The Son Also Rises:

Surnames and the Laws of Social Mobility

Gregory Clark
University of California, Davis

How is Social Mobility Normally Studied?

Status Measure y_t : income, wealth, years of education, social class (measured in logs)

Regress

$$y_{t+1} = by_t + u_t$$

b = intergenerational elasticity

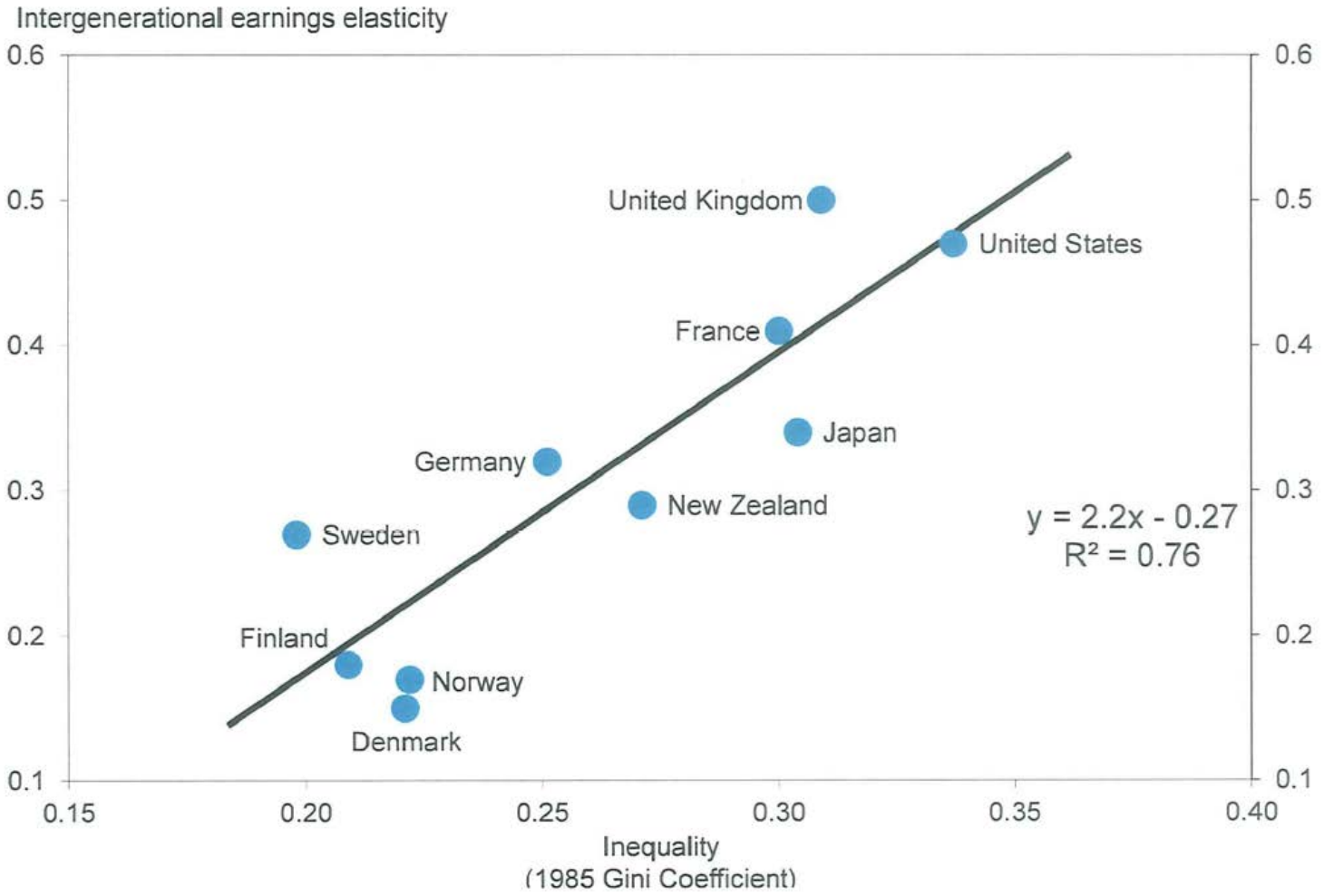
Framework

1-b = rate of regression to mean

b^2 = share of social position variance inherited

$1-b^n$ = rate of regression to mean over n generations (assuming AR1)

Results



Source: Corak (2011), OECD, CEA estimates

Implications

- Income mobility complete within 2-5 generations

$$y_{t+n} = b^n y_t + u_t$$

- Fraction of variance of social position explained by inheritance low – 4% Scandinavia, 22% USA
- Mobility rates vary substantially across countries
- Mobility rates likely "too low" in some societies

Surname Method

- Measure social mobility by tracing wealth, income, status by surnames – e.g. Clark, Smith
- Surnames link us to previous generations though the patriline – in England we can link some people to their status in 1086
- With high rates of social mobility typically found surnames should rapidly lose status information

Measures of Status

- Direct measures of wealth, income, education (years)
- Fraction of people bearing surname who are in high status occupations – doctor, attorney, member of Parliament, professor, author
- Fraction of people bearing surname who are educated at universities – Oxford, Cambridge

Hypotheses

1. $y_{t+1} = by_t + u_t$

describes all social mobility. Elites and underclasses all tend to mediocrity at a constant rate.

2. b is much higher than conventionally estimated – 0.7-0.8. Social mobility is extremely slow. Complete regression to the mean takes 300-500 years.

Hypotheses (cont.)

3. b is constant across societies and social systems

4. b is constant across measures of status – wealth, education, occupation – and across the entire distribution

5. The majority of social status is determined at conception

$b^2 = 0.5\text{-}0.6$

Results - Summary

Country	Period	Wealth	Education	Occupations
England	1800-2011	0.72	0.77	0.69
England	1300-1550	0.65	0.77	-
USA	1940-2010	-	-	0.74
Sweden	1650-2010	-	?	0.76
Bengal	1900-2010	-	-	0.80
Japan	1940-2011	-	0.84	0.82
Chile	1920-1990	-	?	0.74
China	1905-2011	-	0.71	?
China	1700-1905	-	0.85	-

Hypothes (cont.)

- 6. We observe persistent elites and underclasses only in two cases:
  - Isolated elite – no outmarriage
  - Selective retention of members by elites and underclasses
- 7. Assortative mating is what makes b so high. Mating has become more assortative in the modern world, so mobility rates may decline further (Herrnstein-Murray claim).
- 8. Social status is likely mainly of genetic origin

Rare Surnames – England, 1780-2011

- **Very Rich**

AHMUTY
ALLECOCK
ANGERSTEIN
APPOLD
AURIOL
BAILWARD
BAZALGETTE….

- **Poor**

ALLER
ALMAND
ANGLER
ANGLIM
ANNINGS
AUSTELL
BACKLAKE…

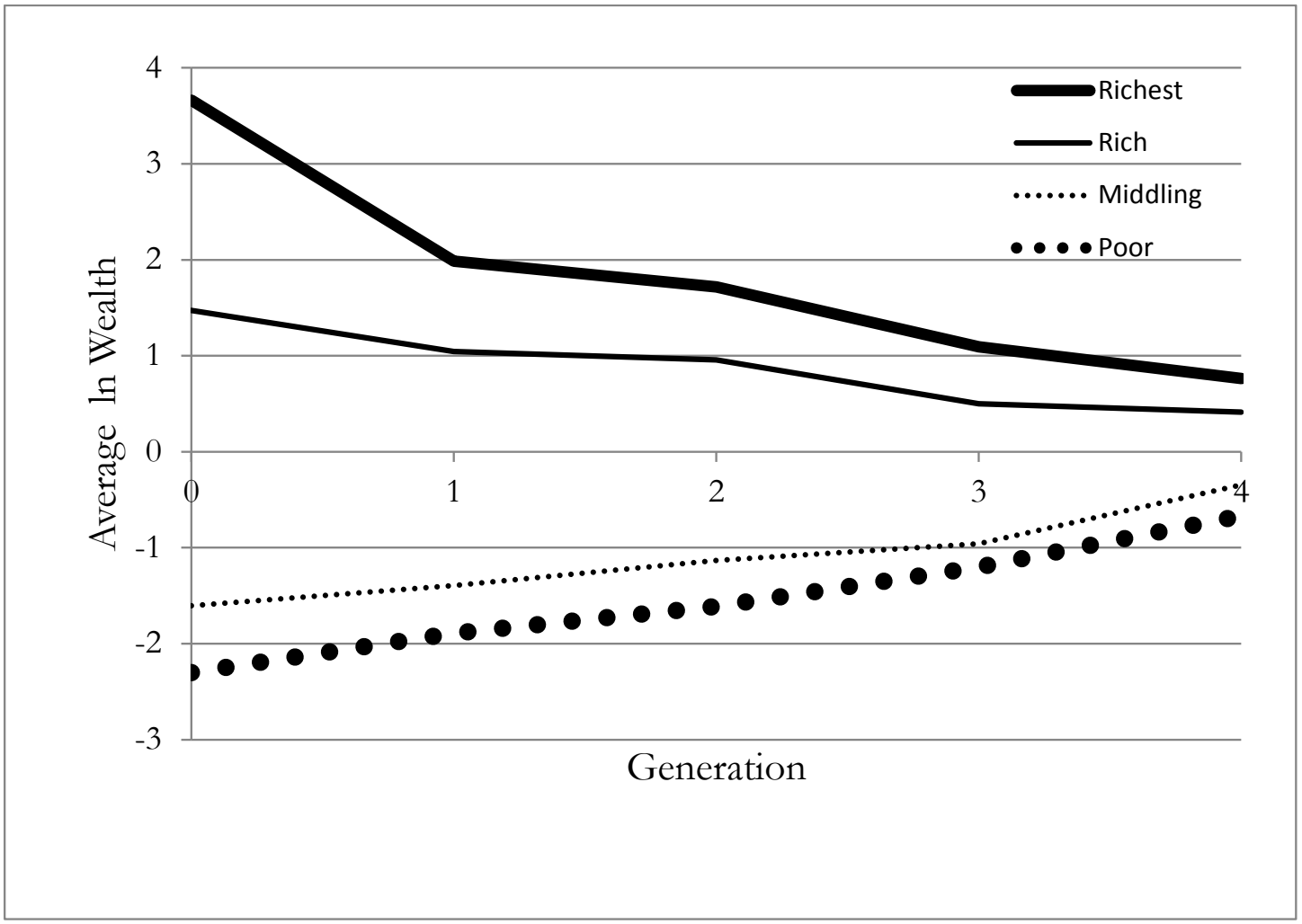
England Wealth Mobility 1858-2011 – Rich Sample

Period	Surnames	Probates	Deaths	Deaths 21+
RICH				
1858-87	181	1,142	2,263	1,767*
1888-1917	172	1,072	1,987	1,792
1918-1952	168	1,582	2,478	2,383
1953-89	156	1,310	2,008	1,983
1990-2011	143	564	989	980

England Wealth Mobility 1858-2011 – Poor Sample

Period	Surnames	Probates	Deaths	Deaths 21+
POOR				
1858-87	273	107	3,300	1,798*
1888-1917	255	275	3,106	1,889
1918-1952	242	638	3,085	2,610
1953-89	246	1,305	3,776	3,654
1990-2011	214	836	2,165	2,135

Figure 5: Average Log Probate value, by generation



Measuring b – method 1

$$\bar{y}_{Rt+n} - \bar{y}_{Pt+n} = \mathrm{b}(\bar{y}_{Rt} - \bar{y}_{Pt})$$

Table 2: b Values Between Death Generations

	1888-1917	1918-1952	1953-1987	1999-2011
1858-1887	**0.71** (.03)	0.62 (.02)	0.42 (.02)	0.26 (.03)
1888-1917		**0.86** (.03)	0.59 (.03)	0.36 (.04)
1918-1952			**0.68** (.03)	0.41 (.05)
1953-1987				**0.61** (.07)

Note: Standard errors in parentheses.

Figure 6: Average log wealth by Birth Generation, 1780-1959.

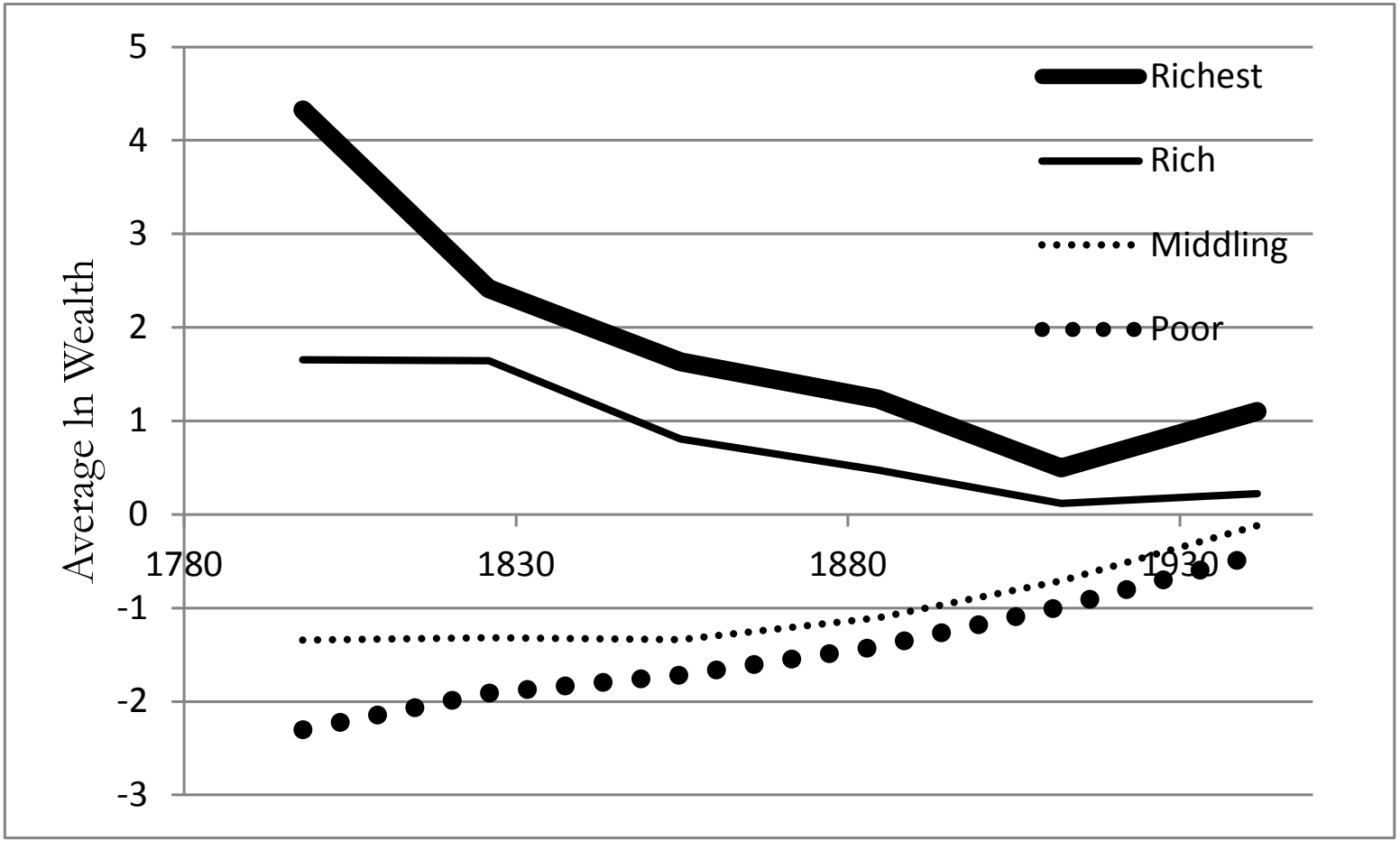


Table 4: b values between birth generations, 1780-1809 to 1930-1959

	1810-39	1840-69	1870-99	1900-29	1930-59
1780-1809	**0.72** (0.03)	0.54 (0.02)	0.41 (0.02)	0.23 (0.02)	0.16 (0.04)
1810-39		**0.75** (0.03)	0.57 (0.02)	0.32 (0.02)	0.22 (0.06)
1840-69			**0.76** (0.03)	0.41 (0.03)	0.29 (0.07)
1870-99				**0.56** (0.04)	0.39 (0.10)
1900-29					**0.69** (0.18)

Notes**:** b values corrected to a 30 year generation gap. Standard errors were bootstrapped.

b differs by wealth level?

Table 13: Average b versus "Brown" by Initial Wealth

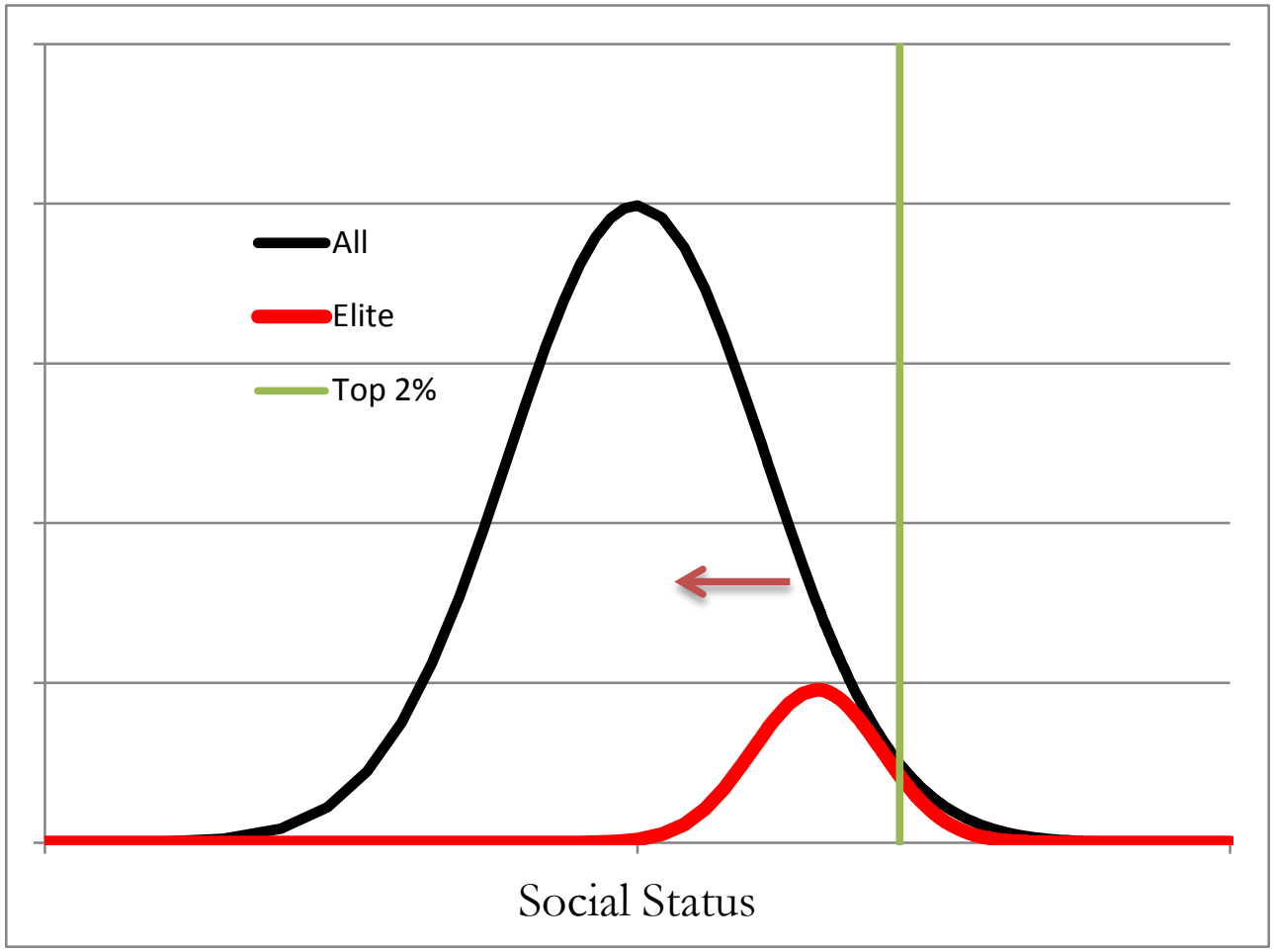
	Gen 0 to Gen 4 Average	Gen 0 to Gen 1	Gen 1 to Gen 2	Gen 2 to Gen 3	Gen 3 to Gen 4
Richest	**0.72**	0.68	0.79	0.66	0.75
Rich	**0.78**	0.87	0.79	0.62	0.83
Poor	**0.73**	0.40	1.70	0.84	0.00

Estimating b from Elite Share of Surnames

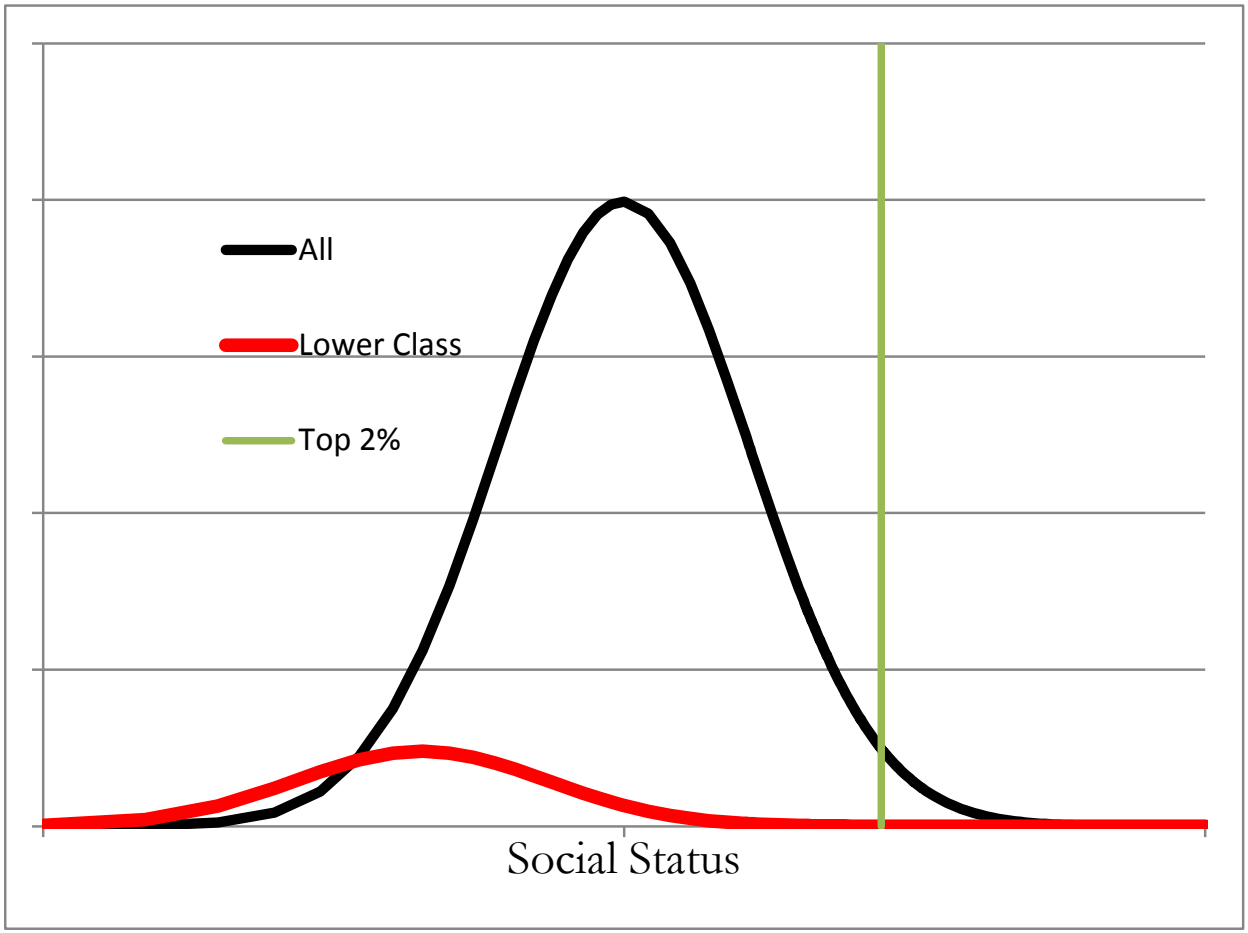
Relative Representation (RR)

$$= \frac{share\ of\ group\ in\ elite}{share\ of\ group\ in\ population} = 1 \text{ on average}$$

Regression to the mean of elites



Regression to Mean of Underclass



Deriving b from status distributions

Group	Mean	Variance
Population	0	σ^2
Elite – Gen 0	$\bar{y}_{z0}$	$0 < \sigma_{z0}^2 < \sigma^2$
Elite – Gen t	$\bar{y}_{z0} b^t$	$b^{2t} var(y_{Z0}) + (1 - b^{2t})\sigma^2$

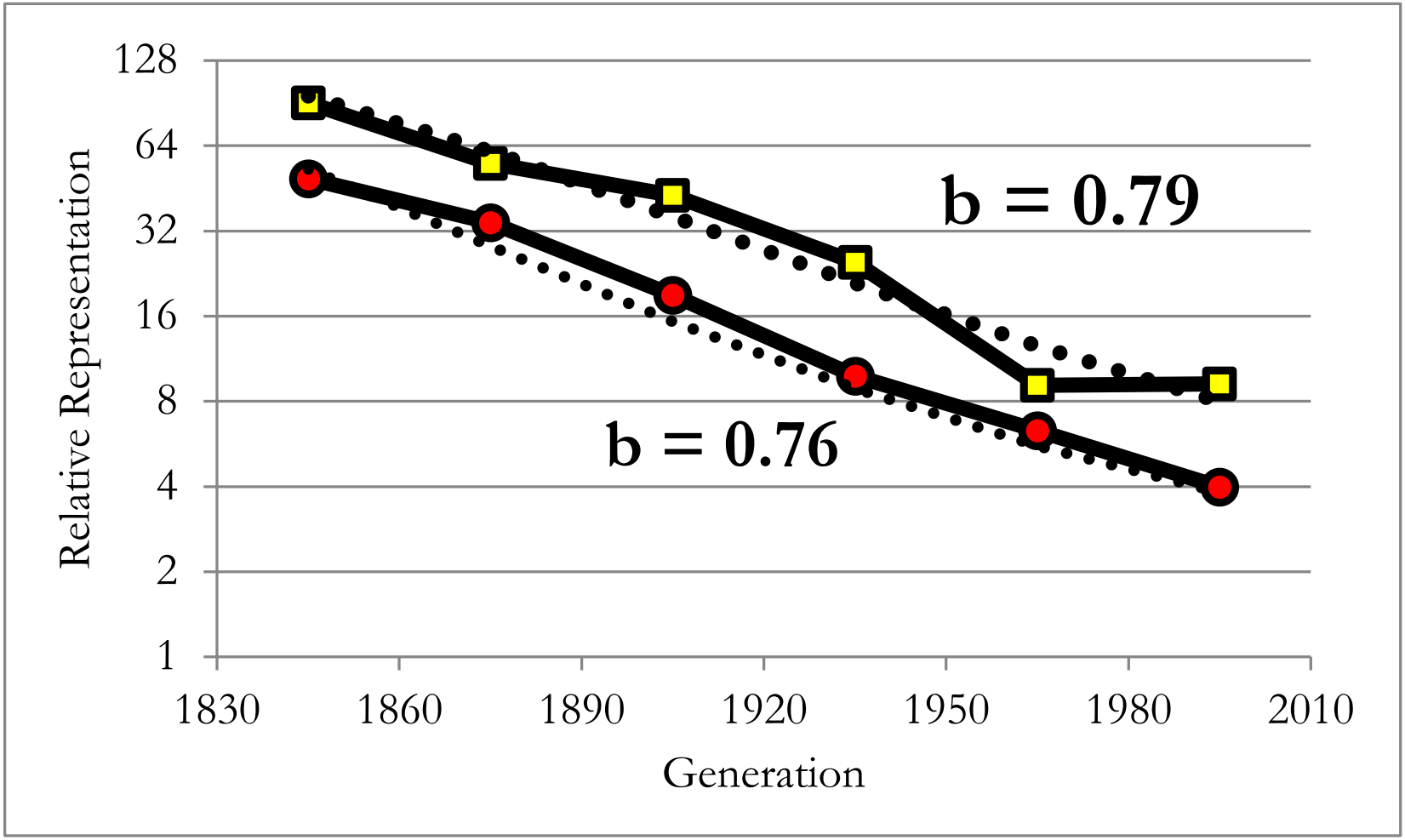
Example – Oxbridge Elite

- 0.7% of each generation
- ≈800,000 people 1170-2011
- Men only before 1869

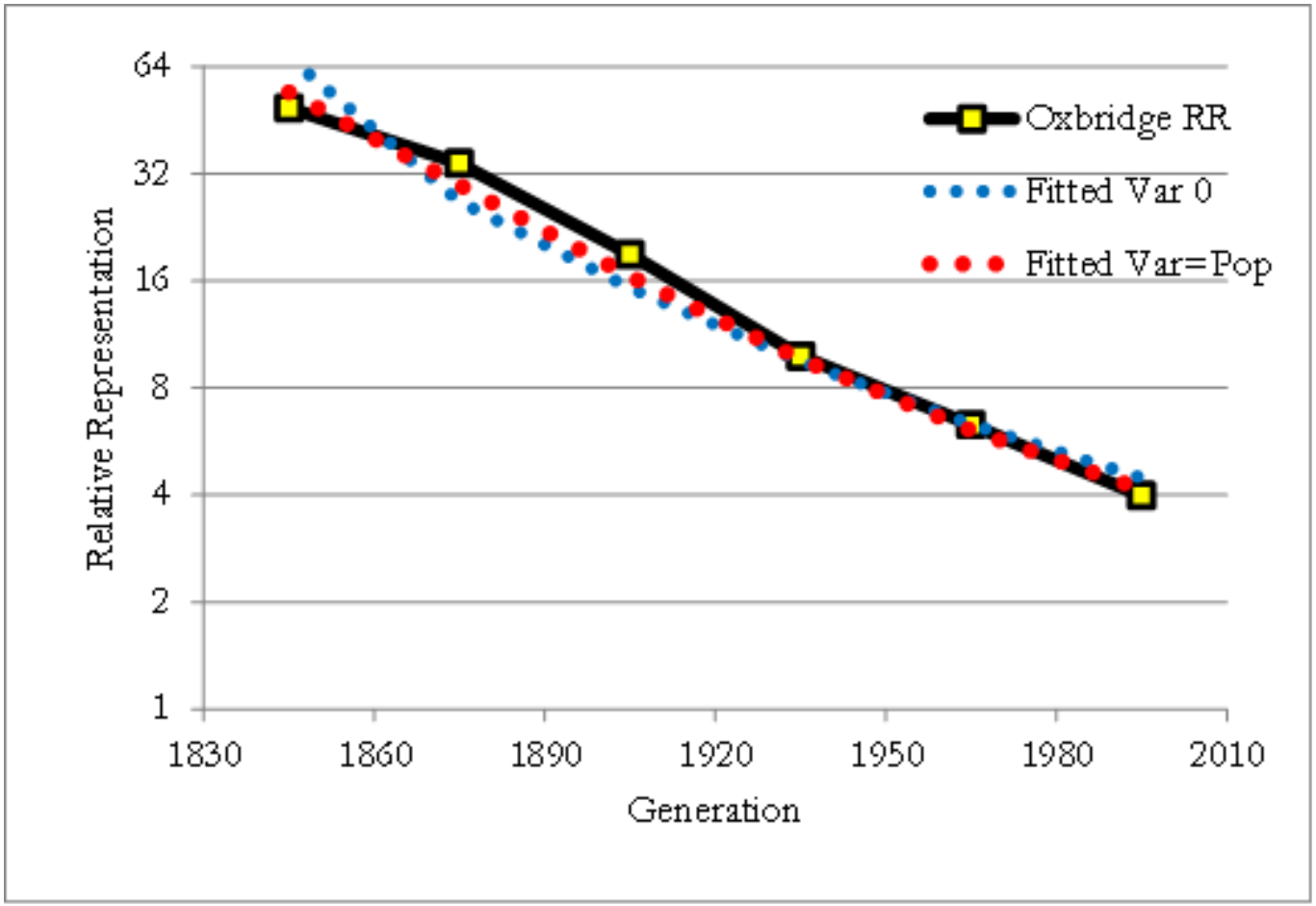
Table 9: Representation by Birth Cohorts at Oxbridge, 1800-2010

Period	Sample Size	N Wealthy Surnames	Relative Representation Wealthy Surnames	Relative Representation Any Rare Surnames 1800-29
1800-29	18,651	169	94	117
1830-59	24,418	210	91	49
1860-89	35,503	184	55	34
1890-1919	22,005	77	43	19
1920-49	44,231	73	25	9.8
1950-79	95,792	67	9.1	6.3
1980-2010	213,303	65	9.2	4.0

Figure 7: Relative Representation at Oxbridge, 1830-2010



Alternative Assumed Initial Elite Variance



Changes in Oxbridge

- 1800-29 largely closed to those outside Church of England
- Before 1902 little public support for university education
- University entrance and scholarships based on special exam that only a few high schools prepared students for. 1900-13 nine schools supplied 28% of Oxford admits

Changes in Oxbridge

- Until 1940 Oxford candidates had to complete a Latin entrance exam
- Major increase in local authority financial support for students 1920-39
- End of special Oxbridge entrance exams, 1980s

Why Such High b estimates?

Table 12: Modern Intergenerational Elasticities for the UK

Measure	*b*	**Source**
Earnings	.22-.69	Dearden et al. (1997), Nicoletti and Ermisch (2008)
Wealth	.48-.59	Harbury and Hitchens (1979)
Education	.43-.71	Dearden et al. (1997), Hertz (2007)
Occupation	.08-.30	Francesconi and Nicoletti (2005), Ermisch et al. (2006)

Notes: Education refers to years of education, occupation to an index of occupational prestige (the Hope-Goldthorpe score).

Why the higher surname estimates?

- Conventional

$$y_{t+1} = by_t + u_t$$

y_t is some aspect of status – ln income, ln wealth, years of schooling

But $y_t = x_t + e_t$

where x_t is an underlying status that the various y_t measure imperfectly.

People Trade off Income, Occupation etc. in seeking Social Status

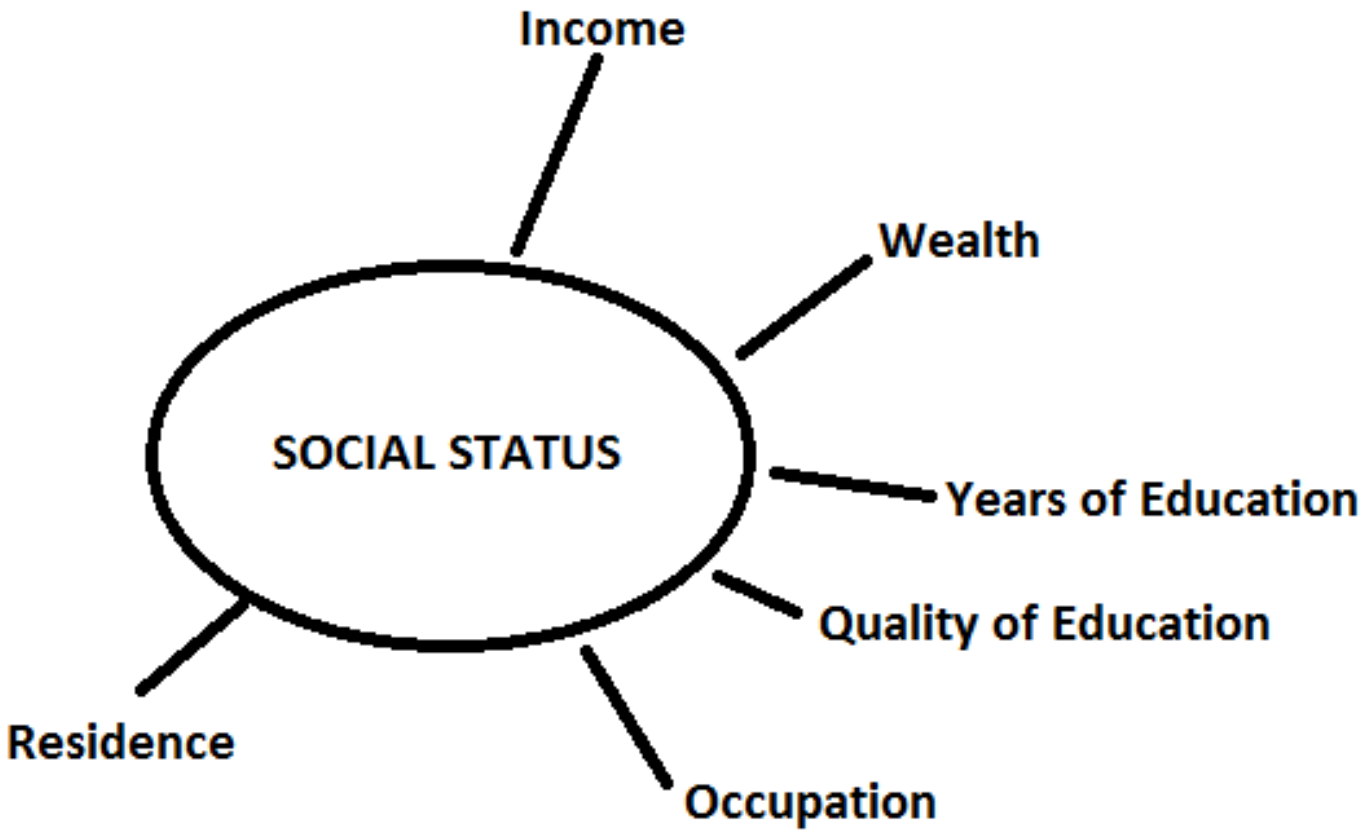


Table 14: Estimates of b from Surnames and Families, by death generation

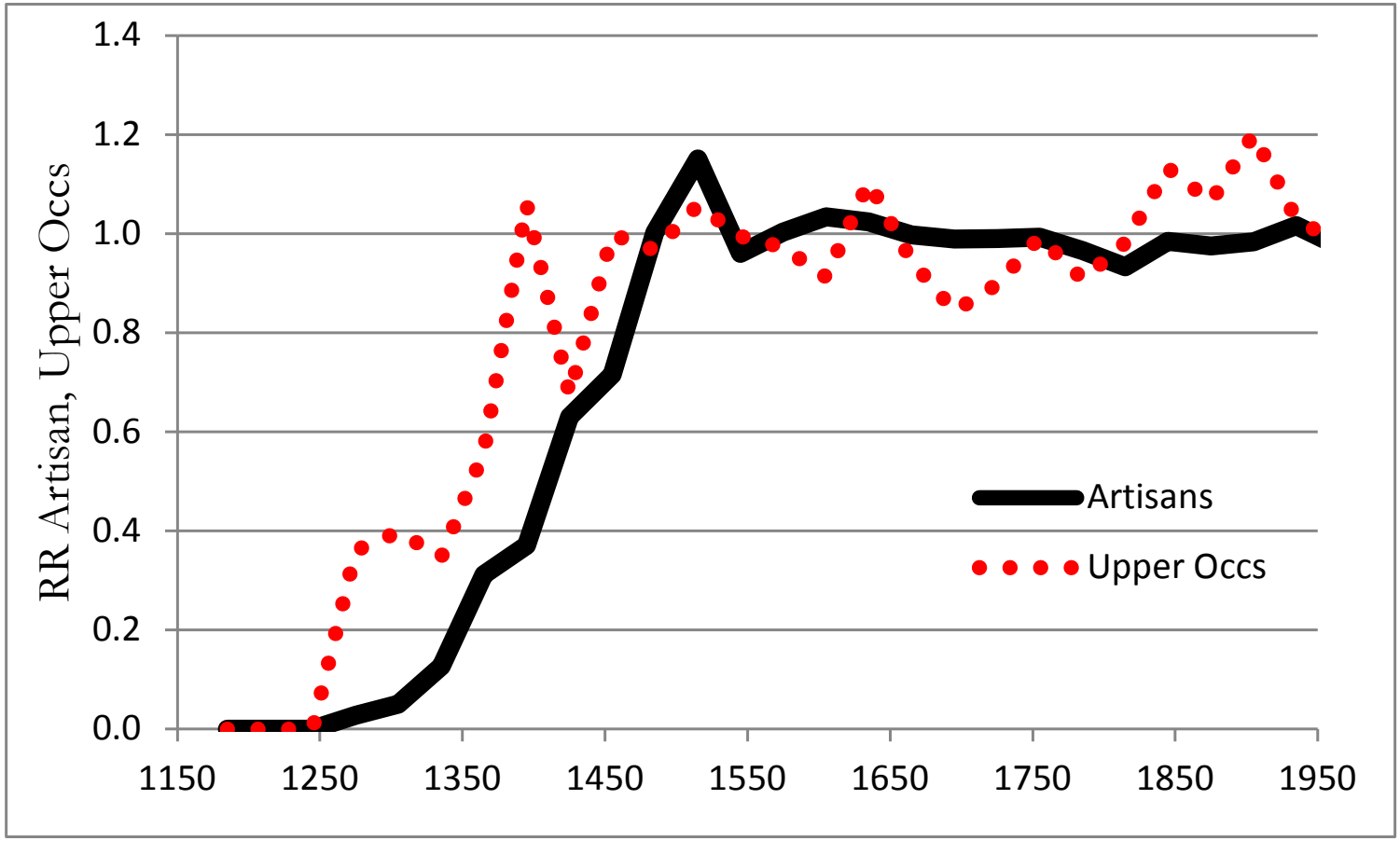
Child Death Period	Surname Types b	Individual Surnames b	Linked Children Number	Individual Families b
1888-1917	0.71	0.66	202	0.59
1918-1952	0.86	0.71	466	0.65
1953-1987	0.68	0.60	389	0.51
1988-2011	0.61	0.53	239	0.29
Average	0.72	0.62	-	0.51

England 1086 - 1800

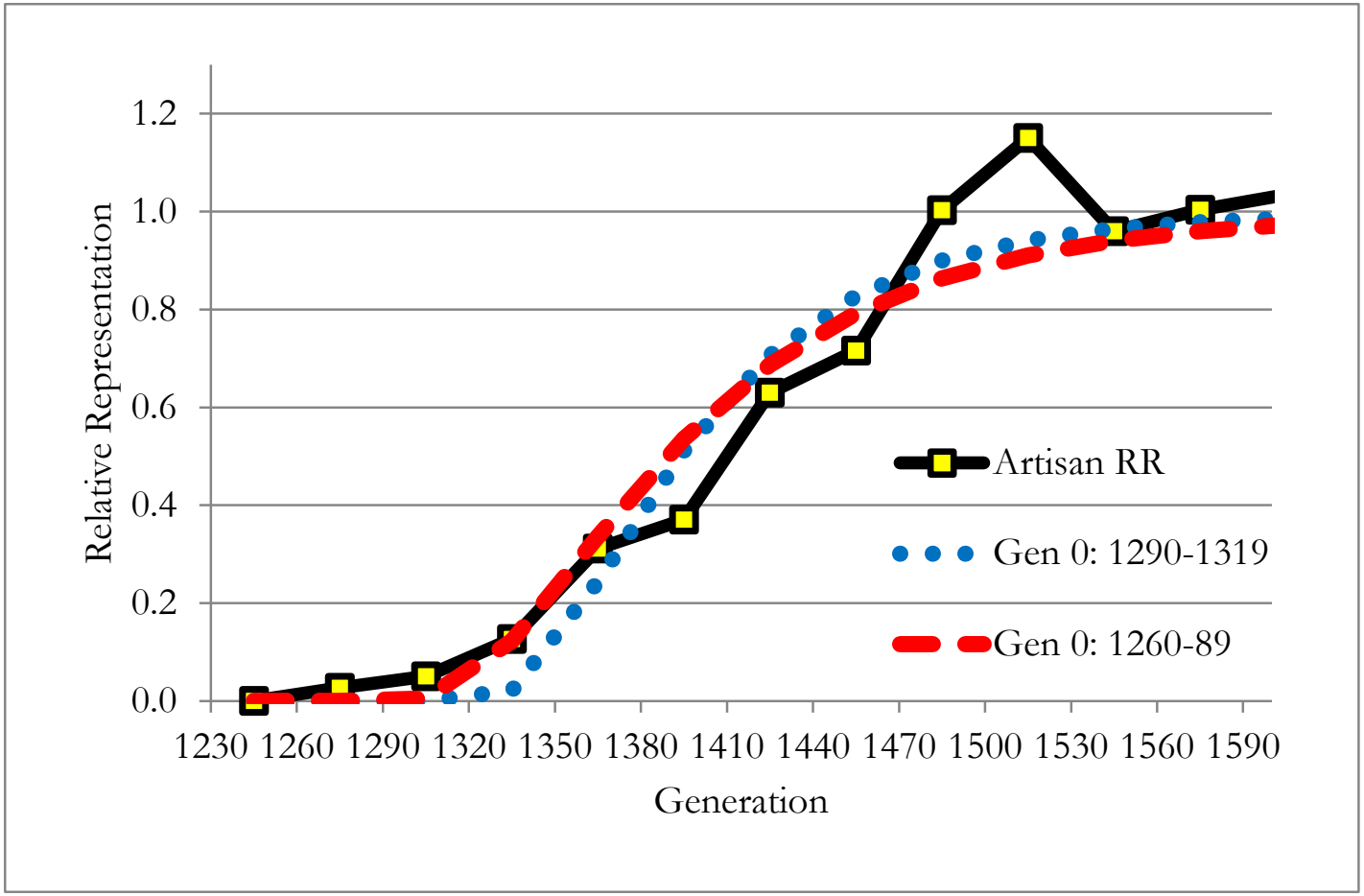
Surname Types, 1300

- **Highest Status** – place names – Berkeley, Hilton, Pakenham
- **Intermediate Status** – official occupations - Chamberlain, Stewart, Butler, Clark, Sergeant, Constable, Reeve
- **Middle Status** – artisan occupations – Smith, Cooper, Baker, Turner, Barker, Shepherd, Coward, etc.

Surname Types, Oxbridge, 1170-1950



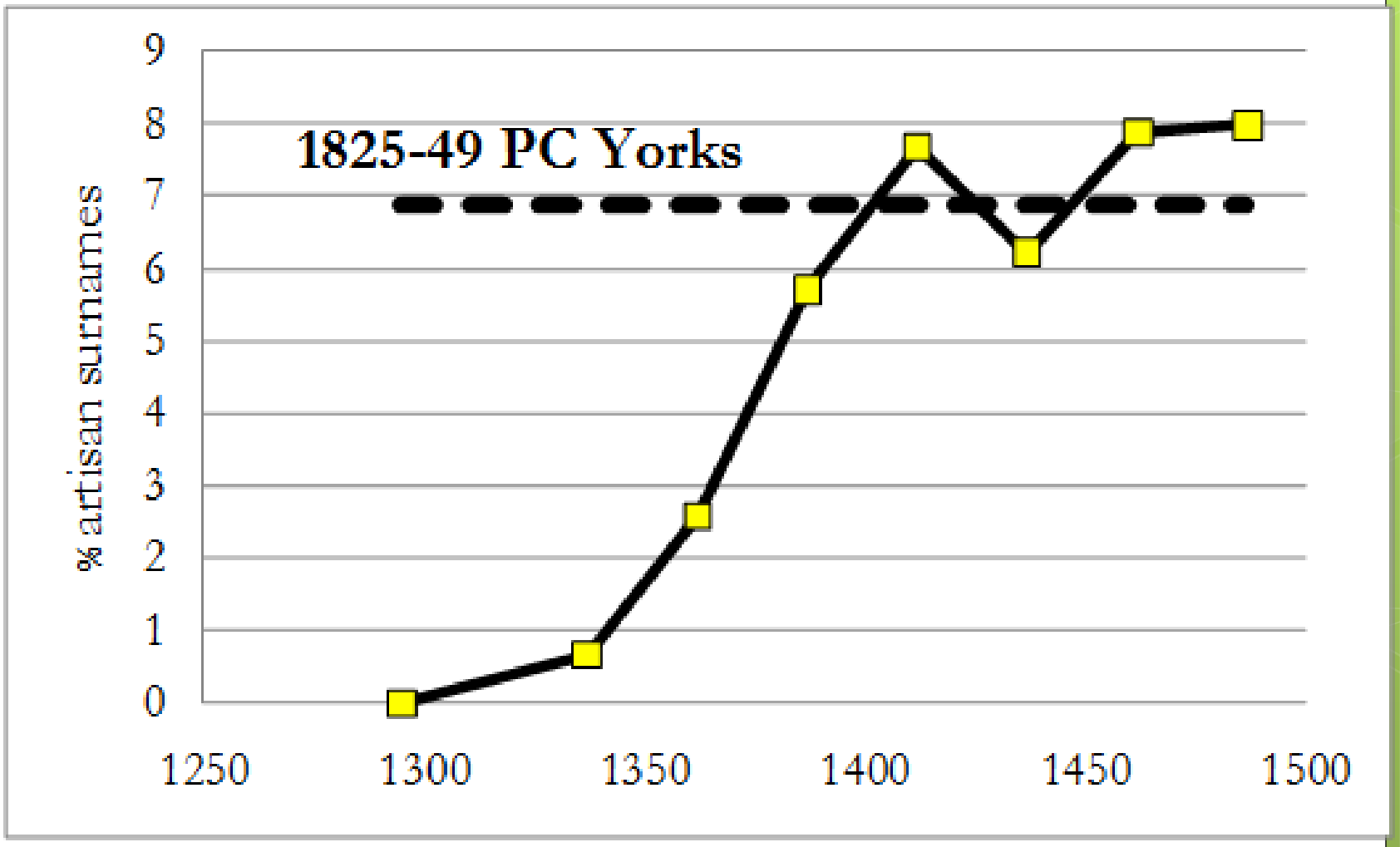
England, Oxbridge Elite, 1300-1600 – "Smiths" etc



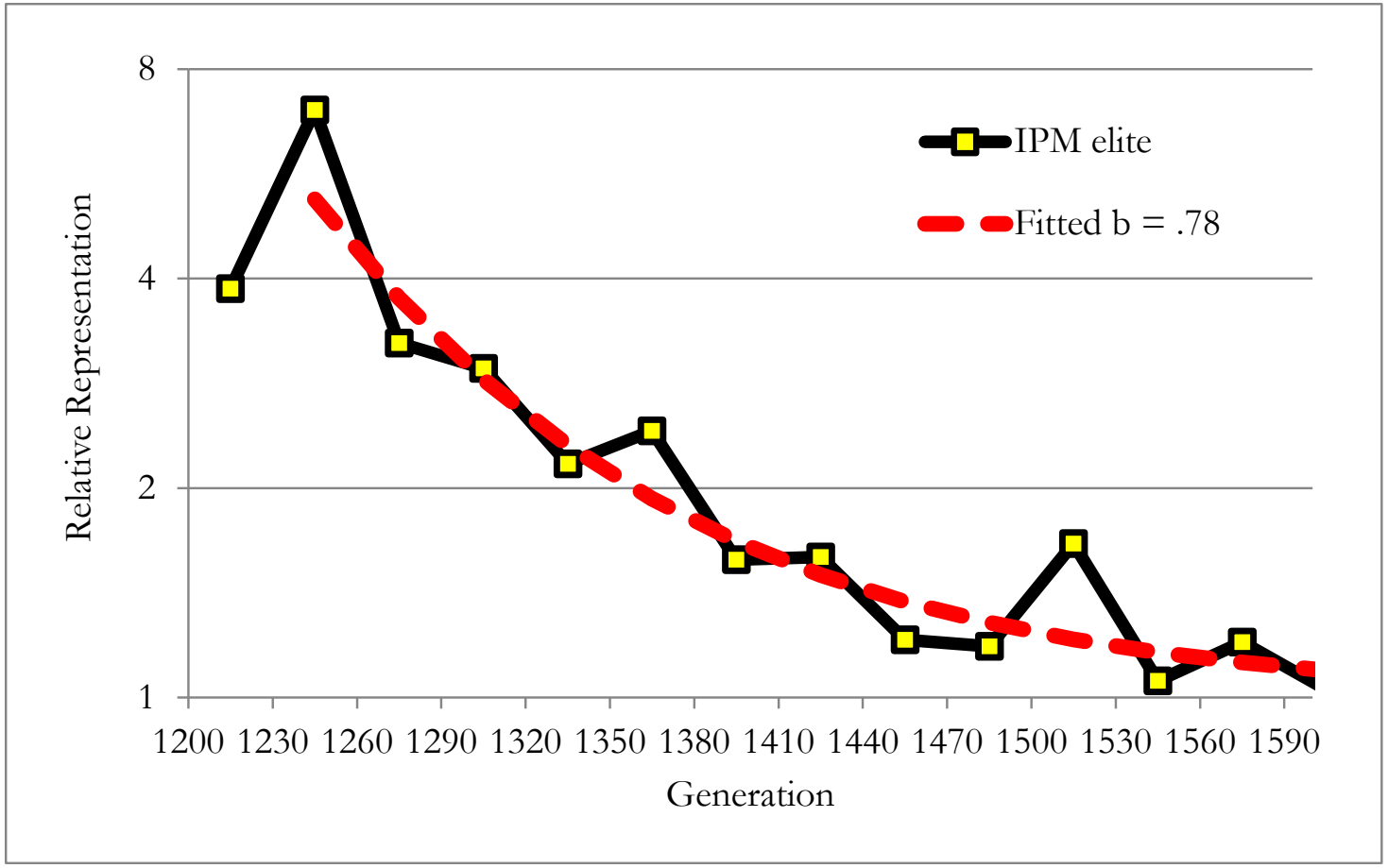
Implied β

0.75-0.8

Artisan Surnames among Property Owners, Yorkshire



Property Owners, 1235-99



1086-1300

Period	Population Share Norman	Norman surnames as share of top 0.2% wealth	Relative Representation of Normans	Implied b
1086	0.4%	46.2%	116	
1235-1300	0.4-2.0%	9.7%	5-24	**0.79-0.91**

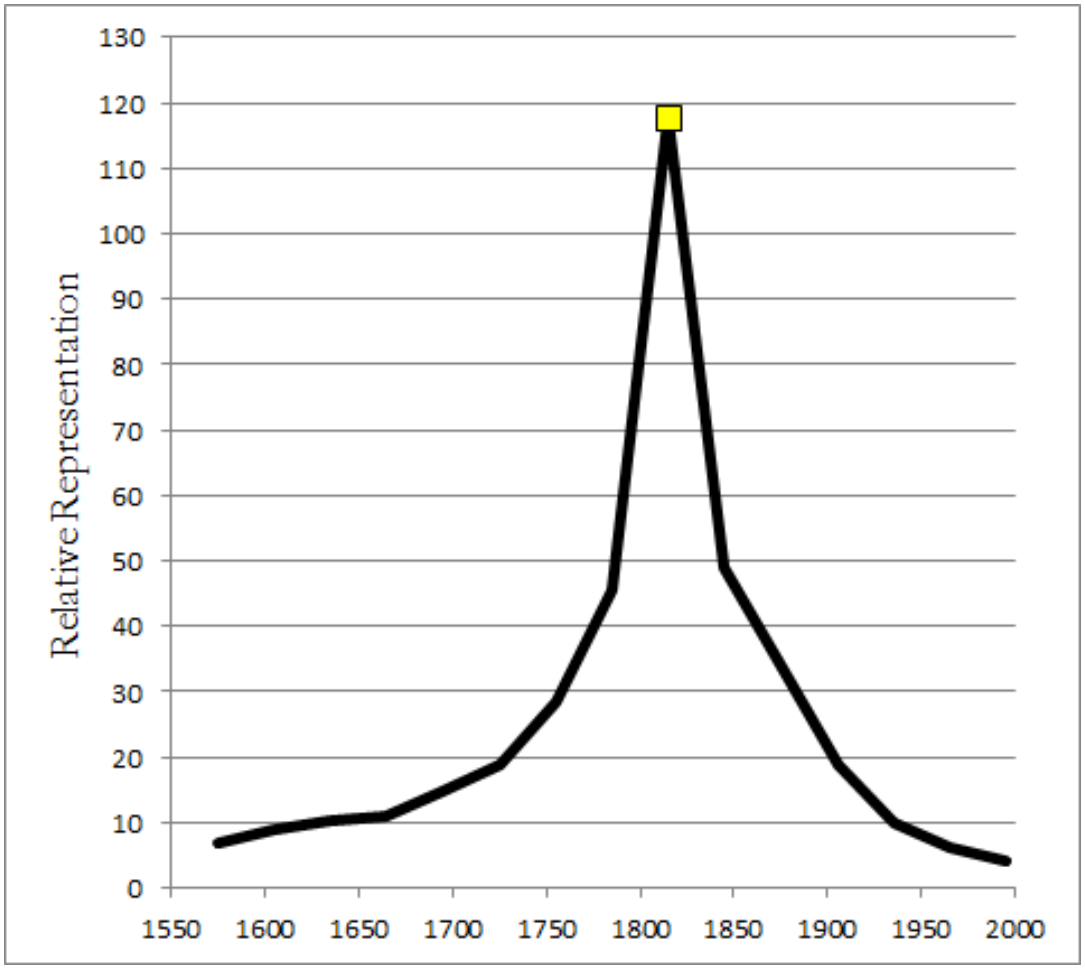
How do you become an elite?

- If

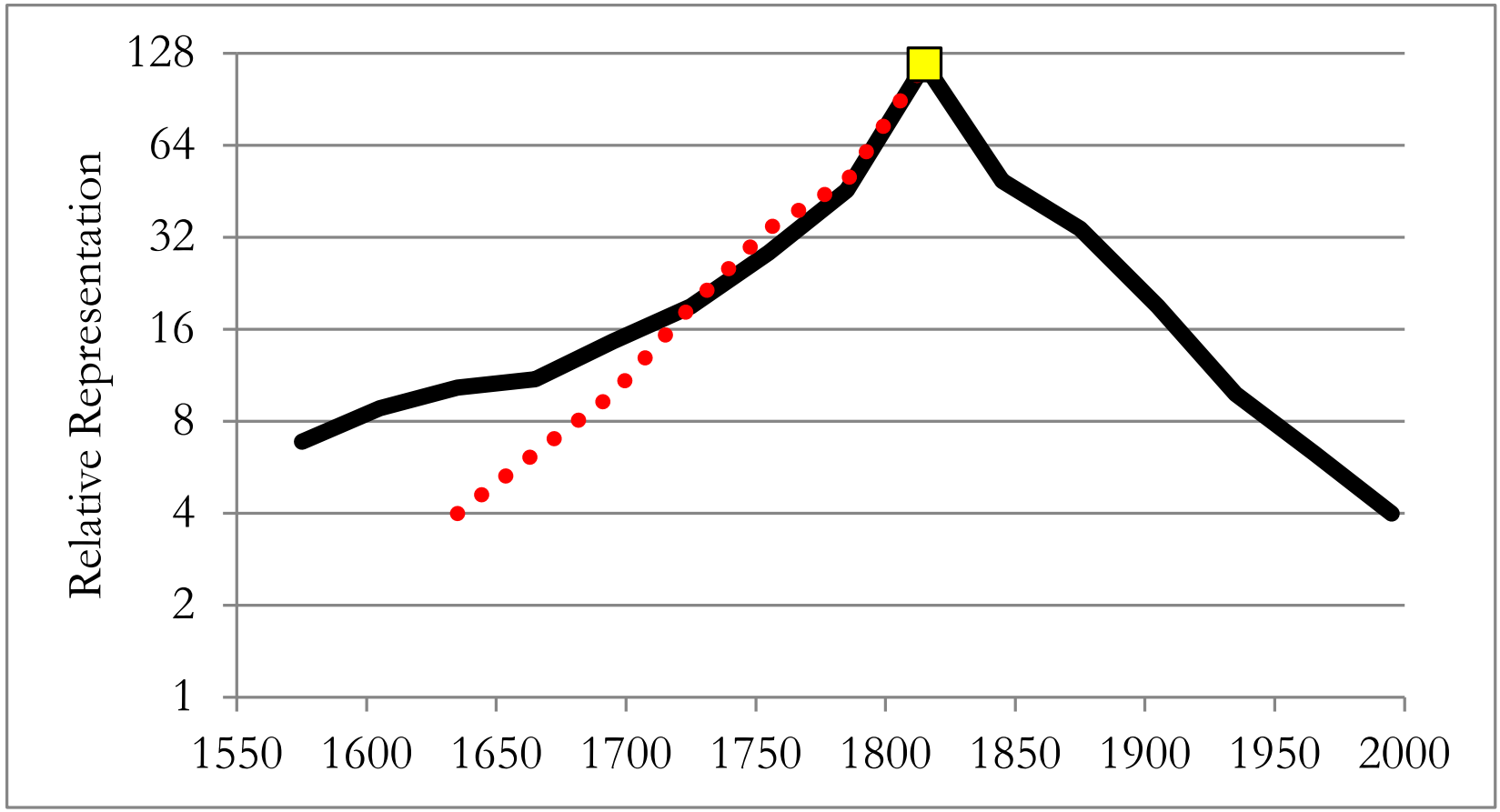
$$y_{t+1} = by_t + u_t$$

is the law of motion, then the rise of an elite should occur at the same rate as the decline. Surname information should dissipate at the same rate backwards and forwards

1800-29 Oxbridge Rare Surname Elite – Relative Representation



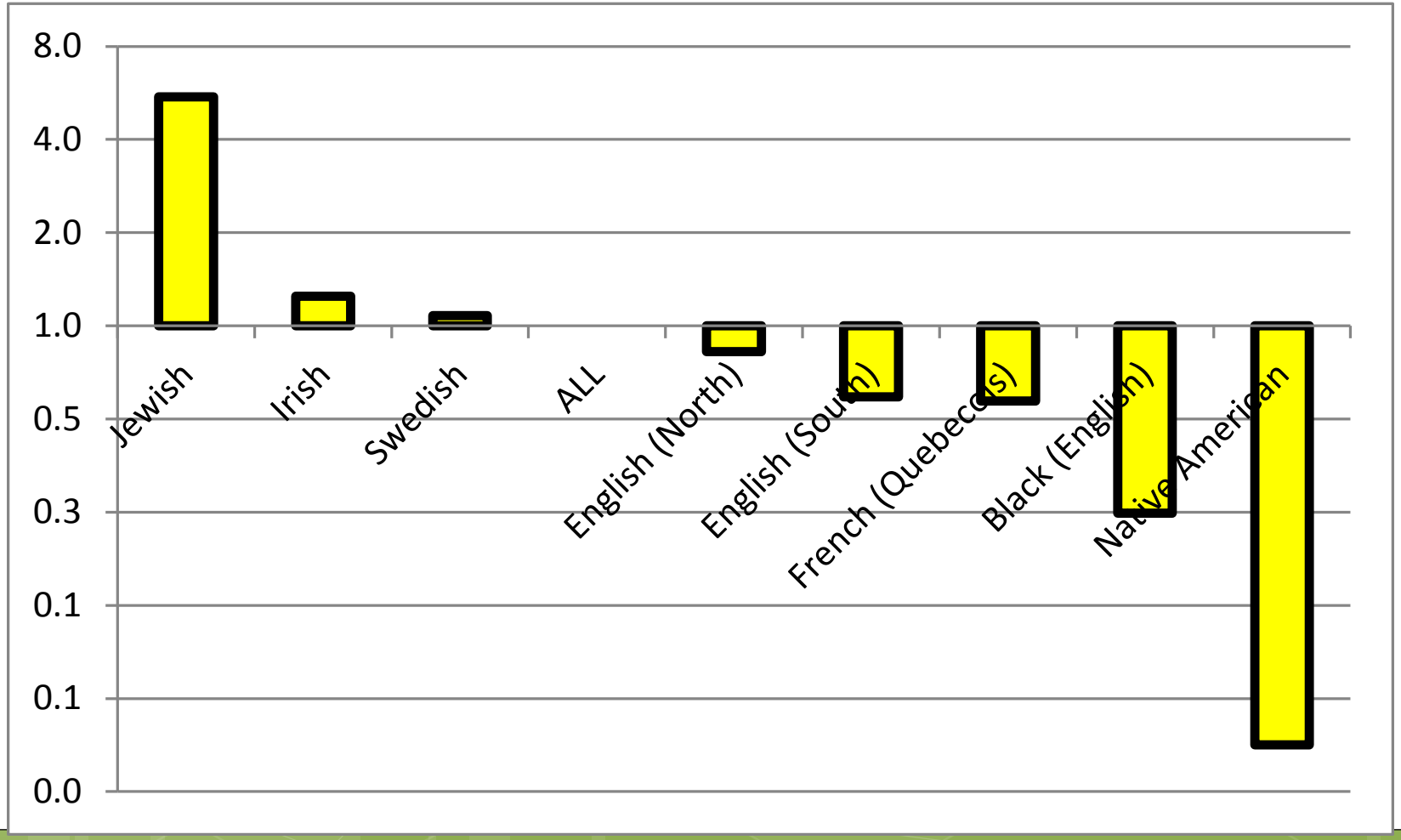
1800-29 Oxbridge Rare Surname Elite – Relative Representation



Surname Types, US

- Jewish – Cohen, Katz, Levin..
- Black (English/French) – Washington, Smalls, Merriweather, Stepney
- French (Quebecois) – Hebert, Cote, Gagnon
- Rare – Ivy League 1650-1850

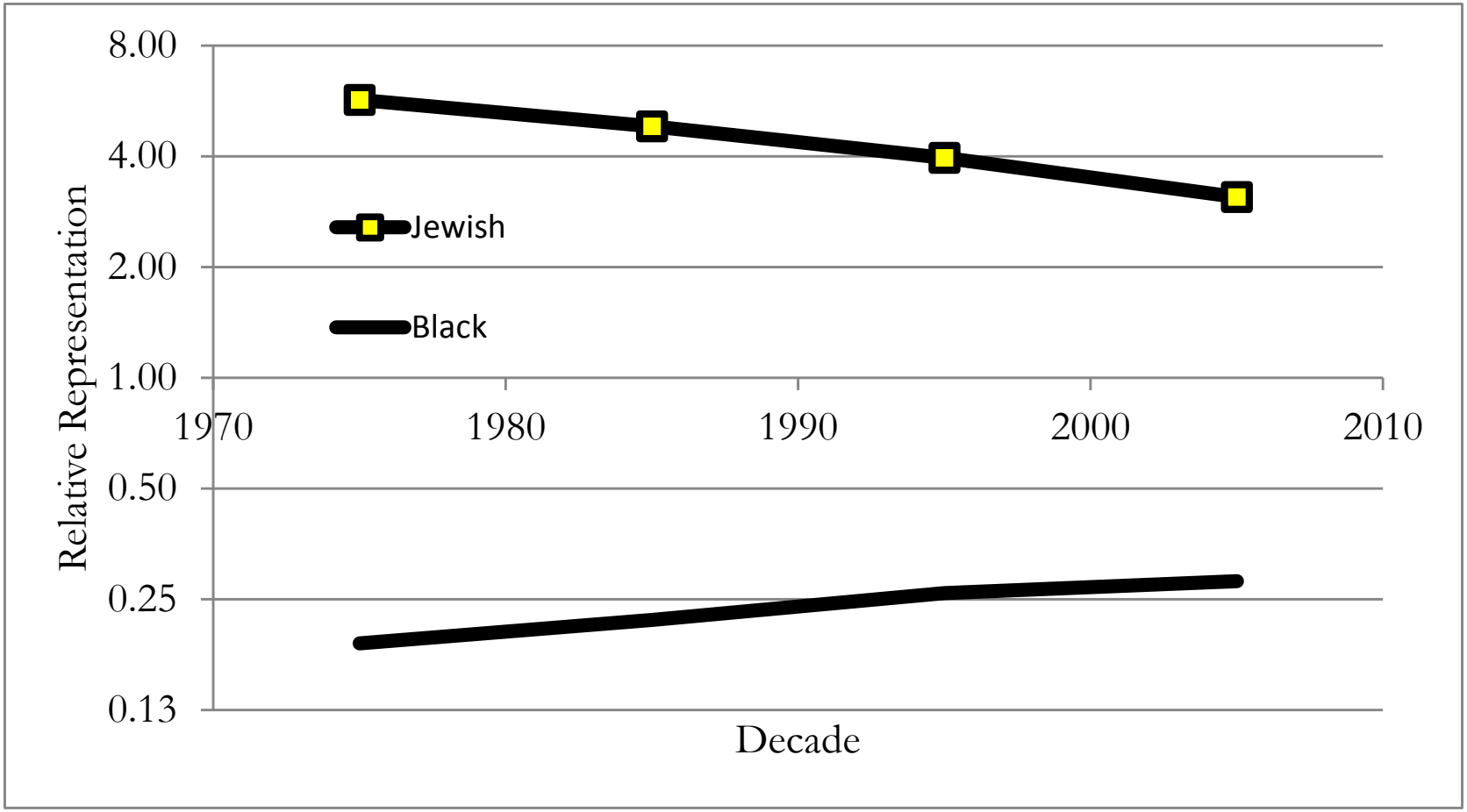
Relative Representation of Surnames among Physicians, USA, 2009 (900,000 doctors)



Implied b's, US, by period of qualification

	Jewish	Implied b	Black	Implied b
1920-49	4.53		0.13	
1950-79	5.30	-	0.13	1.00
1980-2010	4.08	.82	0.25	0.70

US, Decades 1970-2009



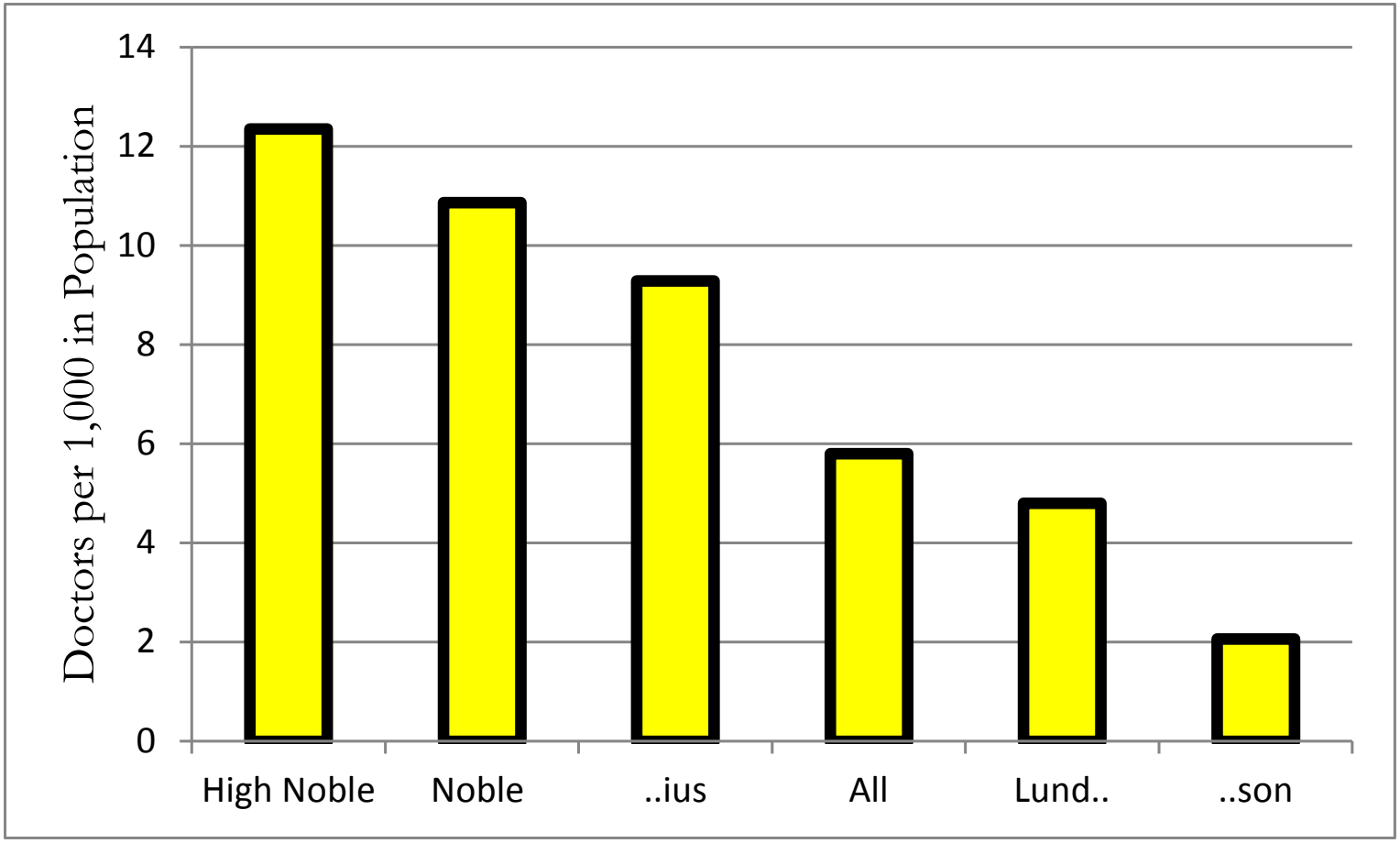
Social Mobility, US, 1970-2009

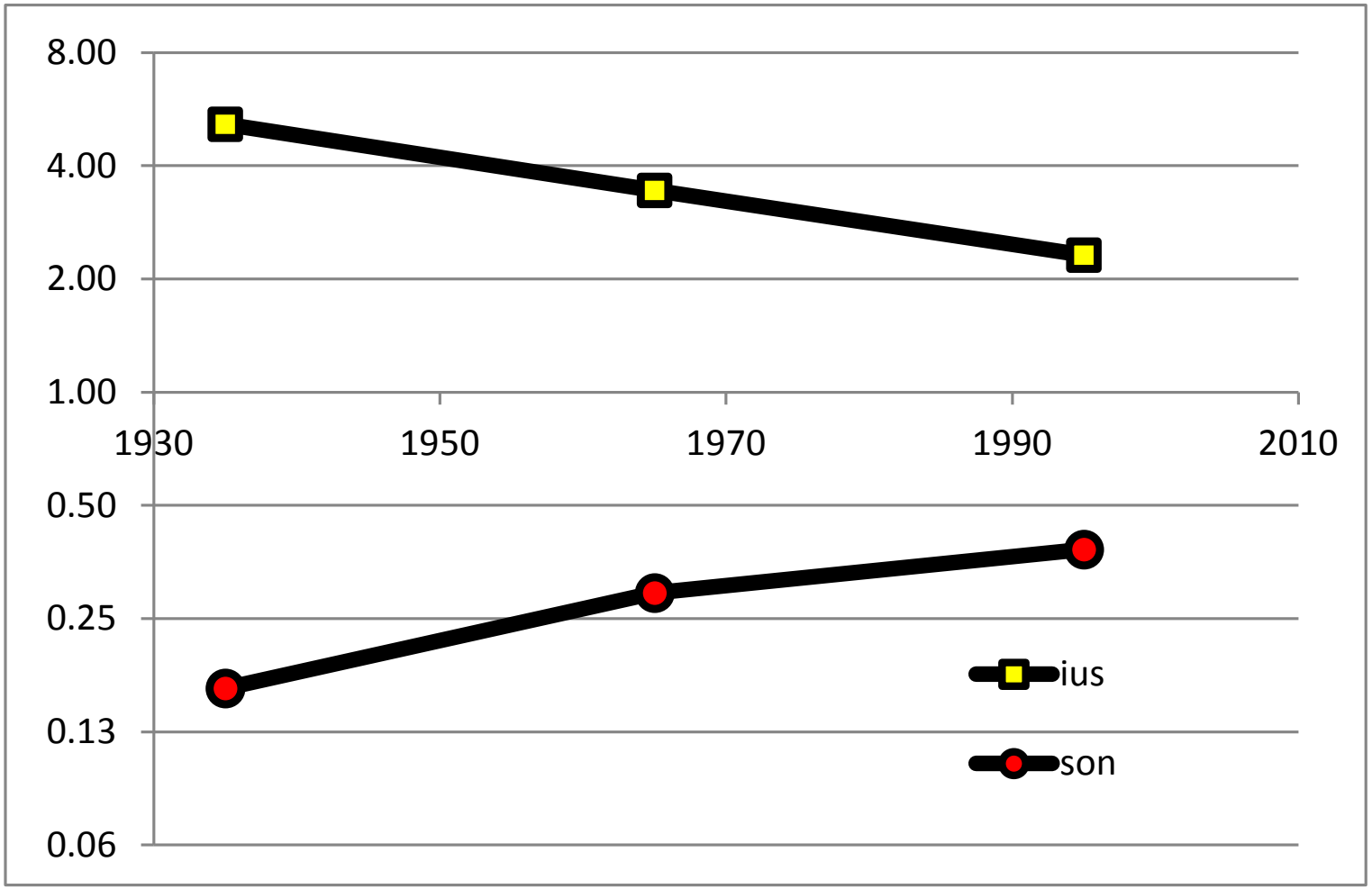
Decade	Jewish	Black
1970-9	5.72	0.19
1980-9	4.96	0.22
1990-9	3.59	0.26
2000-9	3.30	0.28
Ave. b	0.61	0.78

Sweden – true social mobility?

- Three groups of names
- Ordinary – patronyms, ending in “son”
- University Graduates 1600-1850 – Latinized, ending in “ius”
- Aristocrats, created 1600-1750 – High, Lower

Frequency of Physicians by Surname Type, Sweden, 2011



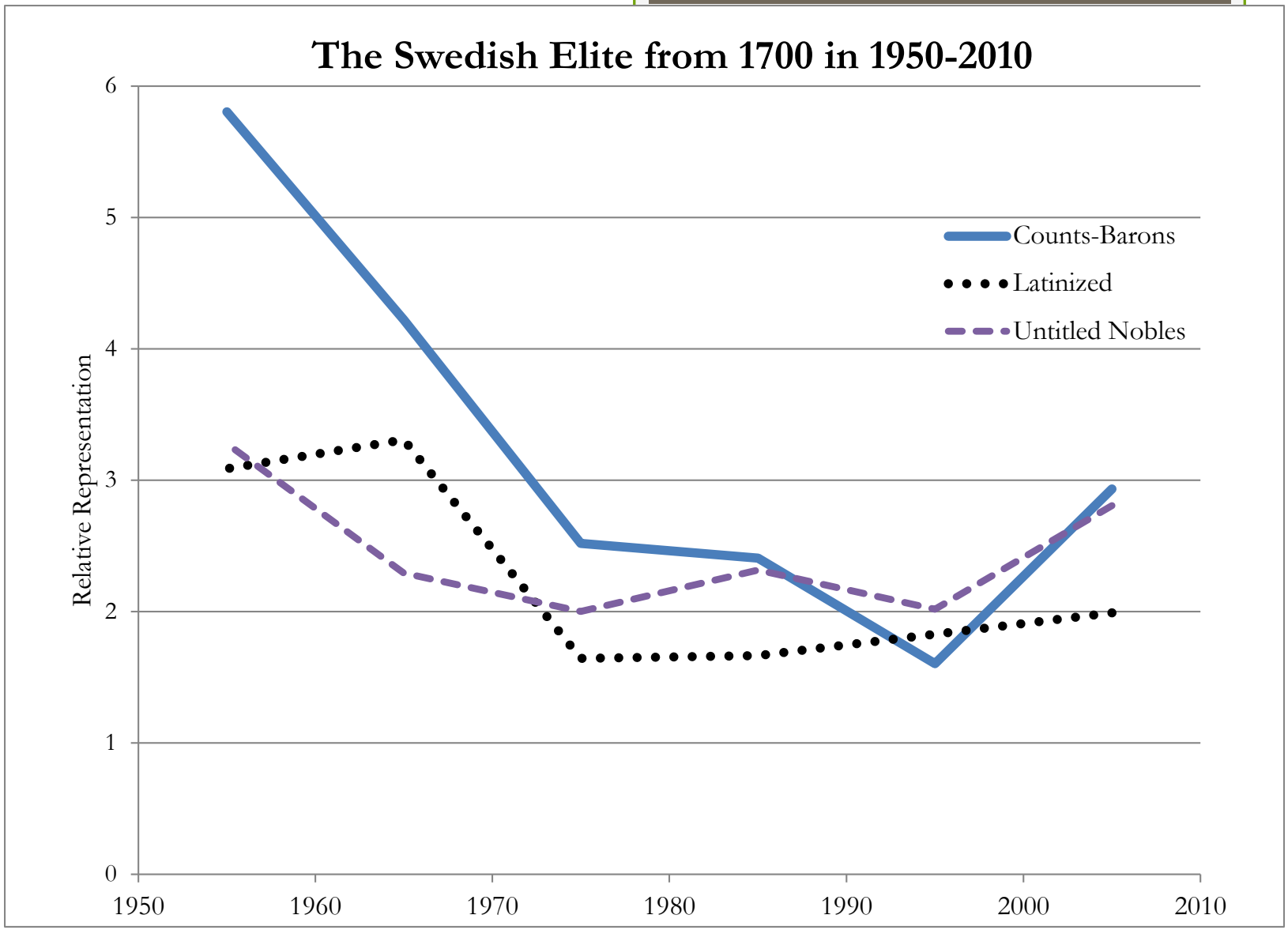

8.00
4.00
2.00
1.00
1930
1950
1970
1990
2010
0.50
0.25
0.13
0.06
ius
son

Implied b's, Sweden

	..ius/lund..	Implied b	..son/lund..	Implied b
1920-49	5.17		0.16	
1950-79	3.44	.72	0.29	0.70
1980-2009	2.31	.65	0.38	0.79

Sweden, Mobility 1970-2009

	..ius/Lund..	..son/Lund..	Arist/Lund..
1970-9	1.92	0.28	2.95
1980-9	2.33	0.34	2.34
1990-9	2.15	0.34	1.57
2000-9	2.84	0.43	2.92
Ave b	>1	0.71	0.88


The Swedish Elite from 1700 in 1950-2010
Relative Representation
6
5
4
3
2
1
0
1950
1960
1970
1980
1990
2000
2010
Counts-Barons
Latinized
Untitled Nobles

Extreme Immobility – India?

- Bengal, 1770-2011
  - Doctors, 1860-2009
  - Attorneys, 1840-2011
  - University Students 1960-2000
- Two Regimes
  - British 1770-1947, laissez-faire
  - Independence 1947-2011 – affirmative action for lower castes

Elite Brahmin Surnames

- Banerjee
- Mukherjee
- Chatterjee
- Ganguly
- Goswami

Kulin Brahmins – Share of Doctors

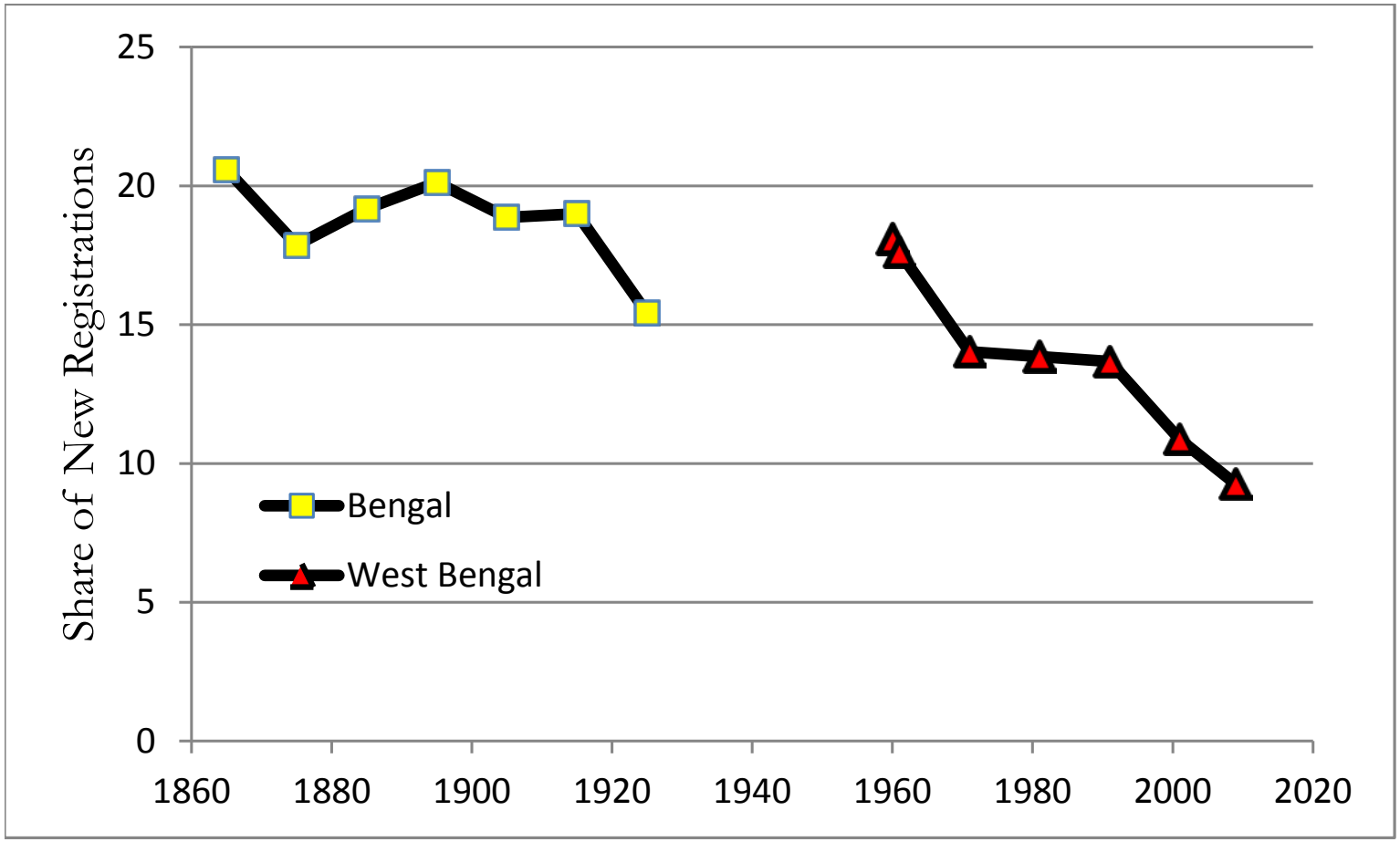
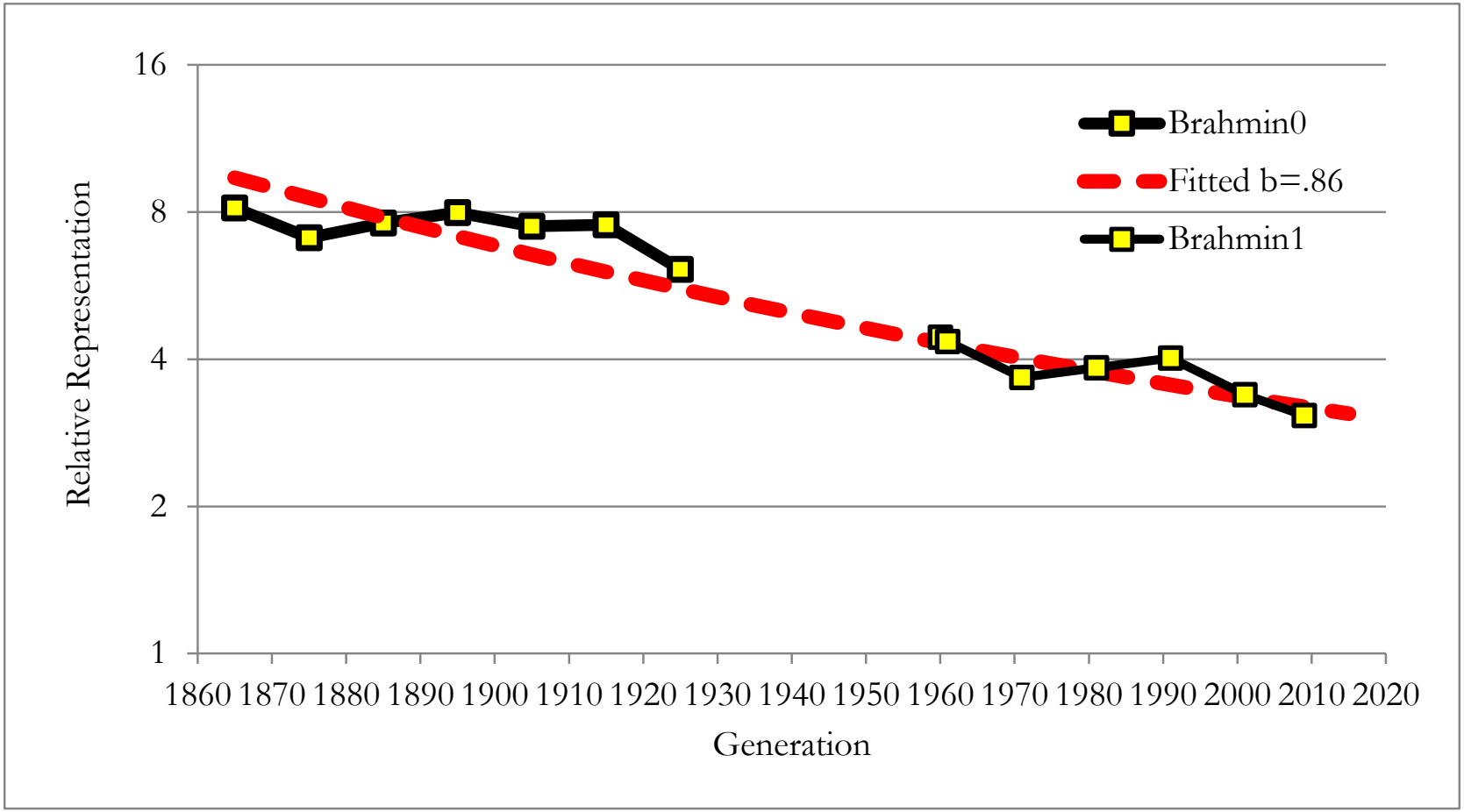


Figure 21: β estimated for Bengal Brahmins, 1860-2009



China

- Imperial Era, 1670-1912
- Republican Era, 1912-49
- Communist Era, 1949-2012

Figure 23: Implied β for the 1670-99 surname elite

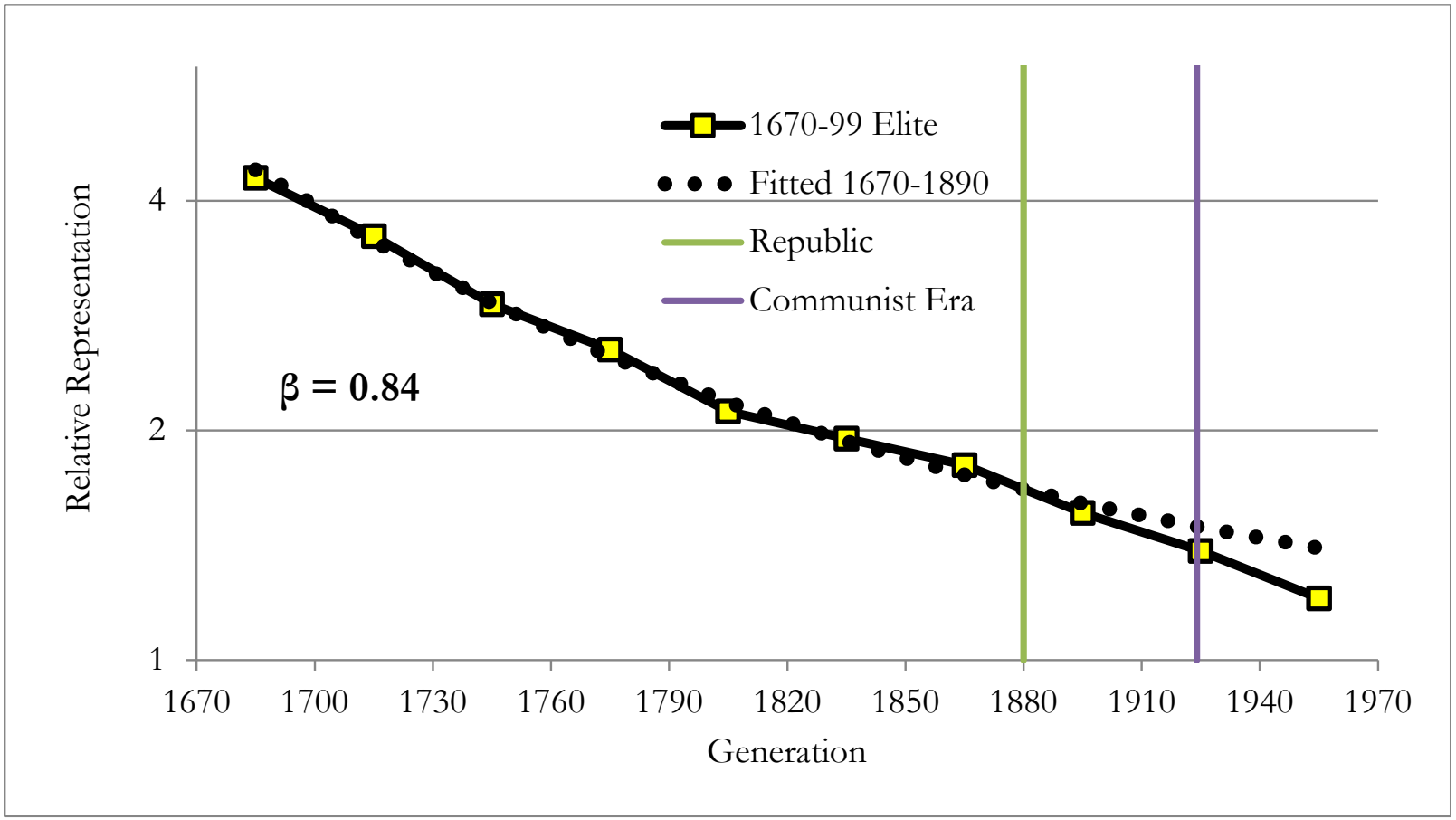


Figure 26: Implied β for the 1670-1699 surname elite, 1850-1969

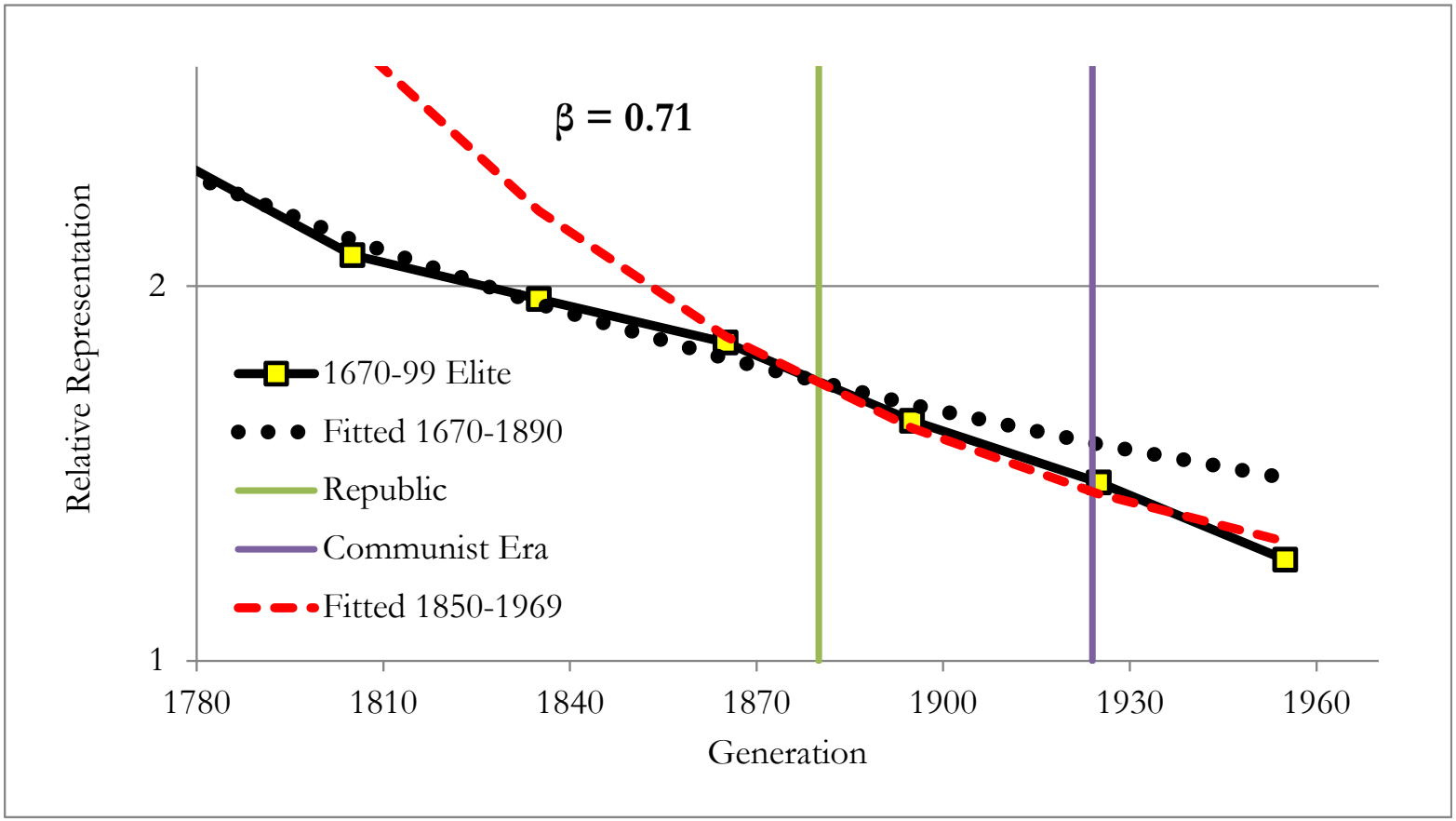
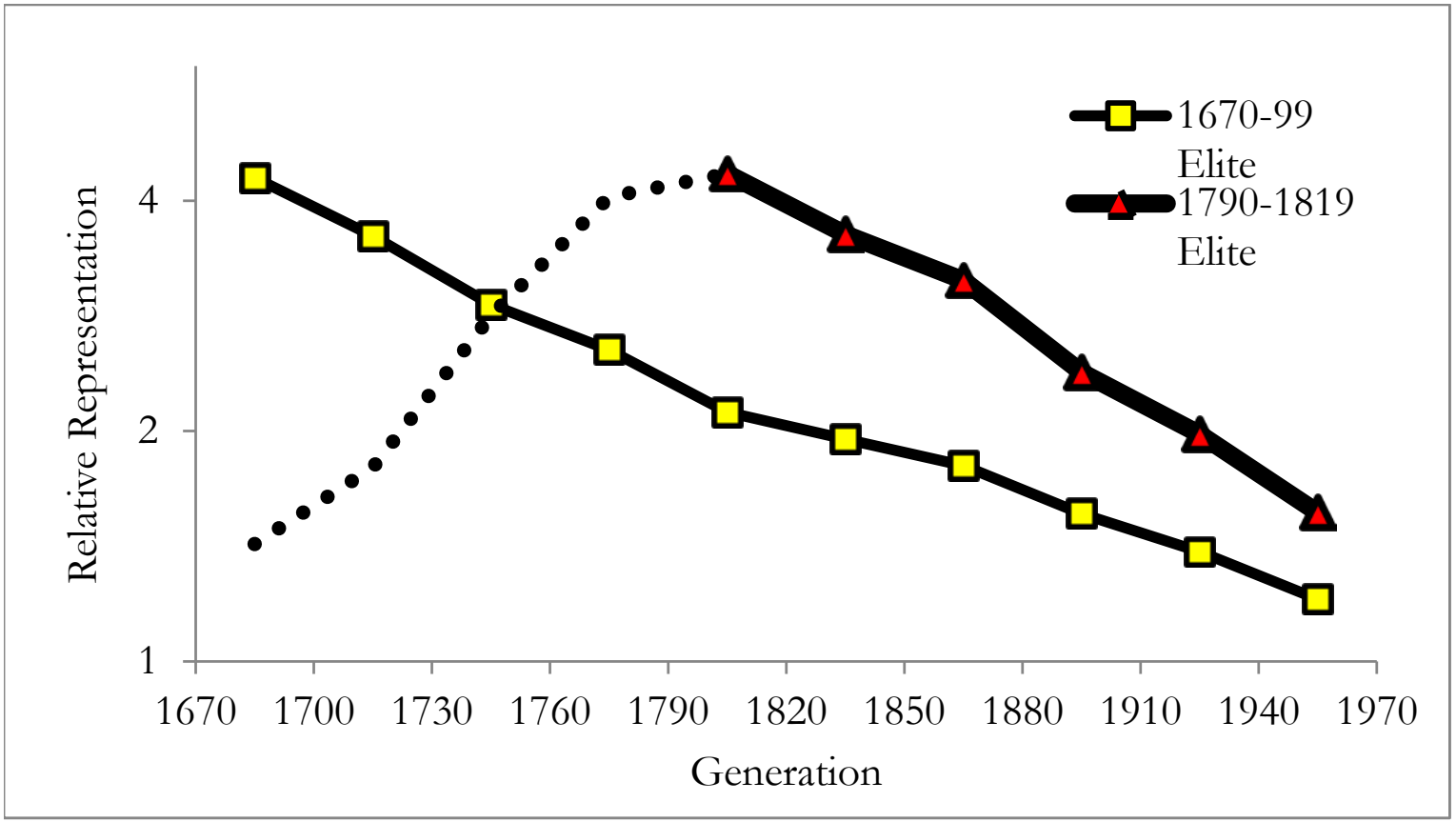


Figure 27: The Pre-History of the 1790-1819 Elite



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Japan	1940-2011	-	0.84	0.82
Chile	1920-1990	-	?	0.74
China	1905-2011	-	0.71	?
China	1700-1905	-	0.85	-

Examples of Persistent Elites/Underclass – how can we explain this anomaly?

- **Persistent Underclass** – English/Irish Gypsies and Travellers (300,000 now in England)

- **Persistent elites** – Brahmin castes in India (pre 1949), Jews, Irish Protestants, Egyptian Copts

Ireland –
Protestant British surnames from the 1600s
% Catholic by 1911 (Kennedy et al.)

	ANDERSON	**BELL**	**ROBINSON**
	% Catholic	*% Catholic*	*% Catholic*
Leinster	74	46	60
Munster	58	51	46
Connacht	53	51	43
Ulster	8	6	10

The Bells, County Dublin in 1911: occupations by religion

	Catholic %	Church of Ireland %
Land owner,	0.4	**0.6**
Merchant,	2.1	**8.4**
Solicitor,		
Civil Servant,		
Teacher,		
Clerk		
Labourer	**9.9**	1.7
Servant	**7.1**	5.1

English Gypsies and Travellers

- Population 2007 estimated at 300,000
- Dramatically poorer than general population
- Travellers versus matched group of whites (60%), Pakistani (20%) and Black Caribbean (20%)

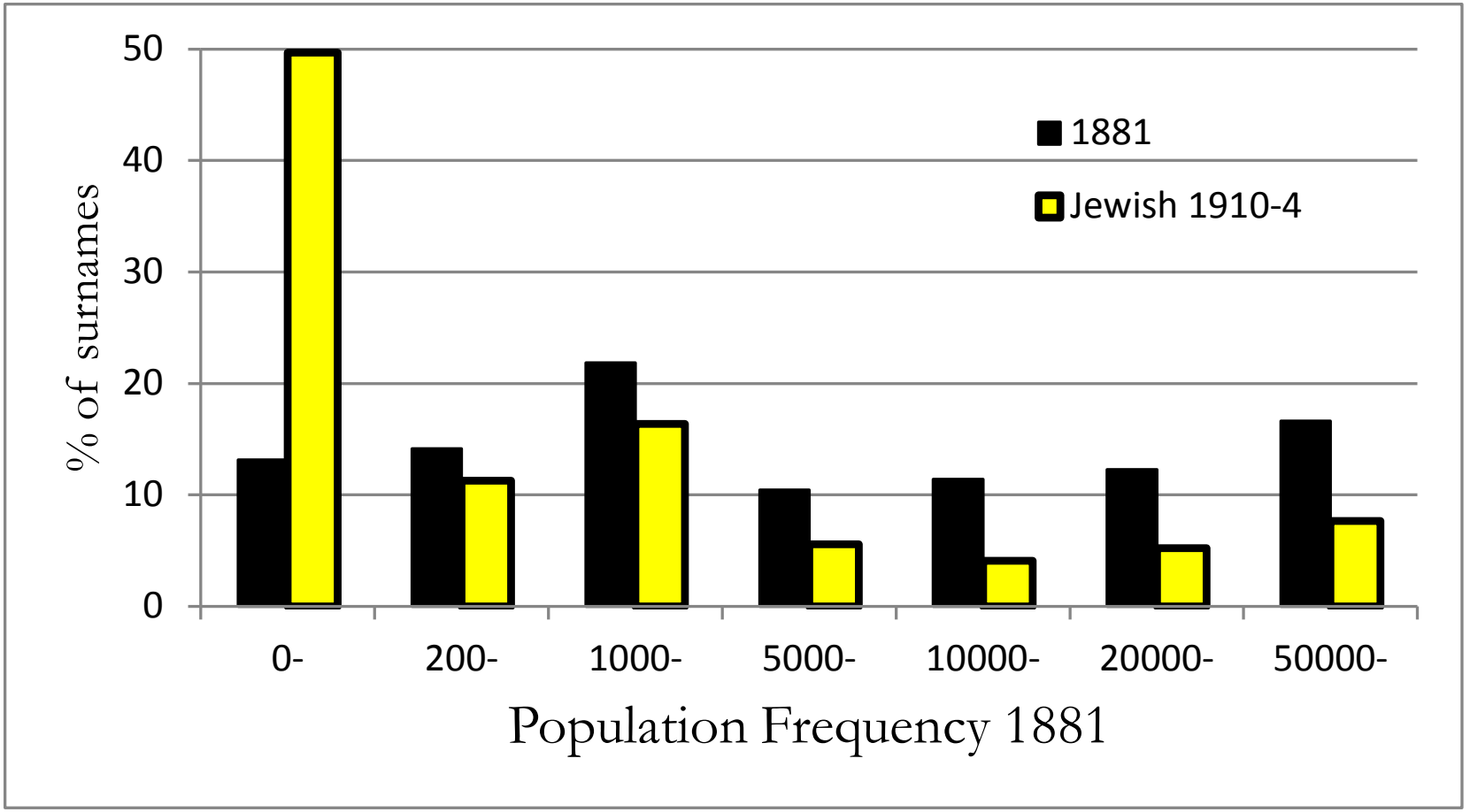
Adult Travellers versus Comparison Working Class Group, 2007

Status	Travellers	Comparison Poor Group
Ave Age	38.1	38.4
Ever attended school (%)	66	88
Ave Age of Completing Education	12.6	16.4
Smoker (current) (%)	58	22
Ave Children (women)	4.3	1.8
Reports Anxiety/Depression (%)	28	16
Chronic Cough	49	17

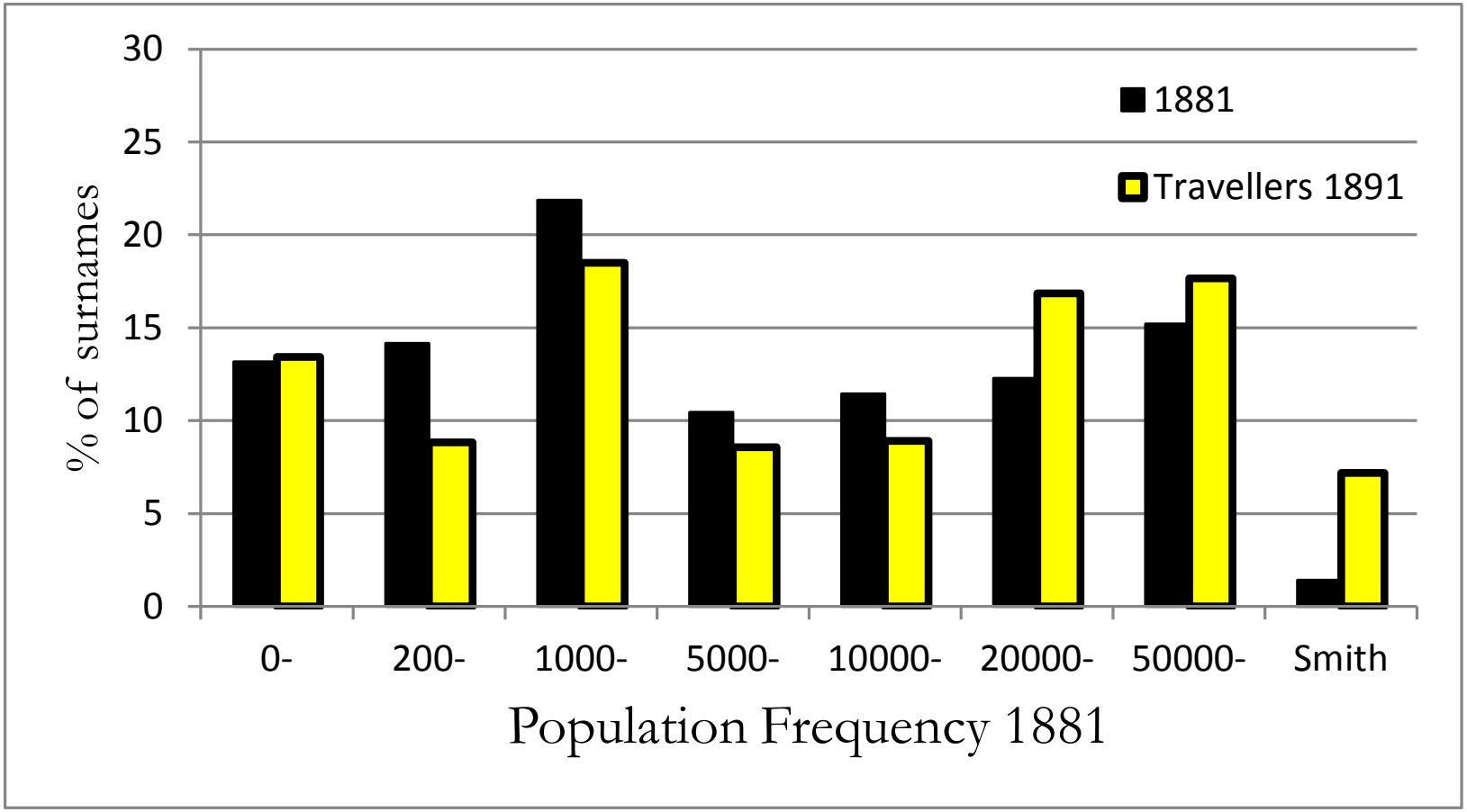
Hypothesis

- English travellers seem to violate the law of return only because they selectively lose economically successful members, and recruit impoverished members of the general population.
- Evidence – surname distribution looks similar to that of the English as a whole
- Test – travellers with rare surnames in 1891. What happens to the status of those surnames over time?

Jewish Surname Types, England 1910-4



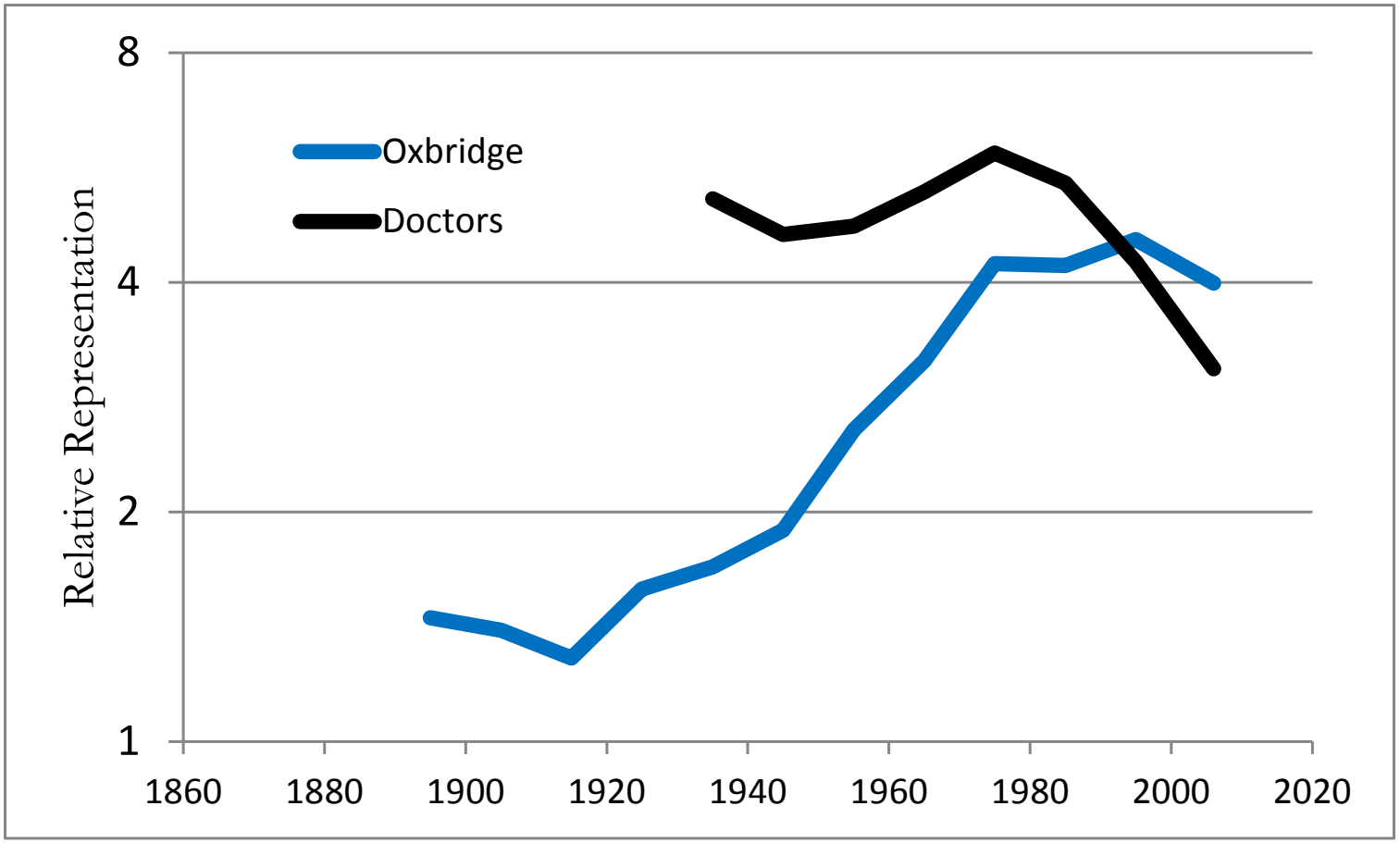
Traveller Surname Types, 1891



Dale Farm, Oct 19, 2011

"Young travellers look on as bailiffs enter to evict residents"

Jewish Exceptionalism? RR of Jewish Origin Surnames, England



English Jewish Intermarriage Rates from Surnames

Period	Intermarriage Rate
1916-36	0.93
1965-85	0.26
1985-2005	0.21

Conclusions

- True mobility rates always much lower than the income mobility figures quoted in recent debates
- The majority of social position can be explained from inheritance
- Rates surprisingly invariant to changes in social regimes
- One equation seems to describe most mobility, but with some remaining anomalies