The people v the experts: Views on economic affairs
Appendix on Estimation and Sampling

William Nordhaus and Douglas Rivers
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Appendix A. List of YouGov and Booth questions

YouGov variable name	YouGov question	Booth original question
AI	The increased use of robots and artificial intelligence will probably increase unemployment substantially over the next twenty years or so.	Holding labor market institutions and job training fixed, rising use of robots and artificial intelligence is likely to increase substantially the number of workers in advanced countries who are
CLIMATEPRIORITYDEFENSE	The U.S. federal government should spend at least as much on slowing climate change as it does on national defense.	
FREETRADE	Free international trade increases productivity and offers consumers better choices, and in the long run these gains far outweigh negative effects on domestic employment.	Freer trade improves productive efficiency and offers consumers better choices, and in the long run these gains are much larger than any effects on employment.
INCOME	Differences in individual incomes primarily reflect differences in personal skills and work efforts.	One of the leading reasons for rising U.S. income inequality over the past three decades is that technological change has affected workers with some skill sets differently than others.
INVEST	Investing in a single company is riskier than investing in a stock mutual fund.	In general, absent any inside information, an equity investor can expect to do better by choosing a well-diversified, low-cost index fund than by picking a few stocks.
LOTTERY	Lotteries such as Powerball are beneficial to society because they provide revenues to states.	Taking into account the revenues, consumer surplus, purchasing patterns by income, and possible consumer biases, state-run lotteries (such as Powerball and scratch-off games) increase social
MONEY	Society puts too much emphasis on money and wealth today.	
OIL	Large changes, up or down, in oil prices are driven primarily by speculators, not by changes in production costs or consumer demand for oil.	Large movements in monthly oil prices, either up or down, are driven primarily by speculators, as opposed to changes in the current (and planned) supply or demand for oil.
PROFITS	It is best for society if companies' only goal is the profitability of their operations.	It is best for society if the management of U.S. publicly traded corporations only considers the impact of their decisions on customers, employees, and community members to the extent that these
WAGE	A major increase in the minimum wage will decreas	A federal minimum wage of $15 per hour would lower employment for low-wage workers in many states.
CLIMATETAX	Sound policy would significantly increase the currently near-zero price of emissions of carbon dioxide and other greenhouse gases.	Sound policy would involve increasing significantly the currently near-zero price of emissions of carbon dioxide and other greenhouse gases.
SODA	A large tax should be put on soft drinks with added sugar because the higher prices will reduce obesity.	Taxes or bans on large bottles of soft drinks containing sugar are not likely to have a significant effect on obesity rates because people will substitute towards consuming excessive calories in
ATHLETES	If athletes in top college basketball and football programs were paid their dollar value to their colleges, they would earn much more than their scholarships.	If the NCAA let colleges pay athletes with more than scholarships (which currently may cover tuition, books, room and board), then top colleges in men's basketball and football would pay most

Appendix B. Variables for regression analysis of two SCORE variables

The following are the two important "SCORE" variables in the study. The definitions of the variables are shown on the next page.

Dependent variables

TOTALSCOREWT = weight*(BONDPRICES + INVEST + FISCALMONETARY + INEQUALITY + TOPTAXRATES + AI + ATHLETES + FREETRADE + INCOME + WAGE + OIL + ANTIBIOTICS + BIGBANG + CONTINENTS+ EVOLUTION)/15

ECONSCOREWT =weight*(BONDPRICES + INVEST + FISCALMONETARY + INEQUALITY + TOPTAXRATES + ATHLETES + FREETRADE + OIL)/8

Variables in "*TOTALSCOREWT*":

AI: The increased use of robots and artificial intelligence will probably increase unemployment substantially over the twenty years or so.

Antibiotics: Antibiotics only kill bacteria, not viruses.

Athletes: If athletes in top college basketball and football programs were paid their dollar value to their colleges, they would earn much more than their scholarships.

Bigbang: The universe began with a huge explosion billions of years ago.

Bondprices: What happens to the price of a bond when interest rates rise?

Continents: Continents have been moving their location for millions of years and will continue to move.

Evolution: Human beings developed over millions of years from less advanced forms of life.

Fiscal/Monetary: Would a change in federal spending or tax rates be considered a part of fiscal policy or of monetary policy?

Free trade: Free international trade increases productivity and offers consumers better choices, and in the long run these gains far outweigh negative effects on domestic employment.

Income: Differences in individual incomes primarily reflect differences in personal skills and work efforts.

Inequality: Has economic inequality (differences in income and wealth between rich and poor people) increased or decreased over the past 50 years?

Invest: Investing in a single company is riskier than investing in a stock mutual fund

Oil: Large movements in monthly oil prices, either up or down, are driven primarily by speculators, as opposed to changes in the current (and planned) supply or demand for oil.

Toptaxrates: What is the top federal income tax rate?

Wage: A major increase in the minimum wage will decrease employment.

Weight: The survey weights on individuals in the YouGov panel after raking (see text).

Appendix C. Definitions of Independent Variables and Results for TOTALSCORE

1. Variable List

Variable name	Survey question (sometimes shortened
ABORTLEGAL	When do you think abortion should be legal? (4 ctegories)
ACCOUNTSVALUE	Total value of your investments and retirement accounts?
AGE	Age (years)
AGE4	Age (categorical)
ANY_SHOTS	Any shots?
BIRTHORDER	Birth order
BORNCITIZEN	Born US citizen
CHILD18	Children under 18
CITIZENPARENTS	Parents citizens
COLLEGEMAJOR	College major (categorical)
COLLEGESCIENCE	College scence
EARNINGS	Earnings (categorical)
ECONOMICS_SPECIALTY	Specialize in economics
EDUC	Education (categorical)
EXPERTISE_BUSINESS	Confidence in Elected officials
EXPERTISE_DOCTORS	Confidence in journalists Journalists
EXPERTISE_ECONOMISTS	Confidence in military The military
EXPERTISE_ELECTED	Confidence in scientists Scientists
EXPERTISE_JOURNALISTS	Confidence in police Police officers
EXPERTISE_MILITARY	Confidence in economists Economists
EXPERTISE_POLICE	Confidence in doctors Doctors
EXPERTISE_RELIGIOUS	Confidence in religious Religious leaders
EXPERTISE_SCIENTISTS	Confidence in business Business executives
FIELDS_ARTSLIT	Know more about ARTSLIT
FIELDS_ECONOMICS	Know more about ECONOMICS

Variable name	Survey question (sometimes shortened
FIELDS_POLITICS	Know more about POLITICS
FIELDS_SCIENCE	Know more about SCIENCE
FIELDS_SPORTS	Know more about SPORTS
FUNCTIONALROLE	Functional role within your company (categorical)
HISPANIC	Hispanic
HSCOURSE_1	High school courses (categorical)
IDEO3	Ideology (3 categories)
IDEO5	Ideology (5 categories)
INSTITUTIONS_CDC__1	Trust in CDC
INSTITUTIONS_CENSUS__1	Trust in Census
INSTITUTIONS_FED__1	Trust in Fed
INSTITUTIONS_IRS__1	Trust in IRS
INSTITUTIONS_UN__1	Trust in UN
INSTITUTIONS_UNIONS__1	Trust in unions
MARSTAT	Marital status
PEW_BORNAGAIN	Born-again or evangelical Christian, or not?
PEW_CHURATD	How often do you attend religious services?
PEW_PRAYER	How often do you pray?
PEW_RELIGIMP	How important is religion in your life?
PRESVOTE20	Vote for in the election for President in 2020?
RACE4	Race (4 categories)
SIBLINGS	Number of siblings
URBANCITY	Urban, suburban, rural
USCITIZEN	US citizen
VAXSTATUS	Vaccine status
VOTEREG	Registered voter?
WEIGHT	Weight

2. Final Regression for TOTALSCORE

Dependent Variable: TOTALSCORE
Method: Variable Selection
Sample: 1 2056
Included observations: 1953
Weighting series: WEIGHT
Weight type: Inverse standard deviation (EViews default scaling)
Number of always included regressors: 1
Number of search regressors: 30
Selection method: Combinatorial
Stopping criterion: Number of search regressors: 10
Note: final equation sample is larger than selection sample (rejected regressors contain missing values)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
C	0.018378	0.014539	1.264112	0.2063
N_COLLEGESCIENCE	0.059012	0.006654	8.868157	0.0000
N_PEW_CHURATD	-0.021086	0.007803	-2.702230	0.0069
N_NUMACCTS	0.071853	0.009306	7.721372	0.0000
N_PEW_BORNAGAIN	0.019442	0.005338	3.641962	0.0003
N_VOTEREG	0.025682	0.005262	4.881039	0.0000
N_RACE	0.032323	0.005447	5.934545	0.0000
N_GENDER	0.018383	0.004226	4.349487	0.0000
N_IDEO5	0.037492	0.008162	4.593328	0.0000
N_PEW_RELIGIMP	0.033480	0.006600	5.072576	0.0000
AGE	0.002309	0.000247	9.356192	0.0000

Weighted Statistics

R-squared	0.298860	Mean dependent var	0.107291
Adjusted R-squared	0.295250	S.D. dependent var	0.223280
S.E. of regression	0.190531	Akaike info criterion	-0.472392
Sum squared resid	70.49830	Schwarz criterion	-0.440979
Log likelihood	472.2903	Hannan-Quinn criter.	-0.460844
F-statistic	82.77767	Durbin-Watson stat	1.906863
Prob(F-statistic)	0.000000	Weighted mean dep.	0.094615

Unweighted Statistics

R-squared	0.317374	Mean dependent var	0.115042
Adjusted R-squared	0.313859	S.D. dependent var	0.222159
S.E. of regression	0.184023	Sum squared resid	65.76450
Durbin-Watson stat	1.902170		

Selection Summary

Number of selected regressors:	10
Number of combinations compared:	30045015

3. Statistics for Variables in TOTALSCORE for YouGov panel

	BOND PRICES	INVEST	FISCAL-MONETARY	INEQUALITY	TOP TAX RATES	AI	ATHLETES	FREE TRADE
Mean	-0.049	0.251	0.232	0.452	0.136	0.279	0.146	-0.038
Median	0.000	0.366	0.000	0.568	0.329	0.423	0.000	0.000
Std. Dev.	0.715	0.591	0.713	0.616	0.755	0.651	0.606	0.601
N	2032	2046	2030	2043	2056	2049	2049	2049
	INCOME	WAGE	OIL	ANTI-BIOTICS	BIG BANG	CONTINENTS	EVOLUTION	
Mean	-0.077	-0.005	0.083	0.286	0.037	0.416	0.112	
Median	0.000	0.000	0.000	0.438	0.000	0.512	0.000	
Std. Dev.	0.688	0.720	0.659	0.703	0.725	0.656	0.760	
N	2047	2042	2045	2042	2037	2037	2036	

4. Correlation matrix for YouGov panel (n = 1970)

	Total scorewt	Bond prices	Invest	Fiscal/ monetary	Inequ-ality	Top tax rates	AI	Athletes	Free trade
Totalscorewt	1.000	0.318	0.480	0.385	0.467	0.451	0.246	0.325	0.234
Bondprices	0.318	1.000	0.101	0.055	0.006	0.068	(0.021)	0.026	0.040
Invest	0.480	0.101	1.000	0.158	0.181	0.212	0.028	0.117	0.070
Fiscal/monetary	0.385	0.055	0.158	1.000	0.091	0.131	0.056	0.077	0.041
Inequality	0.467	0.006	0.181	0.091	1.000	0.175	0.140	0.159	0.070
Top tax rates	0.451	0.068	0.212	0.131	0.175	1.000	0.063	0.070	(0.005)
AI	0.246	(0.021)	0.028	0.056	0.140	0.063	1.000	0.066	(0.079)
Athletes	0.325	0.026	0.117	0.077	0.159	0.070	0.066	1.000	0.054
Free trade	0.234	0.040	0.070	0.041	0.070	(0.005)	(0.079)	0.054	1.000
Income	0.032	(0.043)	(0.046)	(0.075)	(0.128)	0.002	0.009	(0.125)	(0.076)
Wage	0.240	0.018	0.050	0.013	0.009	0.039	0.025	0.022	0.006
Oil	0.246	0.009	0.082	0.010	0.146	0.014	0.045	0.041	(0.025)
Antibiotics	0.455	0.099	0.238	0.143	0.174	0.248	0.044	0.053	0.013
Big bang	0.306	0.038	0.078	0.026	0.050	0.028	(0.108)	0.011	0.030
Continents	0.539	0.095	0.188	0.117	0.276	0.210	0.101	0.132	0.072
Evolution	0.405	0.074	0.111	0.089	0.151	(0.005)	(0.054)	0.088	0.104
	Total scorewt	Income	Wage	Oil	Anti-biotics	Big bang	Continents	Evolution	
Totalscorewt	1.000	0.032	0.240	0.246	0.455	0.306	0.539	0.405	
Bondprices	0.318	(0.043)	0.018	0.009	0.099	0.038	0.095	0.074	
Invest	0.480	(0.046)	0.050	0.082	0.238	0.078	0.188	0.111	
Fiscal/monetary	0.385	(0.075)	0.013	0.010	0.143	0.026	0.117	0.089	
Inequality	0.467	(0.128)	0.009	0.146	0.174	0.050	0.276	0.151	
Top tax rates	0.451	0.002	0.039	0.014	0.248	0.028	0.210	(0.005)	
AI	0.246	0.009	0.025	0.045	0.044	(0.108)	0.101	(0.054)	
Athletes	0.325	(0.125)	0.022	0.041	0.053	0.011	0.132	0.088	
Free trade	0.234	(0.076)	0.006	(0.025)	0.013	0.030	0.072	0.104	
Income	0.032	1.000	0.056	(0.129)	(0.106)	(0.027)	(0.069)	(0.119)	
Wage	0.240	0.056	1.000	(0.011)	(0.001)	(0.025)	0.043	(0.064)	
Oil	0.246	(0.129)	(0.011)	1.000	0.018	(0.039)	0.067	0.078	
Antibiotics	0.455	(0.106)	(0.001)	0.018	1.000	0.079	0.216	0.091	
Big bang	0.306	(0.027)	(0.025)	(0.039)	0.079	1.000	0.125	0.215	
Continents	0.539	(0.069)	0.043	0.067	0.216	0.125	1.000	0.224	
Evolution	0.405	(0.119)	(0.064)	0.078	0.091	0.215	0.224	1.000	

5. Tabular results for Figure 1.

	Experts		Public		Difference
Question	Mean	St dev	Mean	St dev	Experts - Public
Bond prices	1.00	na	(0.05)	0.72	1.05
Fiscal monetary	1.00	na	0.23	0.71	0.77
Diversify	0.99	0.09	0.25	0.59	0.73
Gas tax warming	0.94	na	(0.05)	0.76	0.99
Top tax rates	0.90	na	0.14	0.52	0.76
Athletes	0.85	0.32	0.15	0.61	0.71
Inequality trend	0.82	0.30	0.45	0.62	0.37
Climate tax	0.79	0.35	(0.04)	0.75	0.84
Oil vol	0.67	0.32	(0.08)	0.66	0.75
Free trade	0.62	0.38	(0.04)	0.60	0.66
AI	0.33	0.59	(0.28)	0.65	0.61
Profits priority	0.32	0.45	0.32	0.65	0.01
Lottery	0.27	0.48	0.00	0.67	0.26
Min wage	0.24	0.49	(0.00)	0.69	0.24
Money priority	0.21	0.52	0.36	0.72	(0.16)
Sources inequality	0.15	0.62	(0.08)	0.62	0.22
Soda tax	0.10	0.65	(0.25)	0.72	0.36
Climate-defense	0.06	0.65	(0.06)	0.77	0.12

Appendix D. Alternative estimators for TOTALSCORE

The estimates of the determinants of variables are sensitive to the estimators used. We have looked at four different approaches to selecting regressors for *"TOTALSCOREWT."* The technique in the paper was to select the most significant regressors for a limit of either 5 or 10 using a combinatorial estimator and weighted regression (VARSEL). In this appendix, we compare the results of VARSEL with OLS, LASSO, and Ridge regression. These were calculated with unweighted regression because of the limitations of the software.

Table D-1 shows the rank order of the variables for the four techniques, ranked by the size of the (normalized) coefficient for the Ridge regression. There is reasonably good agreement on the top 5 variables. Of the 4 x 5 ranks, 18/20 are in the top five for these five variables. OLS and VARSEL are the two which include lower-ranked variables, but they are not disastrously lower. However, the next five do very poorly for OLS and VARSEL.

Table D-2 shows the ratio of the coefficients for each variable and estimator, where the ratio is relative to the coefficient for the Ridge regression. Figure D-1 shows this in a bar chart for the top 10 variables. We see that OLS tends to overestimate the coefficients, while VARSEL tends to underestimate them. Since Ridge and LASSO are shrinkage techniques, the results are not surprising. Not shown are standard errors of coefficients, where there is no difference on average between OLS and VARSEL, but they tend to be different.

	Rank OLS	Rank LASSO	Rank Ridge	Rank VARSEL
Age	1	2	1	2
Allaccts	2	1	2	5
Collegescience	3	3	3	3
Born again	5	5	4	6
Relig imp	9	4	5	4
Race	6	7	6	
Prayer	15	8	7	
Child < 18	11	12	8	
Educ	23	13	9	
Vote reg	8	10	10	10
Gender	7	9	11	7
Abort legal	18	14	12	
Ideology	4	6	13	8
Coll major	32	15	15	
Accounts value	13	17	16	
Vax status	30	18	19	
Trust census	14	18	20	
Earnings	24	18	21	
Any shots	31	18	22	
Party ID	22	18	23	
Mar stat	25	18	25	
Trust Fed	17	18	26	
Citizen parents	27	18	27	
Born citizen	29	18	29	
Urban city	21	18	30	
US citizen	28	18	32	
Birth order	26	18	31	
Pres vote 2020	20	18	28	
Trust CDC	19	18	24	
Trust UN	16	16	18	
Number invest	12	18	17	1
Trust IRS	10	11	14	9

Table D-1. Rank of regressors by coefficient or significance

	Ratio coef OLS	Ratio coef LASSO	Ratio coef Ridge	Ratio coef VARSEL
Age	1.75	1.31	1.00	0.13
Allaccts	3.38	2.44	1.00	0.30
College science	1.77	1.35	1.00	0.41
Born again	1.42	0.94	1.00	0.39
Relig imp	1.55	1.11	1.00	1.26
Race	1.34	0.62	1.00	
Prayer	1.17	0.57	1.00	
Child < 18	1.27	0.30	1.00	
Educ	0.59	0.14	1.00	
Vote reg	1.66	0.36	1.00	0.59
Gender	1.54	0.40	1.00	0.46
Abort legal	0.99	0.10	1.00	
Ideology	2.64	1.08	1.00	0.98
Coll major	0.04	0.01	1.00	
Accounts value	1.87	0.00	1.00	
Vax status	(0.47)		1.00	
Trust census	3.87		1.00	
Earnings	(0.96)		1.00	
Any shots	0.57		1.00	
Party ID	2.19		1.00	
Mar stat	1.04		1.00	
Trust Fed	5.60		1.00	
Citizen parents	1.44		1.00	
Born citizen	(2.40)		1.00	
Urban city	8.32		1.00	
US citizen	(10.79)		1.00	
Birth order	(9.69)		1.00	
Pres vote 2020	(8.28)		1.00	
Trust CDC	(4.63)		1.00	
Trust UN	(2.43)	0.00	1.00	
Number invest	3.72		1.00	0.24
Trust IRS	(2.24)	0.38	1.00	0.91

Table D-2. Ratio of coefficients by variable and estimator

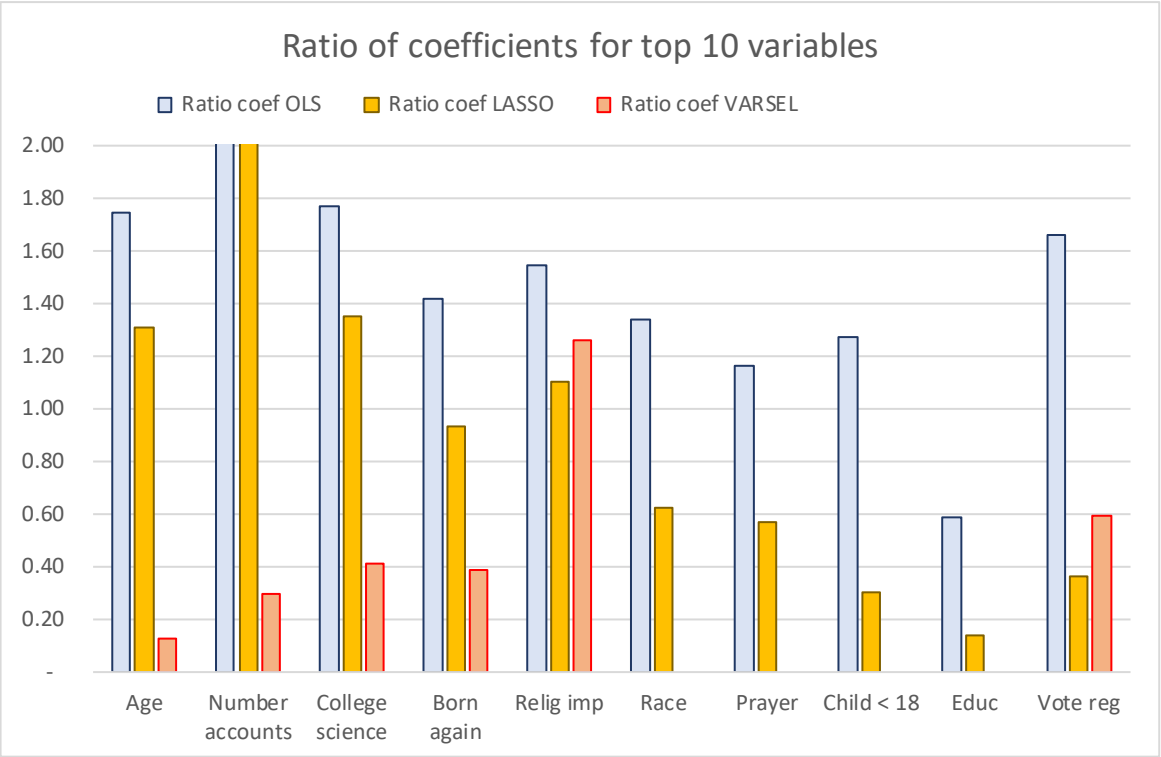

Figure D-1. Ratio of coefficients for different estimators

The bars show the ratios of the coefficients for the estimator to the value of the coefficient for the Ridge regression. The values for Allaccts is truncated to make the other readable. For those values, see Table D-2.

Source: alt-estimates-totalscore.xlsx

Appendix E. Instrumental variable estimates

We tested whether our estimates of the determinants of "*TOTALSCORE*" were sensitive to the endogeneity of the independent variables. As an example, if "Trust in CDC" is determined in part by age and religion, then age and religion might be biased. To test for endogeneity bias, we applied instrumental variable estimators by eliminating progressively more endogenous variables.

For these tests, we looked at the top five determinants of *TOTALSCORE* to simplify the exposition. We examined three alternative instrumental variable estimators for the determinants of *TOTALSCORE*. "Some endogenous" excluded the most obviously endogenous variables, such as the trust variables and voting behavior. "Deep exogenous" included only demographic variables, these being race, gender, age, urban/rural, education, birth order, US citizenship, born as citizen, and citizenship of parents. The "predetermined variables" kept deep exogenous variables plus those that were predetermined, such as educational variables and some economic variables.

Figure E-1 shows the coefficients in different specifications. The coefficients on the religious variables and college science were highly unstable, while age and accounts were reasonable stable. These results suggest that the religion variables were determined by unobserved variables.

Figure E-2 shows standard errors of the coefficients for the variables. (These have been scaled to fit with the age coefficient multiplied by 100 and the religious significance divided by 4.) As would be expected, the OLS standard errors on the variables are biased downward and increase as more variables are excluded. In part, this is because the exogenous variables are unable to explain the endogenous variables with precision. For example, in the deep exogenous specification, the exogenous variables can explain only 4% of the variance of the religious variables, and the t-statistics dropped sharply.

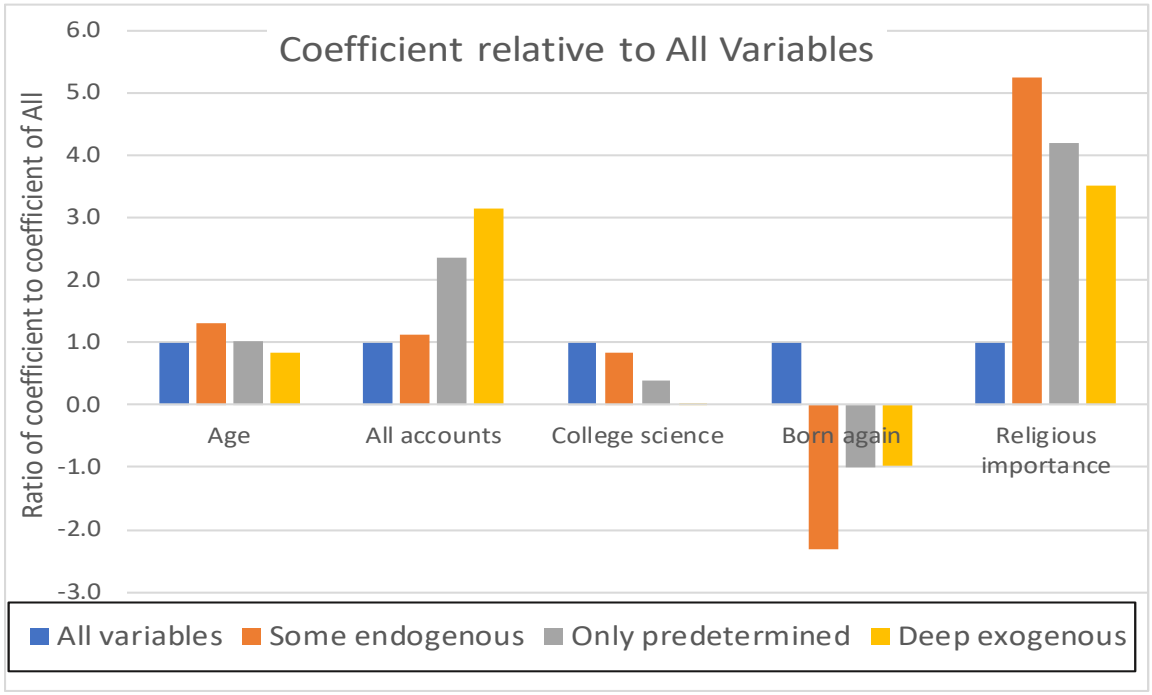

Figure E-1. Coefficients of TOTALSCORE with alternative IV specifications

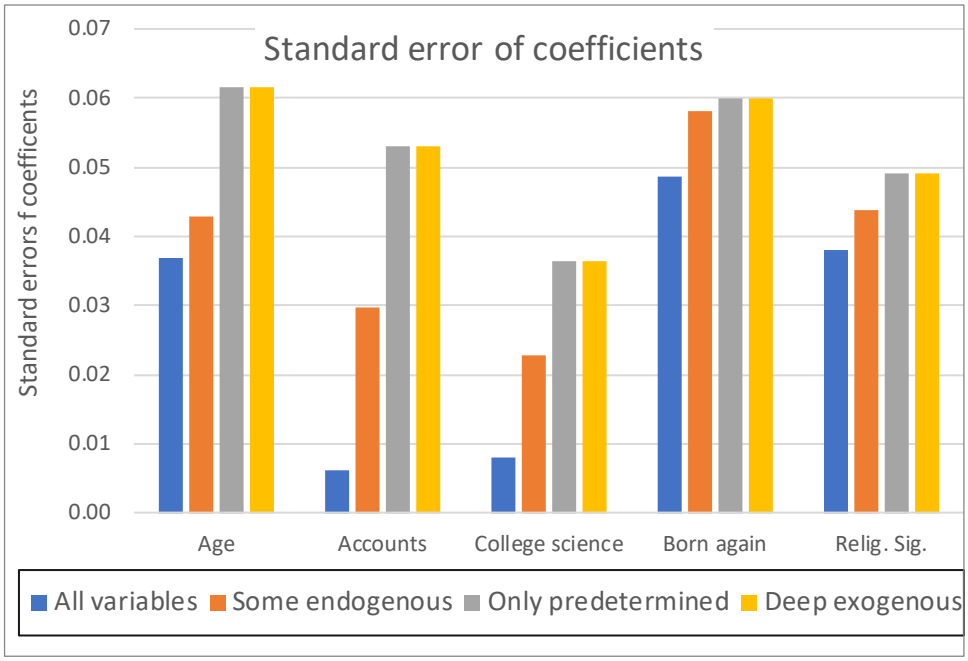

Figure E-2. Standard errors of coefficients of TOTALSCORE with alternative IV specifications