Class, Genes and Rationality

A GxE Approach to Economic Ideology

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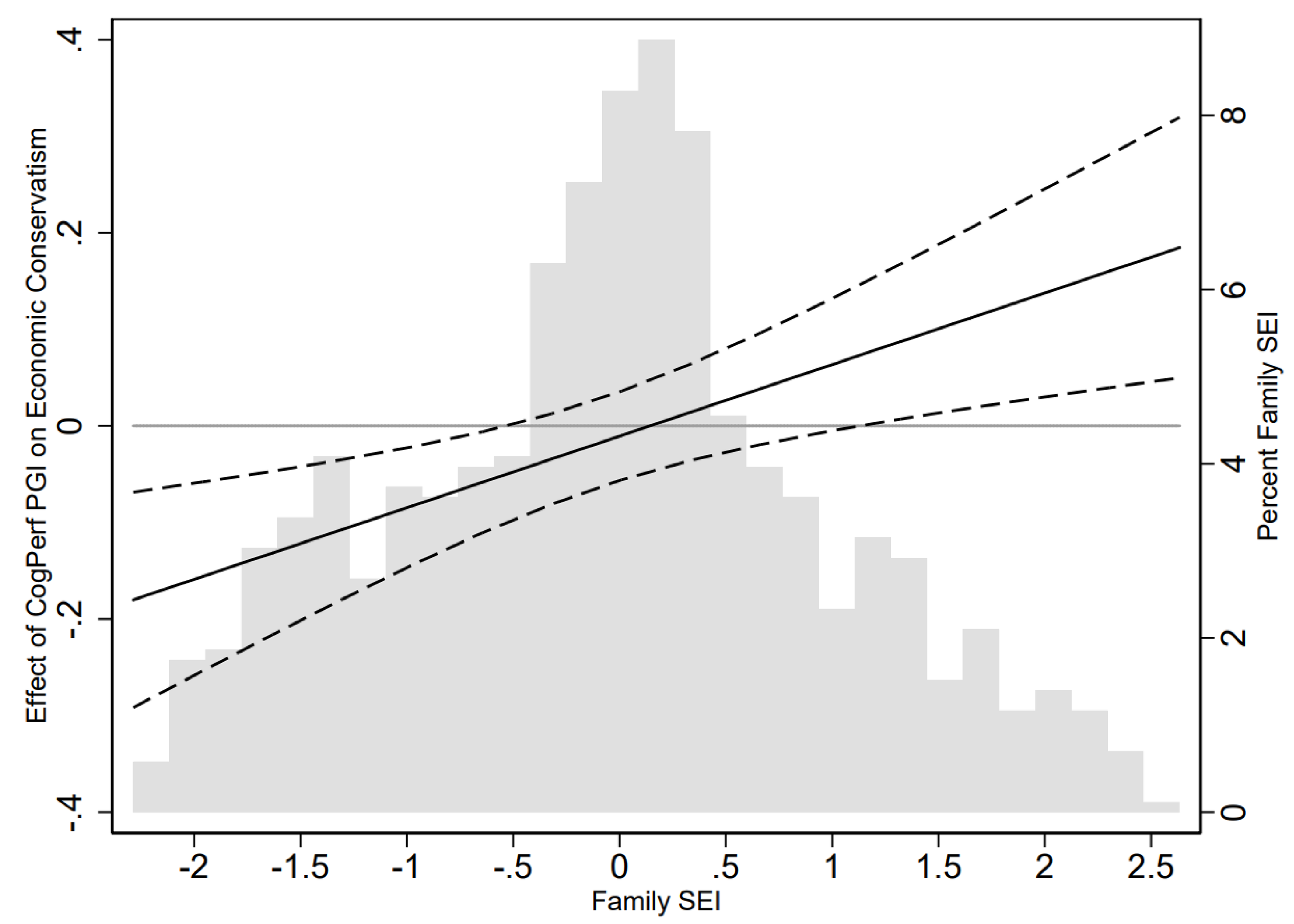
Introduction

Aristotle famously said that man is, by nature, a political animal. While we share a common political core, we also differ tremendously in what we think the state should do - how much taxation, redistribution, public investment and regulation do we prefer? To explain these differences, in addition to upbringing, economic factors and environments, some studies point to genetic influences. Yet, it is poorly understood what these genetic influences actually consist of: since modern mass political systems and their accompanying ideologies did not exist in our evolutionary environment, genetic effects on political preferences must be mediated by a more proximal trait, i.e. an *endophenotype*. This raises the crucial question: what are these underlying endophenotypes and mechanisms for the observed heritability in political attitudes?

Hypothesis

In this study, I propose a gene-by-environment interaction (GxE) hypothesis to explain part of this puzzle. Classical models of “rational preferences” tell us that we should expect a socioeconomic gradient in economic conservatism: put simply, people in material deprivation are more likely to be net beneficiaries of a large state, while rich individuals are not. The former should therefore be more likely to prefer a policy package of high taxation, redistribution and public investment than the latter, who should instead be more economically conservative.

However, making inferences about the impact of complex policy packages in the chaotic modern political landscape arguably requires a fair amount of cognitive resources. This logic of policy preference “optimization” may therefore be dependent on having a sufficient set of cognitive skills – skills that are, in turn, highly genetically contingent. Thus, if we combine these two insights, we should expect genetics associated with cognitive performance to cause more left-wing political orientations among the poor, but more right-wing ditto among the rich.



The figure above shows the marginal effect of within-twin pair differences in a polygenic index of cognitive performance on economic conservatism across different values of family SEI. Interlaced histogram shows distribution of family SEI.

Data and method

To test this empirically, I utilize a sample of dizygotic (DZ) twin pairs from the Swedish Twin Registry. I use data from the SALTY survey to construct an index of economic conservatism using a set of twelve different self-reported policy preferences related to taxation, redistribution, public investment and ownership and free trade. Further, I use variation within dizygotic (DZ) twin pairs in a polygenic index of cognitive performance, interacted with across-pair variation in family socioeconomic status (SEI), measured as an index of the relative parental level of education and income within the local parish, when the twins were adolescents. The basic empirical model is thus:

$$\Delta Y_j = \alpha + \beta_1 \Delta G_j + \beta_2 E + \beta_3 \Delta G_j E_j + \varepsilon_j.$$

where ΔG and ΔY are the within-family transformed PGI of cognitive performance and economic conservatism. Furthermore, controls are added for a set of local economic variables as well as family genetic characteristics measured by a range of polygenic indices other than cognitive performance.

Results

The table below summarizes the main results. First of all, it is clear from models 1-2 that the overall average effect of the cognitive performance PGI on economic conservatism is zero. This is what we should expect if the effect does indeed have opposite signs for different socioeconomic groups. In model 3, we see that this in fact the case: the interaction term is significant and positive, indicating the effect of the PGI becomes more positive as we move up along the family SEI distribution. Models 4-6 show that this pattern is unaltered by a number of different controls.

The crucial question is whether this interaction actually shows marginal effects that are negative at the bottom and positive at the top. To see that this is the case, we can look at the marginal effects plot on the left. The effect is negative (at most -.2) among those with the lowest family SEI, and positive (at most +.2) among those with the highest family SEI. Thus, it appears that the effect of having more alleles associated with cognitive performance translates into different policy preferences in different socioeconomic environments in accordance with the proposed hypothesis.

VARIABLES	(1) Δ EC	(2) Δ EC	(3) Δ EC	(4) Δ EC	(5) Δ EC	(6) Δ EC
Δ CogPer PGI	-0.0182	-0.0160	-0.00352	-0.134	-0.198	-0.145
	(0.0275)	(0.0276)	(0.0470)	(0.159)	(0.162)	(0.159)
Family SEI			-0.000973	0.176	0.165	0.171
			(0.0601)	(0.209)	(0.213)	(0.209)
Δ CogPer PGI × Family SEI			0.0741***	0.0698**	0.0749**	0.0661**
			(0.0282)	(0.0309)	(0.0319)	(0.0310)
Δ Current SEI					0.0460	
					(0.0383)	
Δ CogPer PGI × Δ Current SEI					0.0454	
					(0.0287)	
Δ Ideological Constraint						-0.0217
						(0.0382)
Δ CogPer PGI × Δ Ideol Const						-0.0401
						(0.0284)
Constant	-0.0346	-0.0519	-0.0521	-0.229	-0.244	-0.252
	(0.0365)	(0.0623)	(0.0625)	(0.208)	(0.211)	(0.209)
Twin pairs	857	857	857	857	819	857
R-squared	0.001	0.002	0.014	0.106	0.115	0.109
Controls	NO	YES	YES	YES	YES	YES
Mean/Mean^2 PGIs	NO	NO	NO	YES	YES	YES

In the table above, Δ variables are within-family transformed. Controls are for sex, parish SEI and parish population size, and their interactions with ΔCogPer PGI and Family SEI. Mean/Mean squared PGIs are the full set of family average PGI’s and family PGI’s squared as well as their interactions with ΔCogPer PGI and Family SEI. All coefficients are standardized.

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