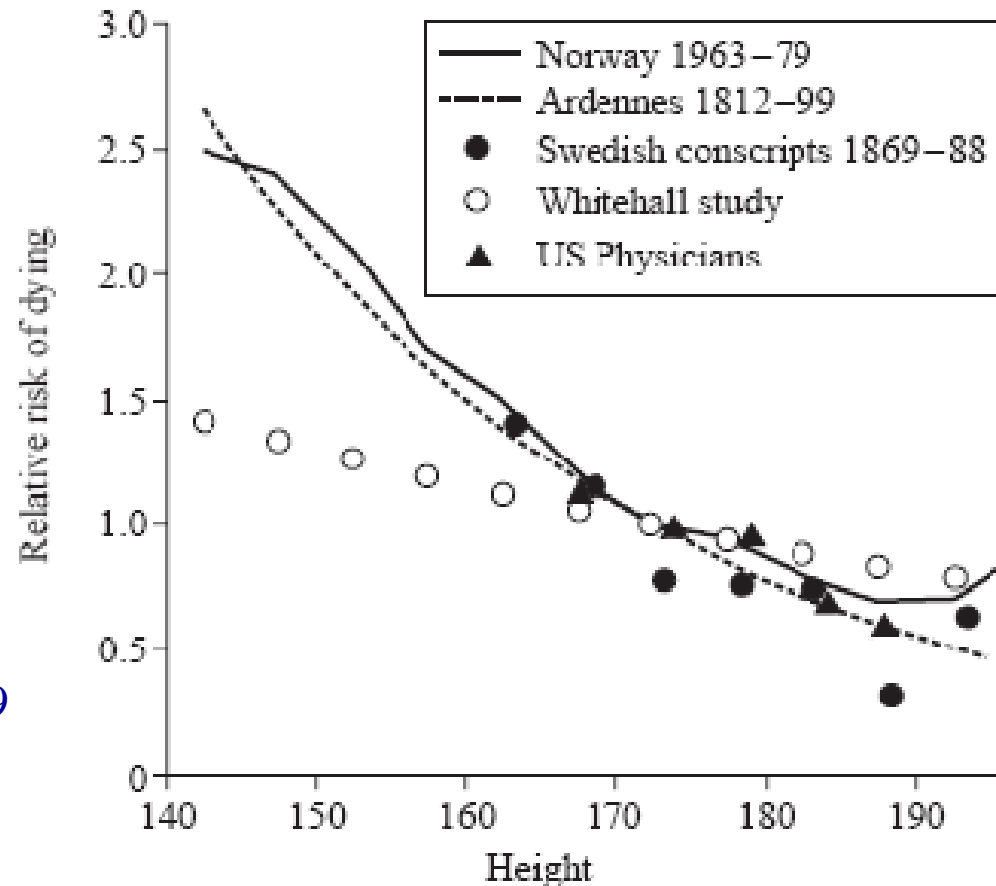
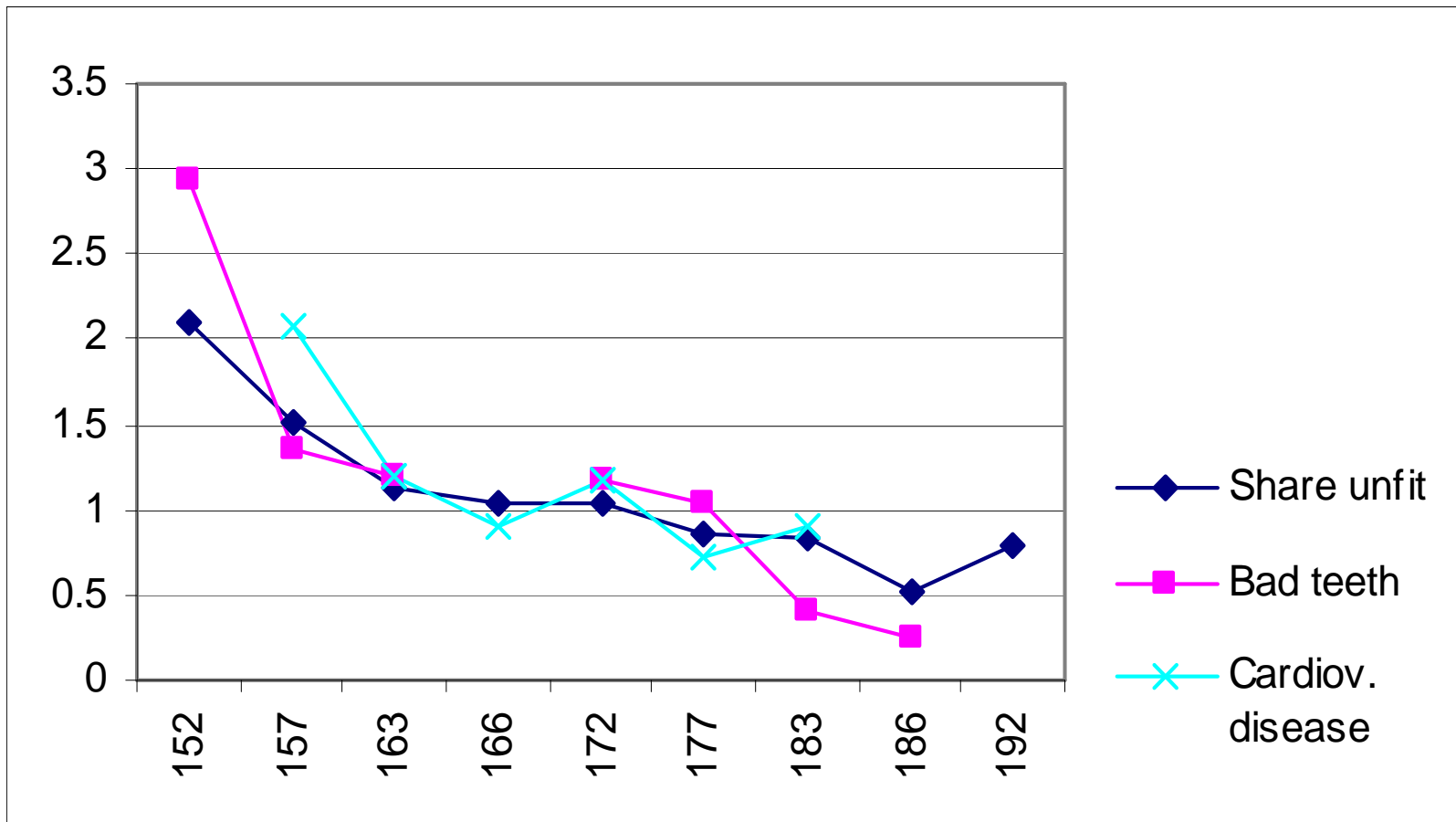


Figure 1 Relative risk of dying by height in five studies (see text for sources)

Sources: Waaler (1984), Allebeck and Bergh (1992), Hebert et al. (1993), Leon et al. (1995), and Alter and Oris (2000)

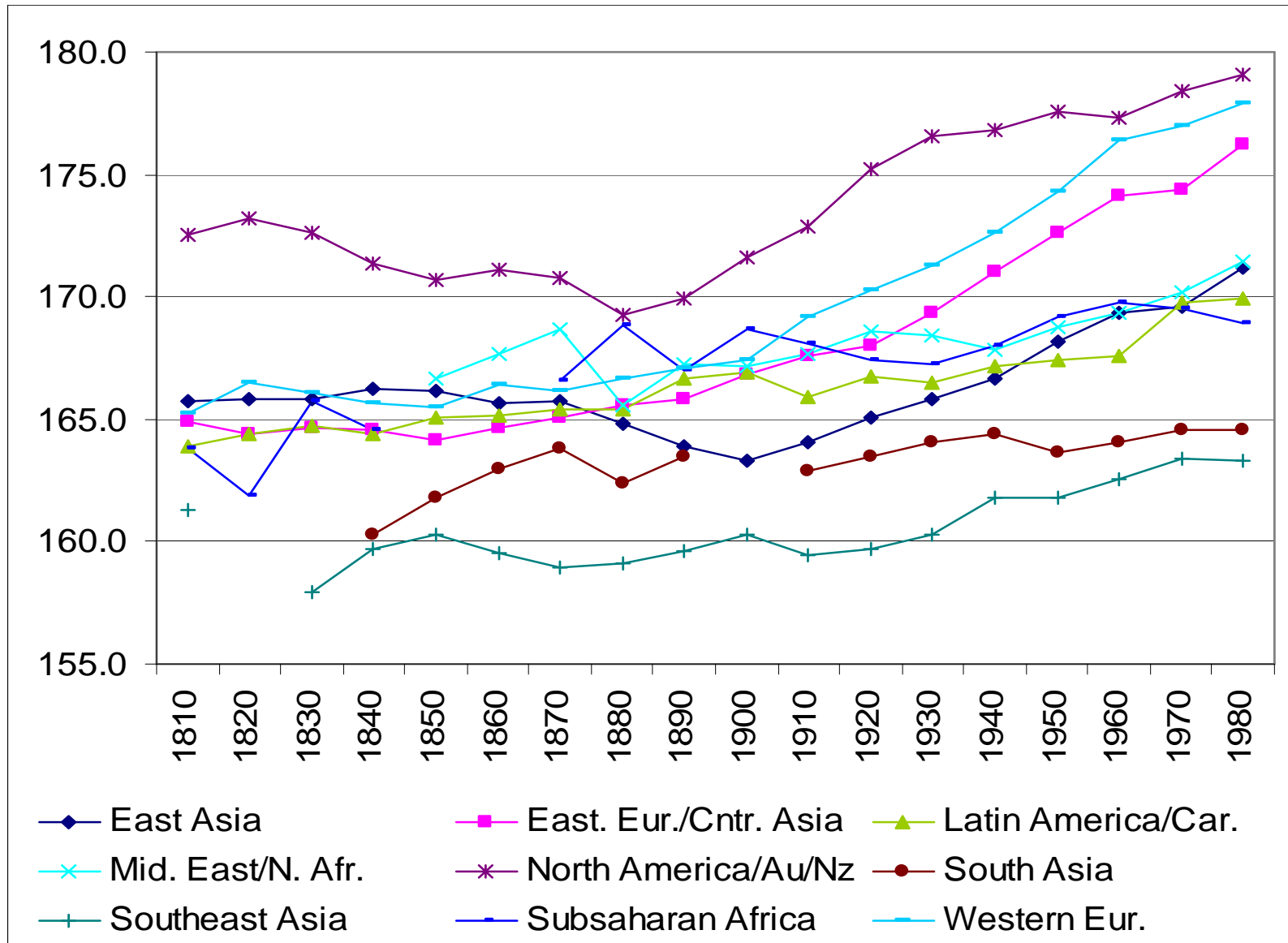
Height and disease risk, Union army 1861-65



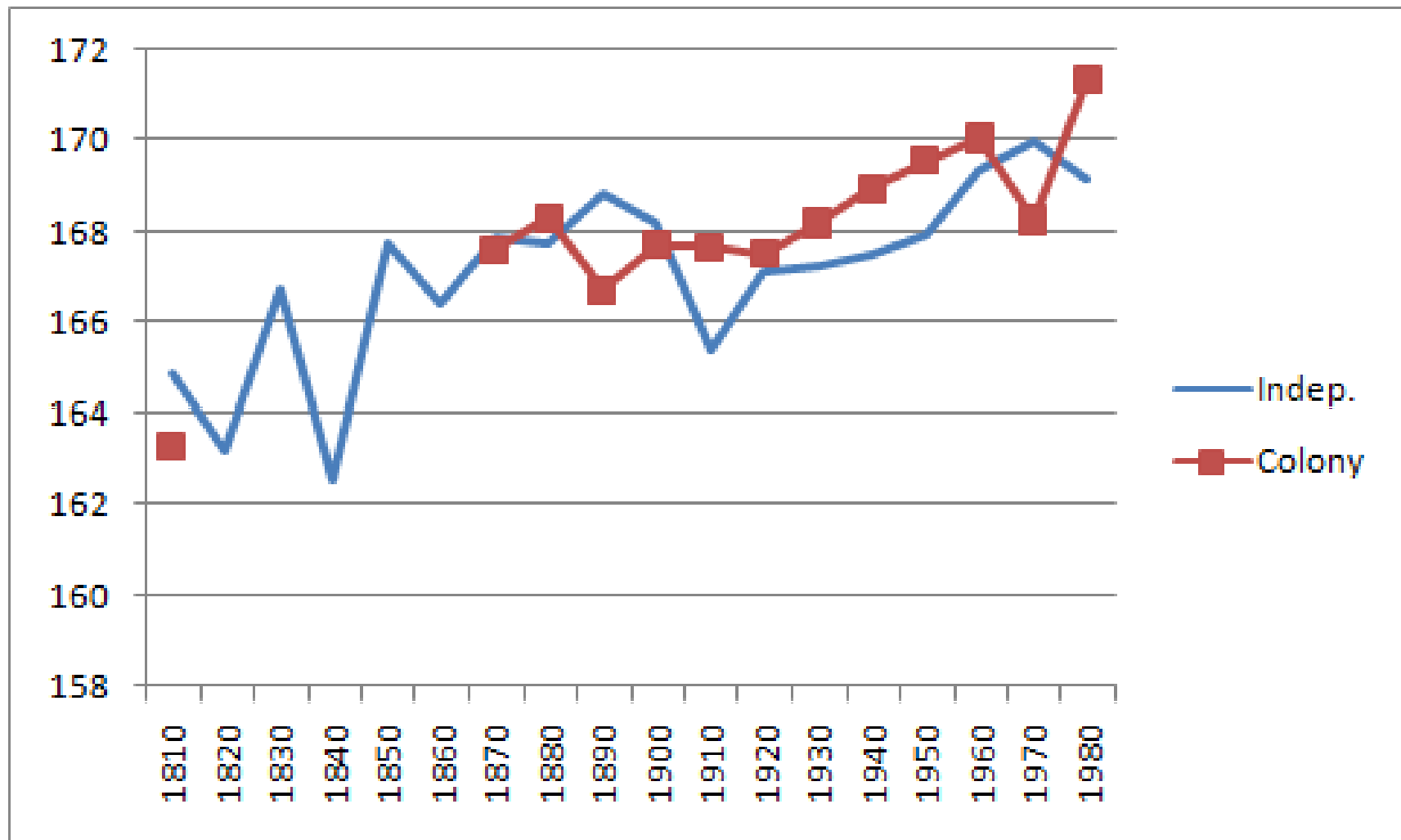
Sources for African heights

- vast anthropometric history literature (all height measures standardized to adult heights): slaves, military recruits...
- contemporary statistics
- contemporary anthropological measurements
 - problem: assumption of time-invariant heights
 - -> sometimes we have only the decade in which the majority of a measured group was born
 - moving average effect (if 70% born in 1880s, 30% in 1870s, and height change: smoothed series)
 - but: large number of different height studies reduces problem
- modern ‘Demographic and Health Surveys’

Africa in global comparison



Anthropometric Trends: Colonies and Independent Countries



Availability of Height Estimates by Birth Decade and Country (Africa, 1810-1980s)

Country	Number of decades		
ao	7	ma	6
bf	15	mg	8
bi	2	ml	12
bj	8	mr	4
bw	1	mw	8
cd	11	mz	10
cf	8	na	7
cg	10	ne	11
ci	12	ng	11
cm	13	rw	7
dz	3	sd	7
eg	12	sl	7
er	3	sn	12
et	10	so	6
ga	7	sz	5
gh	13	td	10
gm	1	tg	6
gn	10	tn	1
gq	1	Tz	11
gw	8	Ug	10
ke	8	Za	9
km	3	Zm	5
lr	7	Zw	5
ls	5		
ly	2		

Regressions: Determinants of Height in Africa, 1810-1980s

	(1)	(2)	(3)	(4)	(5)	(6)
Colonized	-0.12 (0.64)	-0.26 (0.16)				
Slaves p.a.			-0.09 (0.16)			
Slaves p.a. high				-0.69 -0.2		
Slaves p.c.					-0.05 (0.43)	
Slaves p.c. high						-0.65 (0.22)
Cattle p.c. (log)	1.29*** (0.000000)	1.29*** (0.000000)				
Infant mortality (log)	-0.68 (0.15)					
Time fixed effects	NO	YES	NO	NO	NO	
Constant	174.17*** (0)	171.03*** (0)	168.75*** (0)	168.73*** (0)	168.89*** (0)	168.69*** (0)
N	91	183	353	356	353	356
R-squared	0.26	0.44	0.01	0.02	0	0.01

Heterosked-robust p-values in par.. ***, **, * denote 1, 5, 10% level of sign.. R-sq within in Col. 1 to 4, clustered at country level Col. 5, 7

Determinants of Height in Africa before the Decolonization Wave, 1810-1940s

	(1)	(2)	(3)
Colonized	-1.39*** (0.00073)		
Slaves p.a.		-0.04 (0.70)	
Slaves p.c.			-0.04 (0.70)
Cattle p.c. (log)	1.23*** (0.0021)		
Time fixed effects	YES	NO	NO
Constant	171.05*** (0)	168.03*** (0)	167.94*** (0)
N	85	220	220
R-squared	0.26	0.01	0.00

Determinants of Cattle per Capita (in logs) in Africa

	(1)	(2)	(3)	(4)
Colonized	-0.12 (0.11)	0.09 (0.22)		
Slaves p.a.			-0.11** (0.045)	-0.10* (0.051)
Time fixed effects	NO	YES	NO	YES
Constant	-1.03*** (0)	-1.00*** (0)	-0.71** (0.019)	0.09 (0.88)
N	183	183	183	183
R-squared	0.01	0.14	0.12	0.16

Determinants of Infant Mortality (in logs) in Africa

	(1)	(2)	(3)	(4)
Colonized	0.25*** (0.000000)	0.20*** (0.0000054)		
Slaves p.a.			0.04** (0.036)	0.04** (0.038)
Time fixed effects	NO	YES	NO	YES
Constant	4.70*** (0)	4.68*** (0)	4.64*** (0)	4.66*** (0)
N	118	118	118	118
R-squared	0.23	0.41	0.12	0.13

Tentative conclusion

- Colonialism does not have a significant effect on heights for the whole period
- But it does have a negative effect on the early period up to the 1940s
- Infant mortality seems to have been slightly higher in colonial, market-integrated environments – although data is scarce for the early period
- Protein availability was not worse in colonial environments
- although we have only production data, not consumption (later-on, some cattle-products could have been exported)
- Countries who suffered most from slavery in the 1400-1900 had the worst disease environment, and less protein-intensive nutrition in the 19th and 20th centuries

Further agenda of the project

- Endogeneity and omitted variables (inequality...)
 - size of coefficients
 - measurement quality of explanatory variables
 - selection of countries for which explanatory variables available
 - test further explanatory variables such as tropical zones...
 - Additional issues you will raise
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- -> so it is great that we will have a world congress in Africa!