AFRICAN-AMERICAN AND WHITE INEQUALITY IN THE AMERICAN SOUTH: EVIDENCE FROM THE 19TH CENTURY MISSOURI STATE PRISON

SCOTT ALAN CARSON

CESIFO WORKING PAPER NO. 1954
CATEGORY 3: SOCIAL PROTECTION
MARCH 2007

CESifo *Working Paper No. 1954*

AFRICAN-AMERICAN AND WHITE INEQUALITY IN THE AMERICAN SOUTH: EVIDENCE FROM THE 19TH CENTURY MISSOURI STATE PRISON

Abstract

The use of height data to measure living standards is now a well-established method in economic history. Moreover, a number of core findings in the literature are widely agreed upon. There are still some populations, places, and times, however, for which anthropometric evidence remains thin. One example is 19th century African-Americans in US border states. This paper introduces a new data set from the Missouri state prison to track black and white male heights from 1829 to 1913. Where modern blacks and whites come to comparable terminal statures when brought to maturity under optimal conditions, whites were persistently taller than blacks in this Missouri prison sample. Over time, black and white adult statures remained approximately constant throughout the 19th century, while black youth stature increased considerably during the antebellum period and decreased during Reconstruction.

JEL Code: N31, J15, J70, I12, I31.

Scott Alan Carson
School of Business
University of Texas, Permian Basin
4901 East University
Odessa, TX 79762
USA
Carson_s@utpb.edu

I appreciate comments from participants from Western Social Science Association, and the Center for Economic Studies at the University of Munich. Comments from Marco Sünder and John Komlos were particularly helpful. Craig O. Davis and Anita Voorhies provided excellent research assistance. All errors are mine.

African-American and White Inequality in the American South: Evidence from the 19th Century Missouri State Prison System

1. Introduction

An anomalous finding has emerged where the physical stature of 19th century male African-American slaves increased during the antebellum period, while Northern white and free black statures declined. However, if Southern planters and overseers rationally manipulated slave nutrition and medical allocations to maximize slaveowner wealth, slave heights would have increased with antebellum slave values and probably decreased with the removal of the institution (Rees, Komlos, Long, Woitek, 2003, p. 22; Steckel, 1995; Komlos and Coclanis, 1997, p. 445; Komlos, 1998; Conrad and Meyer, 1964, p. 49). While the former has been well documented, the latter remains unresolved. When brought to maturity under optimal net nutritional conditions, blacks and whites should reach comparable adult terminal statures (Eveleth and Tanner, 1976, Appendix. Tables 5, 29, and 44; Tanner, 1977, pp. 341-342; Margo and Steckel, 1982); however, 19th century blacks were physically shorter than whites. By using a new source of 19th century Missouri prison records, the present study contrasts male heights of comparable blacks and whites in the American South from the antebellum period through the end of the 19th century.

The use of height data to measure living standards is now a well-established method in economic history. A populations' average stature reflects the cumulative

interaction between nutrition, disease exposure, work and the physical environment. By considering average versus individual stature, genetic differences are mitigated, leaving only the influence of economic and physical environments on stature. When diets, health and physical environments improve, average stature increases and decreases when diets become less nutritious, disease environments deteriorate or the physical environment places more stress on the body. Hence, stature provides significant insights into understanding historical processes and augments other welfare measures for 19th century blacks and whites in the American South.

The Missouri prison population is particularly interesting because it was a slave state with close proximity to major water ways, was agriculturally productive, and its population was racially polarized, where blacks faced considerable degrees of racial animosity from whites. Three questions are considered. First, how did black and white statures compare by race and how did they vary over the course of the 19th century? Because of slavery's interference with natural biological processes, we may expect that 19th century whites encountered more favorable biological conditions than blacks, and if average stature varied in Missouri around the time of the Civil War, such variation may have been due to institutional change. Second, how did Missouri inmate statures compare to other American statures? Missouri was unique because of its central location in America's 19th century transportation and migration revolutions while embracing the institution of slavery. Third, how did Missouri prison inmate statures vary by socioeconomic status and occupation, and which was most associated with stature variation?

2. Nineteenth Century Missouri

Missouri's most distinctive 19th century features were its physical environment, central location, politics and culture. Conjoined just north of Saint Louis, Missouri's most prominent physical features were the Mississippi and Missouri rivers, which are America's two longest rivers and were central to Missouri's economic development, transporting goods, and peoples and probably served as disease vectors. Missouri's economic system and biological conditions were also influenced by its Northern Plains, central Ozark plateau, and Southeastern Bootheel. The Northern Disected Till Plains were formed approximately 400,000 years ago by Nebraskan glaciation, and were the basis for Missouri's 19th century wheat and grain production (Figure 1). The Ozark plateau—historically settled by Scots-Irish immigrants—is a highland region in the southern half of Missouri, and during the 19th century, was mined for lead, and iron. The Ozark plateau is also suited for beef ranching and dairy production, which enhanced biological conditions. The Missouri Bootheal, located in the flattest and wettest part of Missouri, is part of the Mississippi Alluvial Delta, and is only a few hundred feet above sea level, and there generally is an inverse relationship between proximity to water and stature (Haines, Craig, and Weiss, 2003, p. 405; Craig and Weiss, 1998, p. 197-198, p. 205). These regional comparisons create a natural experiment to assess whether northern Missouri' agricultural productivity outpaced the biological benefits of access to dairy production and animal proteins in southern Missouri. Finally, Missouri's central location within America uniquely positioned it as a slave state but not part of the Black Belt, which is the Southern region of 623 counties that contain higher than average black

concentrations and form a belt-like swath across 11 states. Consequently, not part of the Black Belt but still part of the slave holding South, Missouri offers insight into black and white conditions in a slave state not part of the plantation South (Ransom and Sutch, 1977, pp. 73-78).

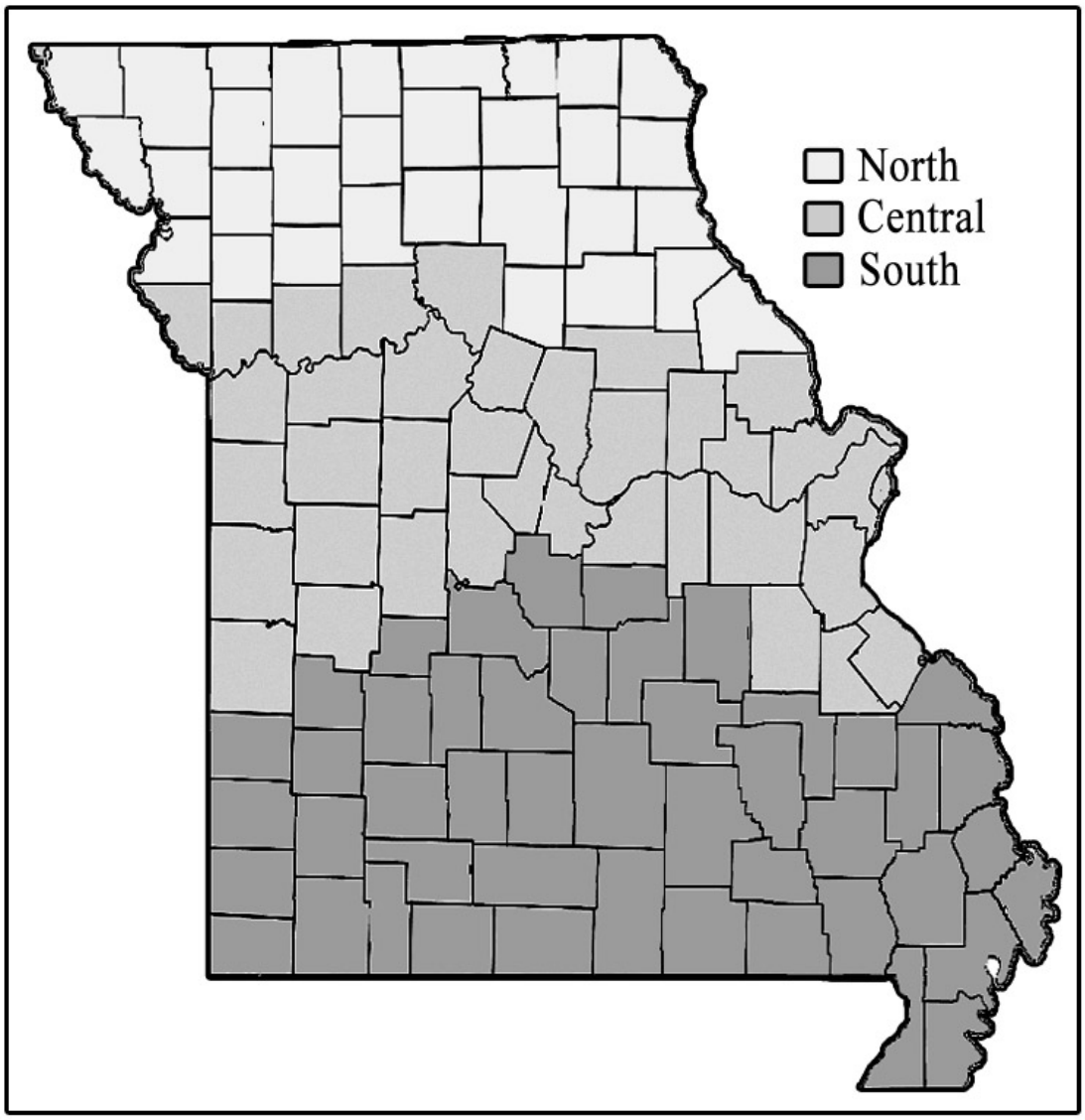


Figure 1, 19th Century Missouri Regions

Notes: Missouri's northern region consists of Adair, Clark, Knox, Lewis, Linn, Macon, Marion, Monroe, Pike, Putnam, Ralls, Randolph, Schuyler, Scotland, Shelby, Sullivan,

Andrew, Atchison, Buchanon, Caldwell, Clinton, Daviess, DeKalb, Gentry, Grundy, Harrison, Holt, Livingston, Mercer, Nodaway and Worth counties. The central region consists of Franklin, Jefferson, Lincoln, Montgomery, Saint Charles, Saint Francois, Saint Genevieve, Saint Louis, Warren, Washington, Audrian, Benton, Boone, Calloway, Carroll, Cole, Cooper, Chariton, Howard, Morgan, Osage, Pettis, Saline, Bates, Cass, Clay, Henry, Jackson, Johnson, Lafeyette, Platte, Ray, Saint Clair, Vernon counties. The southern regions consists of Bollinger, Butler, Cape Girardeau, Carter, Dunklin, Iron, Madison, Mississippi, New Madrid, Pemiscot, Perry, Reynolds, Ripley, Scott, Stoddard, Wayne, Camden, Crawford, Dent, Douglas, Gasconade, Howell, Laclede, Maries, Miller, Oregon, Ozark, Phelps, Pulaski, Shannon, Texas, Wright, Barry, Barton, Cedar, Christian, Dade, Dallas, Greene, Hickory, Jasper, Lawrence, McDonald, Newton, Polk, Stone, Taney, Webster counties.

3. Data

In 1821, the Missouri state legislature established a commission to decide where to locate the new state capitol, and Jefferson City was created specifically to serve as Missouri's center for government. Not void of political manipulation, other Missouri towns soon attempted to wrest the capitol from Jefferson City, and in 1832 governor John Miller suggested a state penitentiary be constructed in the city to strengthen its position as the state capitol. The prison was completed in 1836 and housed many of Missouri's lawless element in, what was at the time, America's western frontier.

To assess how 19th century black and white statures varied in the American South, over 30,000 male inmate records from between 1838 through 1920 Missouri state prison are examined, and stature comparisons are likely genuine because individuals were

incarcerated for criminal, not biological reasons. Stature measurements were taken at the time inmates were admitted to prison; therefore, stature reflects pre-incarceration conditions. Prison enumerators routinely recorded the date inmates were received, age at incarceration, complexion, nativity, stature, pre-incarceration occupation, and crime. Between 1890 and 1920, county of incarceration is also available, and provides residential and stature relationships.

Fortunately, prison enumerators were quite thorough when recording inmate complexion and occupation. For instance, enumerators recorded African-Americans as blacks, copper and various shades of mulatto.[1] While mulatto inmates possessed genetic traits from both black and white ancestry, they were treated as blacks throughout 19th century America and are grouped here with black inmates. Enumerators recorded white inmate complexions as light, fair, dark and sallow. The white inmate complexion classification is further supported by the complexion of European immigrants, who were always of fair complexion and were also recorded as light, medium and dark.[2] Because the focus of this paper is American stature, immigrants are excluded from the analysis.

Enumerators recorded a broad continuum of occupations and defined them narrowly, recording over 200 different occupations. These occupations are classified

[1] Although positive relationship between stature and mulatto complexions have been observed in other samples, the Missouri prison recorded complexions were not recorded in sufficiently refined detail to highlight this relationship.

[2] I am currently collecting 19th century Irish prison records. Irish prison enumerators also used light, medium, dark, fresh and sallow to describe white prisoners in prisons from a traditionally white population. To date, only one inmate in an Irish prison has been recorded with a complexion consistent with African heritage and was identified as “negro.”.

into four categories. Workers who were merchants and high skilled workers are classified as white-collar workers; manufacturing, carpenters and craft workers are classified as skilled workers; workers in the agricultural sector are classified as farmers; laborers are classified as unskilled workers. Unfortunately, prison enumerators did not distinguish between farm and common laborers. This potentially overestimates the biological benefits of being a common laborer and underestimates the advantages of being a farm laborer. By having the same prison official record characteristics over much of the period, the consistency of the Missouri sample creates reliable comparisons across both race and time.

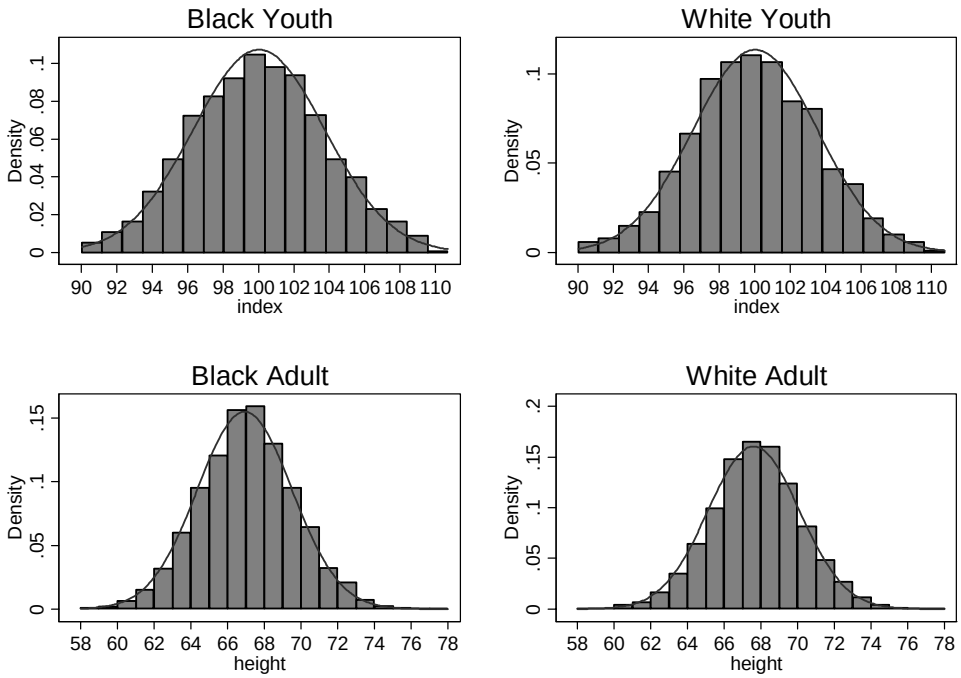
All historical height data have various selection biases. The prison data likely selected many of the materially poorest individuals, although there are skilled and agricultural workers in the sample (Table 1 and 2). While prison records are not random, the selectivity they represent has its own advantages in stature studies, such as being drawn from lower socioeconomic groups, who were more vulnerable to economic change (Bogin, 1991, p. 288; Cutler, 2004, p. 110). For the study of height as an indicator of biological variation, this kind of selection is preferable to that which marks many military records – minimum height requirements for service (Fogel, 1978, p. 85).[3]

A vital distinction in anthropometric studies is between adult and youth stature. Average adult stature reflects nutritional advantages, less environmental conditions, disease insults and calorie claims for work, and prolonged privation during formative

[3] Many 19th century and earlier stature measurements were rounded to the nearest inch or half inch. However, there was great care in recording inmate statures because accurate measurement may have had legal implications in the event that inmates escaped and later recaptured. Most inmates' statures were recorded at a quarter, eighth, and even sixteenth increments.

years can have permanent effects on adult stature. Since adults may undergo catch-up growth, youth stature is even more sensitive to immediate nutritional changes, environmental and disease environments (Godoy, 2005, p. 374-376). Because the direct effects of age on stature are different between youths and adults, their statures are considered separately here. Youths are inmates between the ages of 14 and 22; adults are inmates between the ages of 23 and 55. Since more adults than youths in the sample were born during the antebellum period, changes in adult stature better reflects the consequences of slavery on stature. Because the youth height distribution is itself a function of the age distribution, a youth stature index is constructed that standardizes for age to determine youth stature normality. First, the average stature for each youth age category is calculated. Second, each observation is then divided by the average stature for the relevant age group (Komlos, 1987, p. 899). Figure 2 demonstrates that black and white statures were distributed approximately normal.

Figure 2, Nineteenth Century Missouri Black and White Stature Distributions



Source: See Tables 1 and 2.

Note: A normal distribution is superimposed on the stature histograms.

Table 1, Missouri Youth Stature by Birth, Occupation and Nativity

	White			*Black*				
Birth Decade	N	Percent	Centimeters	N	Percent	Centimeters	Percent Difference	Stature Difference
1810s	7	.11	173.36	0	0	na	.11	na
1820s	18	.27	171.48	4	.10	167.80	.17	3.68
1830s	11	.17	175.07	0	0	na	.17	na
1840s	120	1.8	170.93	16	.42	166.69	1.38	4.24
1850s	988	14.95	169.80	401	10.41	167.17	4.54	2.63
1860s	432	6.54	171.79	219	5.69	167.30	.85	4.49
1870s	1,636	24.76	171.48	1,051	27.29	168.98	-2.53	2.5
1880s	1,376	20.82	171.11	1,031	26.77	168.28	-5.95	2.83
1890s	1,832	27.72	171.18	1,012	26.27	168.45	1.45	2.73
1900s	188	2.85	170.29	118	3.06	168.08	-.21	2.21
Occupations								
White-Collar	537	8.16	170.41	99	2.57	168.05	5.59	2.36
Skilled	1,386	20.98	170.66	293	7.61	168.47	13.27	2.19
Farmer	1,087	16.45	171.99	318	8.26	170.05	13.19	1.94
Unskilled	3,598	54.54	171.02	3,142	81.57	168.15	-27.03	2.87
Nativity								
Great Lakes	1,172	17.74	170.54	195	5.06	167.74	12.68	2.80
Middle Atlantic	497	7.52	169.68	55	1.43	166.63	6.09	3.05
Northeast	71	1.07	168.44	7	.182	167.28	.888	1.16
Plains	3,854	58.32	171.41	2,614	67.86	168.16	-9.54	3.25
Southeast	747	11.30	171.30	815	21.16	168.77	-9.86	2.53
Southwest	147	2.23	170.63	125	3.25	170.10	-1.02	.53
Far West	120	1.82	170.96	41	1.06	170.68	.76	.28

Source: Date used to study black and white anthropometrics is a subset of a much larger 19th century prison sample. All available records from American state repositories have been acquired and entered into a master file. These records include Arizona, California, Colorado, Idaho, Illinois, Kansas, Kentucky, Missouri, New Mexico, Ohio, Oregon, Pennsylvania, Tennessee, Texas, Utah and Washington. Only prison records for inmates incarcerated in the Missouri prison are used in this project.

Notes: Stature is in centimeters. The occupation classification scheme is consistent with Ferrie (1997); The following geographic classification scheme is consistent with Carlino and Sill (2000): New England= CT, ME, MA, NH, RI and VT; Middle Atlantic= DE, DC, MD, NJ, NY, and PA; Great Lakes= IL, IN, MI, OH, and WI; Plains= IA, KS, MN, MO, NE, ND, and SD; South East= AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, and WV; South West= AZ, NM, OK, and TX; Far West= CA, CO, ID, MT, NV, OR, UT, WA, and WA. Stature difference is average white stature less average black stature. Proportion difference is white proportion less black proportion.

Table 2, Missouri Adult Stature by Birth, Occupation and Nativity

	White			*Black*				
Birth Decade	N	Percent	Centimeters	N	Percent	Centimeters	Percent Difference	Stature Difference
1800s	16	.12	170.10	1	.02	175.63	.10	-5.53
1810s	46	.34	171.93	4	.07	170.34	.27	1.59
1820s	164	1.20	170.85	34	.56	167.60	.64	3.25
1830s	382	2.80	171.60	62	1.02	171.29	1.78	.31
1840s	1,255	9.21	171.35	339	5.58	169.69	3.63	1.66
1850s	1,815	13.32	171.39	549	9.03	169.54	4.29	1.85
1860s	2,768	20.31	172.08	1,101	18.11	170.28	2.20	1.8
1870s	3,414	25.05	171.81	1,815	29.86	170.12	-4.81	1.69
1880s	2,747	20.13	171.50	1,657	27.26	169.94	-7.13	1.56
1890s	1,022	7.50	172.13	517	8.51	169.72	-1.01	2.41
Occupations								
White-Collar	1,658	12.17	171.57	292	4.80	170.26	-7.37	1.31
Skilled	4,322	31.71	171.47	1,002	16.48	169.23	15.23	2.24
Farmer	1,818	13.34	172.54	384	6.32	171.03	7.02	1.51
Unskilled	5,831	42.78	171.67	4,401	72.40	170.05	-29.62	1.62
Nativity								
Great Lakes	2,833	20.79	171.61	325	5.35	169.90	15.44	1.71
Middle Atlantic	1,473	10.81	170.26	146	2.40	169.04	8.41	1.22
Northeast	217	1.59	170.43	25	.41	171.40	1.18	-.97
Plains	6,528	47.90	171.92	3,368	55.40	169.65	-7.50	2.27
Southeast	2,095	15.37	172.18	1,937	31.86	170.56	-16.49	1.62
Southwest	252	1.85	172.73	216	3.55	170.60	-1.70	2.13
Far West	231	1.70	171.96	62	1.02	170.52	.68	1.44

Note: Stature is in centimeters. The occupation classification scheme is consistent with Ferrie (1997); The following geographic classification scheme is consistent with Carlino and Sill (2000): New England= CT, ME, MA, NH, RI and VT; Middle Atlantic= DE, DC, MD, NJ, NY, and PA; Great Lakes= IL, IN, MI, OH, and WI; Plains= IA, KS, MN, MO, NE, ND, and SD; South East= AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, and WV; South West= AZ, NM, OK, and TX; Far West= CA, CO, ID, MT, NV, OR, UT,

WA, and WA. Stature difference is average white stature less average black stature. Proportion difference is white proportion less black proportion.

Tables 1 and 2 present average heights and proportions for black and white males incarcerated in the 19th century Missouri prison by birth year, occupations, and nativity. Whites born before the Civil War took up proportionally larger shares of the population than black inmates born before the Civil War. Southern slave law evolved to favor plantation law, which generally allowed slave-owners to recover slave labor on plantations while the slave was punished (Wahl, 1996 and 1997; Friedman, 1993, pp. 84-106). However, with passage of the 13th Amendment, slave-owners no longer had claims on black labor, and free blacks who broke the law were turned over to the Missouri penal system to exact their social debt.

Occupations reflect socio-economic status, and while prison inmates typically come from the lower working class, there was a sizable share of inmates from white-collar and skilled occupations. White inmates were 154 and 92 percent, respectively, more likely than blacks to occupy white-collar and skilled occupations. Even in agriculture, whites were more likely than blacks to come from planting and stock raising occupations. The difference, of course, was in the unskilled category. Blacks were 69 percent more likely than whites to occupy unskilled occupations, making occupations within the Missouri prison segregated; white-collar, skilled, and agricultural occupations were filled by whites, and unskilled occupations were filled by blacks. Nativity within the Missouri prison was mostly from Plains states, which includes Missouri.

Table 3, Nineteenth Century Missouri Census Household Head Occupations by Race

	1860	*1870*		*1880*		*1900*	
	White	Black	White	Black	White	Black	White
White-Collar	8.52	0	9.22	1.62	10.14	6.05	12.61
Skilled	12.53	2.07	12.77	2.43	12.55	1.91	15.10
Farmer	57.27	19.31	54.31	24.29	55.16	14.97	43.31
Unskilled	21.22	78.62	23.70	67.61	20.62	77.07	28.68
No Occupation	.46	0	0	4.05	1.54	0	.30

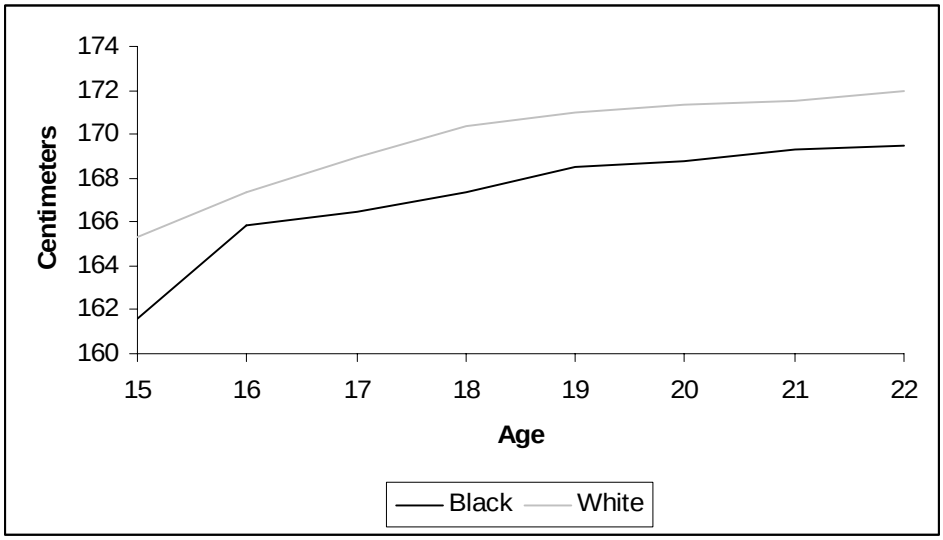
Source: Steven Ruggles, Matthew Sobek, Trent Alexander, Catherine A. Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander. *Integrated Public Use Microdata Series: Version 3.0* [Machine-readable database]. Minneapolis, MN: Minnesota Population Center [producer and distributor], 2004.

How well prison records reflect socioeconomic processes of Missouri's general population is assessed by comparing the Missouri prison records to Missouri's decennial federal census. Table 3 illustrates that blacks in Missouri censuses were predictably less likely than whites to be white-collar, skilled workers and farmers, and were more likely to be unskilled workers. These striking occupational differences between blacks and whites were due primarily to Southern institutional arrangements. Under slavery, blacks were trained in plantation skills, and did not choose the occupations they desired (Ransom and Sutch 1977, p. 17; David and Temin, 1976, p. 45-46). After emancipation, blacks could not acquire the skills they desired because they were denied access to the education and training to facilitate their upward occupational advance into white-collar and skilled occupations.[4] Moreover, blacks faced rigid hiring policies after slavery was

[4] Ransom and Sutch. *One Kind of Freedom*, pp. 28-30, 177-179; In the face of postbellum Reconstruction, blacks demonstrated remarkable resilience to acquire what had so long been denied them. Marable,

abolished and were unlikely to be hired into skilled positions.[5] Missouri urbanized along racial lines. In 1860, 19.39 percent of Missouri whites lived in urban locations. By 1900, 35.55 percent of Missouri whites lived in urban locations; 58.60 percent of blacks lived in urban locations.

Figure 3, Missouri Youth Black and White Stature Profiles



"Politics of Black Land Tenure," p. 140, suggests that by 1910 blacks had succeeded to a limited degree to attain economic advancement. Despite exclusion from general human capital accumulation acquired in more traditional educational institutions, blacks banded together to establish institutions where they could acquire market specific skills. Examples include the Agricultural and Mechanical College for Negroes, the Utica Institute and Booker T. Washington's Tuskegee Institute, pp. 145-147. Southern blacks also attempted black owned banks, 144-145. Unfortunately, these extraordinary examples of black progress during Reconstruction did little to influence black biological living conditions at the lower ordinal ranks of late 19th century southern society.

[5] Maloney, "Degrees of Inequality" and "African Americans in the 20th Century"; Fite, "The Agricultural Trap in the South," p. 46, suggests that there were insufficient non-farm occupations to absorb the surplus of southern farm labor hours that resulted from emancipation. Moreover, blacks faced more rigid hiring opportunities because the available factory jobs that were available were restricted to whites, p. 46.

Source: see Table 4.

The youth height pattern by age is itself noteworthy, and whites were ubiquitously taller than blacks (Figure 3). While 15 year old black stature growth was impressive, it was less impressive after 16, which is consistent with Cuff (2005, p. 16) and Steckel (1979, pp. 374-376). Taller white youth stature in the Missouri prison indicates that biological disparity started early and lasted throughout life.

4. Stature, Birth Period, Occupations and Nativity

Black and white statures were related to age, socioeconomic status and birth cohorts; they were also related to nativity, residence within Missouri and proximity to the Mississippi and Missouri rivers. Tables 4 and 5 regress individual youth and adult statures on observable characteristics. Models 1 in both Tables 4 and 5 regress stature on the entire black and white samples. To compare how Missouri biological conditions contrasted with the rest of the United States, Model 2 regresses only Missouri-born male stature on characteristics. Model 3 regresses stature on only white male characteristics, while Model 4 does the same for blacks. By using Table 4 and 5's birth decade coefficients, Figure 4 isolates black and white stature variation over time.

Table 4, Missouri Youth Stature by Age, Birth, Occupations and Nativity

	All (Coeff)	(P-Value)	*Missouri* (Coeff)	(P-Value)	*White* (Coeff)	(P-Value)	*Black* (Coeff)	(P-Value)
Intercept	171.98	<.01	173.39	<.01	172.61	<.01	166.55	<.01
Black	-2.75	<.01	-2.99	<.01				
Ages								
15	-7.35	<.01	-6.62	<.01	-6.51	<.01	-7.63	<.01
16	-4.06	<.01	-4.05	<.01	-4.50	<.01	-3.68	<.01
17	-3.05	<.01	-2.78	<.01	-3.02	<.01	-3.08	<.01
18	-1.84	<.01	-1.63	<.01	-1.65	<.01	-2.18	<.01
19	-1.01	<.01	-1.03	<.01	-1.07	<.01	-.895	.01
20	-.686	<.01	-.412	.14	-.66	.01	-.811	.02
21	-.297	.14	-.142	.61	-.379	.12	-.152	.67
22	Ref.		Ref.		Ref.		Ref.	
Birth Cohort								
Before 1840	Ref.		Ref.		Ref.		Ref.	
1850	-.828	.13	-2.33	.23	-1.17	.04	1.46	.38
1860	.447	.43	-1.11	.57	.497	.41	1.95	.25
1870	.482	.36	-1.12	.56	-.076	.89	3.09	.06
1880	.194	.72	-1.32	.49	-.290	.61	2.69	.10
1890	.125	.81	-1.44	.45	-.345	.54	2.63	.11
1900	.333	.60	-.997	.61	-.316	.65	3.22	.07
Occupations								
White-collar	-.680	.01	-1.06	<.01	-.770	<.01	-.289	.65
Skilled	.325	.09	-.333	.21	-.448	.03	.037	.94
Farmer	1.13	<.01	1.74	<.01	.825	<.01	1.99	<.01
Unskilled	Ref.		Ref.		Ref.		Ref.	
Birth Region								
Northeast	-2.32	<.01	Missouri-born only		-2.67	<.01	-.597	.74
Middle Atlantic	-1.12	<.01			-1.27	<.01	-1.20	.21
Great Lakes	-.582	<.01			-.754	<.01	-.205	.67
Plains	Ref.				Ref.		Ref.	
Southeast	.203	.41			-.029	.93	.531	.16
Southwest	.478	.23			-.507	.34	1.71	<.01
Far West	.422	.44			-.395	.51	2.80	.02
Black Belt	.142	.67			.084	.86	.040	.93
N	10,460		5,825		6,608		3,852	
R^2	.0806		.0986		.0426		.0537	

Source: See Table 1.

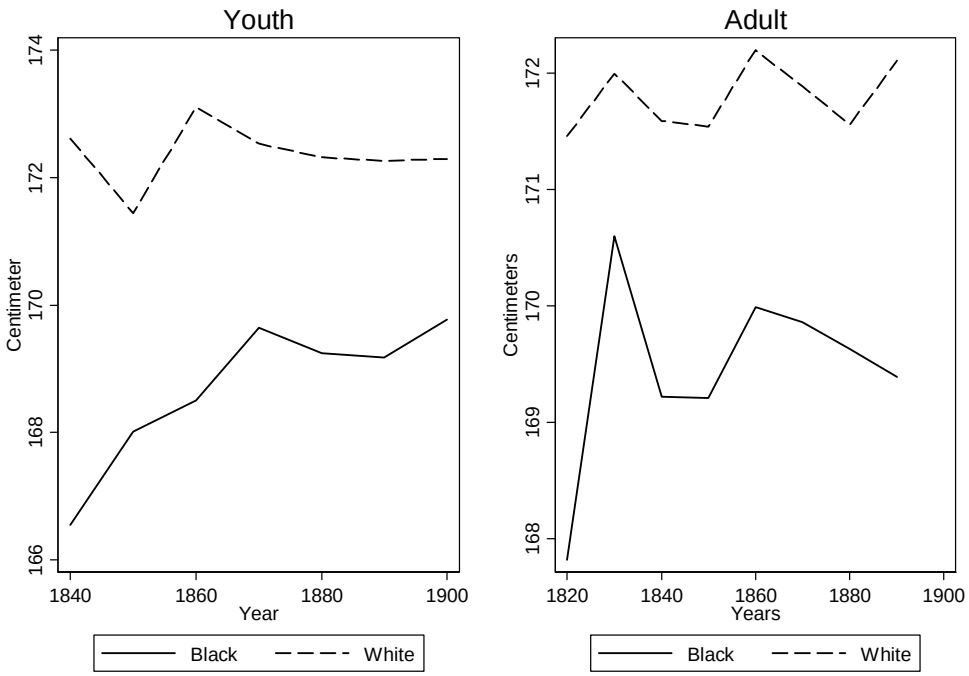
Notes: The US geographic classification scheme is consistent with Carlino and Sill (2000): New England= CT, ME, MA, NH, RI and VT; Middle Atlantic= DE, DC, MD, NJ, NY, and PA; Great Lakes= IL, IN, MI, OH, and WI; Plains= IA, KS, MN, MO, NE, ND, and SD; South East= AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, and WV; South West= AZ, NM, OK, and TX; Far West= CA, CO, ID, MT, NV, OR, UT, WA, and WA.

Table 5, Missouri Adult Stature by Birth, Occupations and Nativity

	All (Coeff)	(P-Value)	*Missouri* (Coeff)	(P-Value)	*White* (Coeff)	(P-Value)	*Black* (Coeff)	(P-Value)
Intercept	171.15	<.01	172.20	<.01	171.46	<.01	167.82	<.01
Black	-1.98	<.01	-2.22	<.01				
Birth Cohort								
1820	Ref.				Ref.		Ref.	
1830	.851	.11	Ref.		.537	.80	2.78	.04
1840	.305	.51	-.310	.78	.131	.80	1.40	.23
1850	.268	.55	-.654	.55	.082	.87	1.39	.23
1860	.964	.03	-.047	.97	.737	.13	2.17	.06
1870	.725	.10	-.242	.82	.426	.38	2.04	.07
1880	.450	.32	-.427	.69	.098	.84	1.81	.11
1890	.739	.11	-.387	.72	.645	.21	1.57	.17
Occupations								
White-collar	-.037	.82	-.468	.07	-.036	.84	.138	.72
Skilled	-.265	.02	-.526	<.01	-.101	.43	-.835	<.01
Farmer	.795	<.01	1.28	<.01	.764	<.01	1.09	<.01
Unskilled	Ref.		Ref.		Ref.		Ref.	
Birth Region								
Northeast	-.933	.02	Missouri-born only		-1.38	<.01	1.92	.19
Middle Atlantic	-1.30	<.01			-1.52	<.01	-.263	.634
Great Lakes	-.134	.32			-.280	.05	.323	.40
Plains	Ref.				Ref.		Ref.	
Southeast	.523	<.01			.249	.20	.954	<.01
Southwest	.870	<.01			.850	.05	.969	.04
Far West	.330	.38			.099	.82	1.04	.15
Black Belt	.117	.58			.093	.76	-.009	.98
N	19,708		8,804		13,629		6,079	
R^2	.0249		.0347		.0118		.0113	

Source: See Table 2.

Figure 4, Missouri 19th Century Black and White Stature



Source: See Tables 4 and 5.

Two general patterns emerge when comparing black and white stature variations. First, it is striking the degree to which average white stature exceeds black stature.[6] This is even more significant since modern black and white statures are comparable when brought to maturity under optimal biological conditions (Eveleth and Tanner, 1976; Tanner, 1977; Steckel, 1995, p. 1910; Barondess, Nelson and Schlaen, 1997, p. 968; Komlos and Baur, 2004, pp. 64, 69; Nelson et al., 1993, pp. 18-20; Godoy et al, 2005, pp.

[6] Margo, and Steckel "Work, Disease and Diets," pp. 514-515, 517 and 519, find that southern whites were nearly 2 inches taller than southern blacks, and that compositional effects can not explain the difference; Margo, and Steckel, "Heights of American Slaves," p. 519.

472-473). However, comparison of 19th century blacks and whites in Missouri confirms that blacks were physically shorter than whites.

Figure 4's second pattern is that both black and white average statures approximately varied with institutional change (Conrad and Meyer, 1964, pp. 50 and 75). During the antebellum period, black youth stature increased by over two centimeters, while young white statures remained constant at 172 centimeters, and young black statures may have declined during Reconstruction. Adult black statures increased during the early antebellum period, while adult white statures remained approximately constant throughout the 19th century. Missouri-born adults were also considerably taller than other inmates for much of the century, however declined after slavery.

For several other categories, expected patterns hold. Black and white farmers were taller than white-collar, skilled and unskilled individuals. Individuals from the Southwest were taller than those from the Plains (Margo, 2000, pp. 72-73, Tables 3A.10 and 3A11; Rosenbloom, 2002, pp. 53, 124-125). Although Southern wages were generally lower than Northern wages, West South Central laborer wages were comparable to those in the Middle-Atlantic regions. Moreover, limited skilled immigration to the Southwest created a relative scarcity of skilled labor, which may have increased their material and biological conditions (Rosenbloom, 2002, pp. 53, 124-125)

Table 6, Missouri Youth and Adult Stature Regression with Residence and Proximity to Water, 1890-

	Whites Coeff.	p-value	*Blacks* Coeff.	p-value	*Youths* Coeff.	p-value	*Adults* Coeff.	p-value
Intercept	171.42	<.01	166.78	<.01	171.82	<.01	170.67	<.01
Black					-2.43	<.01	-1.65	<.01
Ages								
17	-3.45	<.01	-3.86	<.01	-3.09	<.01		
18	-1.48	<.01	-2.41	<.01	-1.34	<.01		
19	-1.32	<.01	-1.27	<.01	-.847	<.01		
20	-.391	.23	-.963	.05	-.130	.69		
21	.147	.65	-.542	.17	.319	.33		
22	-.378	.23	-.494	.21	Reference			
23-55	Reference		Reference					
Birth Cohort								
1850	Reference		Reference				Reference	
1860	-.175	.78	3.00	.08			.441	.47
1870	.122	.84	3.33	.04			.792	.17
1880	-.104	.97	3.08	.08	Reference		.630	.27
1890	.341	.57	2.93	.08	-.060	.83	.933	.11
1900	.400	.60	3.83	.03	.155	.75		
Occupations								
White-collar	-.003	.99	.139	.76	-.348	.38	.111	.64
Skilled	.156	.36	-.549	.14	-.285	.35	-.048	.79
Farmer	.764	<.01	1.29	.01	1.39	<.01	.637	.02
Unskilled	Reference		Reference		Reference		Reference	
Birth Region								
Northeast	-.978	.15	2.55	.08	-2.52	.04	.078	.91
Middle Atlantic	-1.19	<.01	-.991	.24	-1.27	.04	-1.01	<.01
Great Lakes	-.444	.02	.726	.13	-1.12	<.01	.106	.62
Plains	Reference		Reference					
Southeast	.661	.02	1.39	<.01	.203	.62	1.25	<.01
West	.524	.11	1.13	<.01	.520	.23	.850	<.01
Black Belt	-.498	.29	-.322	.43	.012	.98	-.440	.22
Missouri								

County								
North	.419	.04	.046	.88	.381	.22	.196	.33
Central	Reference		Reference					
South	.592	<.01	.674	.03	-.003	.99	.770	<.01
Mississippi River	-.536	<.01	-1.20	<.01	-.933	<.01	.685	<.01
R^2	.0178		.0327		.0668		.0291	
N	7,852		4,293		3,781		8,364	

Source: See Table 1.

Notes: See Table 1 for American nativity classification. See Figure 4 for Missouri classification.

Using over 7,800 observations for inmates received between 1890 and 1920, the relationship between residence at time of incarceration, proximity to water and stature are evaluated (Table 6). Missouri residence augments patterns already observed in two ways. First, regions are classified into three general categories: Northern, Central and Southern Missouri (Figure 1). Northern Missouri was composed mostly of fertile farmlands formed during Nebraskan glaciacian; Central Missouri had greater population concentrations, and early industrial centers near Saint Louis; Southern Missouri had greater access to animal proteins and dairy products (Figure 1). Individuals from southern Missouri counties were taller than individuals from northern counties. While southern Missouri was closer to the South's slavery stronghold, Missouri's southern Ozark's specialized in beef production, and animal fats and dairy production were propitious to stature growth, indicating that proximity to animal and dairy products contributed more to human growth than access to grains (Cuff, 2005, pp. 207, 216).

Nineteenth century roximity to water may have been related to stature in at least one of two ways.[7] Close proximity to major water ways created access to trade routes, which may have improved biological conditions because agricultural products were more easily imported; access to water would have had a positive relationship with stature. Alternatively, proximity to rivers can be a drain on local resources because agricultural products can be more easily exported, which is likely the case with Missouri's agricultural surplus. Closer proximity to rivers also increases exposure to disease vectors, such as insects and bacteria.[8] Malaria and yellow fever are two insect-born diseases spread by mosquitoes. Tubular bascilli and vibrio cholerae are two bacteria diseases causing tuberculosis and cholera, which were prominent 19th century diseases, all prominent diseases in the 19th century South (Crimmens and Condran, 1983, p. 33; Breeden, 1985). Higher disease rates in regions with closer proximity to water, in turn, would have increased calorie requirements used to fend off disease, taking precious calories away from stature growth. In this case, access to rivers would have a negative relationship with stature (Cuff, 2005, p. 217). The overall effect of close proximity to a major waterway in Missouri was negative, which held for both whites and blacks, indicating water access was a biological drain in 19th century agriculturally rich farmlands.

---

[7] Missouri counties that share a border with the Mississippi river are Clark, Lewis, Marion, Ralls, Pike, Lincoln, Saint Charles, Saint Genevieve, Saint Louis, Jefferson, Perry, Cape Girardeau, Scott, Mississippi, New Madrid, and Pemiscot counties.

[8] Haines, Craig and Weis, "The Short and the Dead," p. 395; Craig and Weiss, 1998, 197-198.

5. Conclusion

Black stature in the 19th century American South increased during the antebellum period, yet experienced a significant decline with the removal of slavery, which is consistent with the Rees, et al, hypothesis that Southern slave owners and overseers consciously manipulating slave food and health allocations to maximize slave-owners' wealth. However, once removed, black statures experienced a short-run diminution, which recovered by the end of the 19th century. On the other hand, white youth stature was roughly constant throughout the antebellum period but was adversely affected by the removal of slavery and Reconstruction, indicating that institutional change in the American South influenced both blacks and whites. The Missouri prison sample confirms several other patterns observed in other 19th century American samples. First, blacks and whites from the South were taller than their northerly born counterparts, suggesting that although the South experienced higher disease rates, the net benefit from Southern nativity was positive. Second, farmers consistently benefited from close proximity to nutritious food sources, mild disease environments and removal from population centers. Stature was also sensitive to proximity to water and individuals in counties that shared borders with the Mississippi or Missouri Rivers were consistently shorter than those who did not. The Missouri sample also contrasts the prominent types of agriculture related to stature growth. Northern Missouri specialized in grain, which contains essential amino acids related to growth. However, southern Missouri was suitable for animal husbandry and dairy production, which contributed more to stature growth than access to grains, and Southern Missourians reached taller statures than elsewhere within the state.

References

Barondess, David A., Dorothy A. Nelson and Sandra E. Schlaen, 1997, "Whole Body Bone, Fat and Lean Mass in Black and White Men," *Journal of Bone and Mineral Research,* 12, pp. 967-971.

Bodenhorn, Howard, 1999, "A Troublesome Caste: Height and Nutrition of Antebellum Virginia's Rural Free Blacks," *Journal of Economic History* 59, 972-96.

Bogin, Barry, 1991, "Measurement of Growth Variability and Environmental Quality in Guatemalan Children," *Annals of Human Biology 18,* pp. 285-294.

Breeden, James, 1988, "Disease and Southern Distinctiveness." In *Disease and Distinctiveness in the American South.* edited by Todd L. Savitt and James H. Young. Knoxville, TN: University of Tennessee Press.

Burnett, Robyn and Ken Luebbering, 1996, *German Settlement in Missouri: New Land, Old Ways,* University of Missouri Press: Columbia.

Capeci, Dominic, 1998, *The Lynching of Cleo Wright*, Lexington: University Press of Kentucky.

Conrad, Alfred, and John Meyer, 1964, *The Economics of Slavery and Other Studies in Econometric History,* Chicago: Aldine Publishing.

Craig, Lee and Thomas Wiess, 1998, "Nutritional Status and Agricultural Surpluses in the Antebellum United States," in Komlos, John and Jeorg Batan's, *The Biological Standard of Living in Comparative Perspective.*

Crimmins, Eileen M. and Gretchen Condran, 1983, "Mortality Variation in U.S. Cities in 1900" a Two-Level Explanation by Cause of Death and Underlying Factors," *Social Science History,* 7(1), pp. 31-59.

Cuff, T., 2005, *The Hidden Cost of Economic Development: The Biological Standard of Living in Antebellum Pennsylvania*. Vermont: Ashgate.

Cutler, David, Angus Deaton, and Adiana Lleras-Muney, 2006, "The Determinants of Mortality," *Journal of Economic Perspectives,* 20(3), pp. 97-120.

David, Paul and Peter Temin, 1976, "Capitalist Masters and Bourgeois Slaves," in David, Paul, Herbert Gutman, Richard Sutch and Gavig Wright. *Reckoning With Slavery*. New York: Oxford University Press. .

Eveleth, P.B. and J.M. Tanner, 1976, *Worldwide Variation in Human Growth.* Cambridge: Cambridge University Press.

Floud, R., Wachter, K. and A. Gregory, 1990, *Height, Health and History: Nutritional Status in the United Kingdom, 1750-1980*. Cambridge: Cambridge University Press.

Fogel, Robert, Stanley Engerman, James Trussell, Roderick Floud, Clayne Pope, and Larry Wimmer, 1978, "The Economics of Mortality in North America, 1650-1910: The Description of a Research Project," *Historical Methods 11(2)*, pp.75-108.

Friedman, Lawrence M. , 1993, *Crime and Punishment in American History*. New York: Basic Books.

Godoy, Ricardo, E. Goodman, R. Levins and W.R. Leonard, 2005, "Anthropometric Variability in the USA," *Annals of Human Biology*, 32(4), pp. 469-485.

Haines, M.R., 2004, "Growing Incomes, Shrinking People—Can Economic Development Be Hazardous to Your Health?" *Social Science History* 28, 250-270.

Haines, Micheal, Lee Craig and Thomas Weiss, 2003, "The Short and The Dead: Nutrition, Mortality and the "Antebellum Paradox" in the United States." *Journal of Economic History* 63, p. 382-413.

Johnson, Daniel M., and Rex R. Campbell, 1981, *Black Migration in America: A Social Demographic History*. Durham: Duke University Press.

Kiple, Kenneth and Virginia Kiple, 1977, "Slave Child Mortality: Some Nutritional Answers to a Perennial Puzzle." *Journal of Social History* 10, p. 284-309.

Komlos, J., 1987, "The Height and Weight of West Point Cadets: Dietary Change in Antebellum America." *Journal of Economic History* 47, 897-927.

Komlos, J., 1992, "Toward an Anthropometric History of African-Americans: The Case of Free Blacks in Antebellum Maryland," in Goldin and Rockoff, eds., *Strategic Factors in 19th Century American Economic History*. Chicago: University of Chicago Press, 1992, p. 297-329.

Komlos, J., 1996, "On Anomalies in Economic History: Reflections on the Antebellum Puzzle." *Journal of Economic History* 56, 202-214.

Komlos, J., 1998, "Shrinking in a Growing Economy? The Mystery of Physical Stature during the Industrial Revolution." *Journal of Economic History* 58, 779-802.

Komlos, J., Coclanis, P., 1997, "On the Puzzling Cycle in the Biological Standard of Living: The Case of Antebellum Georgia." *Explorations in Economic History* 34, 433-59.

Komlos, J. and M. Baur, 2004, "From Tallest to (one of) the Fattest: the Enigmatic Fate of American Population in the 20th Century." *Economics and Human Biology*, 2(1), 57-74.

Margo, Robert, 2000, *Wages and Labor Markets in the United States, 1820-1860.* Chicago: University of Chicago Press.

Margo, Robert and Richard Steckel. 1982, "Heights of American Slaves: New Evidence on Nutrition and Health." *Social Science History* 6, no. 4, pp. 516-538.

Margo, R., Steckel, R.H., 1983, "Heights of Native Born Northern Whites during the Antebellum Era." *Journal of Economic History* 43, 167-174.

Margo, R. and R.H. Steckel, 1992, "Nutrition and Health of Slaves and Antebellum Southern Whites." In: Fogel, R.W., Engerman, S.E. (Eds.), *Without Consent or Contract: the Rise and Fall of American Slavery, Conditions of Slave Life and the Transition to Freedom, Technical Papers*, Vol. 2. W. W. Norton, New York, pp. 508-521.

Nelson, Dorothy, M. Kleerekoper, E. Peterson and A. M. Parfitt, 1993, "Skin Color and Body Size as Risk Factors for Osteoporosis," *Osteoporosis International*, 3, pp. 18-23.

Nolen, Rose, 2003, *Hoecakes, Hambone, and All that Jazz.* University of Missouri Press: Columbia.

Ransom, Roger and Richard Sutch, 1977, *One Kind of Freedom: the Economic Consequences of Emancipation.* Cambridge: Cambridge University Press.

Rees, R., John Komlos, Ngo Long and Ulrich Woitek, 2003, "Optimal Food Allocation in a Slave Economy." *Journal of Population Economics*, v. 16, 21-36.

Rosenbloom, Joshua, 2002, *Looking for Work, Searching for Workers: American Labor Markets during Industrialization.* Cambridge: Cambridge University Press.

Sandberg, L. and R.H. Steckel, 1997, "Was Industrialization Hazardous to Your Health? Not in Sweden!" In: Steckel, R.H., Floud, R. (Eds.), *Health and Welfare During Industrialization*. University of Chicago Press, Chicago, pp. 127-159.

Sokoloff, K., Villaflor, G., 1982, "Early Achievement of Modern Stature in America," *Social Science History* 6, 453-481.

Steckel, Richard, 1979, "Slave Height Profiles from Coastwise Manifests," *Explorations in Economic History 16*, pp. 363-380.

Steckel, R.H., 1986, "A Peculiar Population: The Nutrution, Health, and Mortality of American Slaves from Childhood to Maturity," *Journal of Economic History* 46, 721-42.

Steckel R.H., 1992a, "Stature and Living Standards in the United States," in Gallman and Wallis, eds., *American Economic Growth and Standards of Living Before the Civil War*. Chicago, University of Chicago Press.

Steckel, R.H., 1992b, "Work, Disease and Diet in the Health and Mortality of American Slaves." In: Fogel, R.W., Engerman, S.E. (Eds.), *Without Consent or Contract: The Rise and Fall of American Slavery, Conditions of Slave Life and the Transition to Freedom: Technical Papers*, Vol. 2. W. W. Norton, New York, pp. 489-507.

Steckel, R.H., 1995, "Stature and the Standard of Living." *Journal of Economic Literature* 33, 1903-1940.

Steckel, R.H., 1996, "Percentiles of Modern Height Standards for Use in Historical Research." *Historical Methods* 29, 157-166.

Steckel, R.H. and D. Haurin, 1994, “Health and Nutrition in the American Midwest: Evidence from the Height of Ohio National Guardsman 1850-1910.” In: Komlos, J. (Ed.), *Stature, Living Standards and Economic Development*. University Press of Chicago, Chicago, pp. 117-128.

Tanner, James M., 1977, “Hormonal, Genetic and Environmental Factors Controlling Growth,” in *Human Biology: an Introduction to Human Evolution, Variation, Growth and Ecology, 2nd Ed.,* edited by G.A. Harrison, J.S. Weiner, J.M. Tanner, and N.A. Barnicot, Oxford: Oxford University Press, 335-351.

Wahl, Jenny B. March, 1996."The Jurisprudence of American Slave Sales." *Journal of Economic History* 56, no. 1, pp. 143-69.

Wahl, Jenny B., 1997, “Legal Constraints on Slave Masters: The Problem of Social Costs,” *The American Journal of Legal History* 41, no. 1, pp. 1-24.

Xiong, E-H, F-H Xu, P-Y Liu, H Shen, J-R Long, L Elze, R R Recker and H-W Deng, 2007, “Vitamin D Receptor Gene Polymorphisms are Linked to and Associated with Adult Height,” *Journal of Medical Genetics*, 42, pp. 228-234.

Y-Z Liu, F-H Shen, H Deng, Y-J Liu, L-J Zhao, V Dvornyk, T Conway, J-L Li, Q-Y Huang, K M Davies, R R Recker, and H-W Deng, “Confirmation Linkage Study in Support of the X Chromosome Harbouring a ATL Underlying Human Height Variation,” *Journal of Medical Genetics*, 40, pp. 825-831.

CESifo Working Paper Series

(for full list see www.cesifo-group.de)

1892 Erkki Koskela and Rune Stenbacka, Equilibrium Unemployment with Outsourcing under Labour Market Imperfections, January 2007

1893 Maarten Bosker, Steven Brakman, Harry Garretsen, Herman de Jong and Marc Schramm, The Development of Cities in Italy 1300 – 1861, January 2007

1894 Michel Beine, Oscar Bernal, Jean-Yves Gnabo and Christelle Lecourt, Intervention Policy of the BoJ: A Unified Approach, January 2007

1895 Robert S. Chirinko and Daniel J. Wilson, State Investment Tax Incentives: A Zero-Sum Game?, January 2007

1896 Theo S. Eicher and Oliver Roehn, Sources of the German Productivity Demise – Tracing the Effects of Industry-Level ICT Investment, January 2007

1897 Helge Berger, Volker Nitsch and Tonny Lybek, Central Bank Boards around the World: Why does Membership Size Differ?, January 2007

1898 Gabriel Felbermayr and Wilhelm Kohler, Does WTO Membership Make a Difference at the Extensive Margin of World Trade?, January 2007

1899 Benno Torgler and Friedrich Schneider, The Impact of Tax Morale and Institutional Quality on the Shadow Economy, January 2007

1900 Tomer Blumkin and Efraim Sadka, On the Desirability of Taxing Charitable Contributions, January 2007

1901 Frederick van der Ploeg and Reinhilde Veugelers, Higher Education Reform and the Renewed Lisbon Strategy: Role of Member States and the European Commission, January 2007

1902 John Lewis, Hitting and Hoping? Meeting the Exchange Rate and Inflation Criteria during a Period of Nominal Convergence, January 2007

1903 Torben M. Andersen, The Scandinavian Model – Prospects and Challenges, January 2007

1904 Stephane Dees, Sean Holly, M. Hashem Pesaran and L. Vanessa Smith, Long Run Macroeconomic Relations in the Global Economy, January 2007

1905 Richard Jong-A-Pin and Jakob De Haan, Political Regime Change, Economic Reform and Growth Accelerations, January 2007

1906 Sascha O. Becker and Peter H. Egger, Endogenous Product versus Process Innovation and a Firm's Propensity to Export, February 2007

1907 Theo S. Eicher, Chris Papageorgiou and Oliver Roehn, Unraveling the Fortunates of the Fortunate: An Iterative Bayesian Model Averaging (IBMA) Approach, February 2007

1908 Liliana E. Pezzin, Robert A. Pollak and Barbara S. Schone, Efficiency in Family Bargaining: Living Arrangements and Caregiving Decisions of Adult Children and Disabled Elderly Parents, February 2007

1909 Christian Keuschnigg and Soren Bo Nielsen, Self-Selection and Advice in Venture Capital Finance, February 2007

1910 Rune Jansen Hagen and Gaute Torsvik, Irreversible Investments, Dynamic Inconsistency and Policy Convergence, February 2007

1911 Eric A. Hanushek and Ludger Woessmann, The Role of School Improvement in Economic Development, February 2007

1912 Bernard M. S. van Praag, Perspectives from the Happiness Literature and the Role of New Instruments for Policy Analysis, February 2007

1913 Volker Grossmann and Thomas M. Steger, Growth, Development, and Technological Change, February 2007

1914 Margarita Katsimi and Thomas Moutos, Human Capital and the Feldstein-Horioka Puzzle, February 2007

1915 Oliver Roehn, Theo S. Eicher and Thomas Strobel, The Ifo Industry Growth Accounting Database, February 2007

1916 Ian Babetskii, Aggregate Wage Flexibility in Selected New EU Member States, February 2007

1917 Burkhard Heer, Alfred Maussner and Paul D. McNelis, The Money-Age Distribution: Empirical Facts and Limited Monetary Models, February 2007

1918 Yin-Wong Cheung, Menzie D. Chinn and Eijii Fujii, The Overvaluation of Renminbi Undervaluation, February 2007

1919 Jim Malley, Apostolis Philippopoulos and Ulrich Woitek, To React or Not? Fiscal Policy, Volatility and Welfare in the EU-3, February 2007

1920 Mattias Polborn, Competing for Recognition through Public Good Provision, February 2007

1921 Lars P. Feld and Benno Torgler, Tax Morale after the Reunification of Germany: Results from a Quasi-Natural Experiment, February 2007

1922 Robert S. Chirinko and Huntley Schaller, Fundamentals, Misvaluation, and Investment: The Real Story, February 2007

1923 Benno Torgler and Friedrich Schneider, Shadow Economy, Tax Morale, Governance and Institutional Quality: A Panel Analysis, February 2007

1924 Adrian Pagan and M. Hashem Pesaran, On Econometric Analysis of Structural Systems with Permanent and Transitory Shocks and Exogenous Variables, February 2007

1925 Hans-Werner Sinn, The Welfare State and the Forces of Globalization, February 2007

1926 Michael Smart, Raising Taxes through Equalization, February 2007

1927 Øystein Foros, Kåre P. Hagen and Hans Jarle Kind, Price-Dependent Profit Sharing as an Escape from the Bertrand Paradox, February 2007

1928 Balázs Égert, Kirsten Lommatzsch and Amina Lahrèche-Révil, Real Exchange Rates in Small Open OECD and Transition Economies: Comparing Apples with Oranges?, February 2007

1929 Aleksander Berentsen and Cyril Monnet, Monetary Policy in a Channel System, February 2007

1930 Wolfgang Ochel, The Free Movement of Inactive Citizens in the EU – A Challenge for the European Welfare State?, February 2007

1931 James K. Hammitt and Nicolas Treich, Statistical vs. Identified Lives in Benefit-Cost Analysis, February 2007

1932 Wilhelm Kohler, The Bazaar Effect, Unbundling of Comparative Advantage, and Migration, February 2007

1933 Karsten Staehr, Fiscal Policies and Business Cycles in an Enlarged Euro Area, February 2007

1934 Michele Bernasconi and Paola Profeta, Redistribution or Education? The Political Economy of the Social Race, March 2007

1935 Axel Dreher, Martin Gassebner and Lars-H. R. Siemers, Does Terror Threaten Human Rights? Evidence from Panel Data, March 2007

1936 Naércio Aquino Menezes Filho and Marc-Andreas Muendler, Labor Reallocation in Response to Trade Reform, March 2007

1937 Gebhard Flaig and Timo Wollmershaeuser, Does the Euro-zone Diverge? A Stress Indicator for Analyzing Trends and Cycles in Real GDP and Inflation, March 2007

1938 Michael Funke and Michael Paetz, Environmental Policy Under Model Uncertainty: A Robust Optimal Control Approach, March 2007

1939 Byeongchan Seong, Sung K. Ahn and Peter A. Zadrozny, Cointegration Analysis with Mixed-Frequency Data, March 2007

1940 Monika Bütler and Michel André Maréchal, Framing Effects in Political Decision Making: Evidence from a Natural Voting Experiment, March 2007

1941 Giacomo Corneo and Olivier Jeanne, A Theory of Tolerance, March 2007

1942 Qing Hong and Michael Smart, In Praise of Tax Havens: International Tax Planning and Foreign Direct Investment, March 2007

1943 Yin-Wong Cheung, Dickson Tam and Matthew S. Yiu, Does the Chinese Interest Rate Follow the US Interest Rate?, March 2007

1944 Panu Poutvaara and Mikael Priks, Unemployment and Gang Crime: Could Prosperity Backfire?, March 2007

1945 Burkhard Heer, On the Modeling of the Income Distribution Business Cycle Dynamics, March 2007

1946 Christoph A. Schaltegger and Lars P. Feld, Are Fiscal Adjustments less Successful in Decentralized Governments?, March 2007

1947 Giovanni Facchini, Marcelo Olarreaga, Peri Silva and Gerald Willmann, Substitutability and Protectionism: Latin America's Trade Policy and Imports from China and India, March 2007

1948 C. Mirjam van Praag and Bernard M. S. van Praag, The Benefits of Being Economics Professor A (and not Z), March 2007

1949 Astrid Hopfensitz and Frans van Winden, Dynamic Choice, Independence and Emotions, March 2007

1950 Guglielmo Maria Caporale and Luis A. Gil-Alana, A Multivariate Long-Memory Model with Structural Breaks, March 2007

1951 Mattias Ganslandt and Keith E. Maskus, Wholesale Price Discrimination and Parallel Imports, March 2007

1952 Michela Redoano, Fiscal Interactions Among European Countries. Does the EU Matter?, March 2007

1953 Stefan C. Wolter, Rémy Hübschi and Matthias Müller, Push or Pull? An Empirical Analysis of the Demand for Individual Project Grants from the Swiss National Science Foundation, March 2007

1954 Scott Alan Carson, African-American and White Inequality in the American South: Evidence from the 19th Century Missouri State Prison, March 2007