Financial literacy, education, and voter turnout

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Abstract

This work studies the long-run associations between different forms of education and voter turnout in parliamentary elections, focusing in particular on the role of basic education in economic-specific subjects, measured by financial literacy. In a sample of advanced and developing countries observed over the 1990-2014 period, countries where financial literacy is higher record higher rates of voter turnout. The association between electoral participation and measures of general education, instead, is not robust in regressions controlling for socio-economic and institutional determinants of voter turnout. The effect of financial literacy is causal in regressions where instrumental variables account for potential endogeneity issues.

Keywords: financial literacy; education; voter turnout.

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1. Introduction

A large literature in political science and economics agrees on the relevance of education to electoral participation. From a theoretical point of view, education may increase voter turnout through several channels (see Mayer, 2011, for a review of the literature). For instance, by increasing civic skills (Rosenstone and Hansen, 1993) or the benefits of civic engagement (Glaser et al., 2007), defined in the context of the civic education theory as a factor spurring democracy and that, empirically, is usually measured as the percentage of eligible voters showing up at polls, i.e., voter turnout.

In micro-economic analyses, scholars find a positive effect of education voter turnout (Sondheimer and Green, 2010, and the references therein). The microeconomic literature on political participation considers differences in education length, while a few studies consider differences in education type. The idea that the type of education matters to voter turnout has been explored in a recent micro-economic study. Using data on Danish municipal and regional elections, Bhatti (2017) shows that turnout is higher for individuals who enrolled in a political bachelor degree program with a high civic education content, while general education types at the BA-level do not seem to matter. As regards macroeconomic analyses, little or no attention has been devoted to study how different lengths or types of education affect voter turnout. Education is generally included among control variables, recognizing that voter turnout is higher in countries with more educated people on average, and measured it in terms of school enrolment or school attainment (Mueller and Stratman, 2003; Fumagalli and Narciso, 2012).

This paper makes a step further and focuses on the role that school completion and financial literacy, a measure of competence in economic- and financial-specific subjects, play in explaining voter turnout across countries. In doing so, it represents the first work to offer some evidence on the relationship between different forms of education and electoral participation across countries. In a sample of advanced and developing countries observed over the 1990-2014 period, countries where financial literacy is higher are countries with higher levels of voter turnout, a finding that does not hold using measures of general education.

The present work also contributes to understanding the role of financial literacy from a macro-economic perspective. As documented in microeconomic studies, economic-specific competence may play a more important role than general schooling in contexts where what matters is people ability to understand economic and financial subjects (see, e.g. Lusardi and Mitchell, 2007; Van Rooij et al., 2011). In aggregate data, income inequality decreases more in countries with higher economic literacy, not general schooling (Lo Prete, 2018). This paper explores whether, when considering voting behavior, general school attainment may affect the numeric component of

political engagement. The relevance of economic literacy to electoral outcomes has been first analyzed in Fornero and Lo Prete (2019), finding that the probability of a government to be re-elected in the aftermath of an economic reform is higher in countries where the level of financial literacy is higher.

Using data from the world's largest survey measuring knowledge of basic financial knowledge, the Standard & Poor's Ratings Services Global Financial Literacy Survey (2014), the findings in this paper support the idea that people's understanding of the political stances they are asked to express a preference on, as measured by financial literacy, is an important dimension of electoral participation. Financial literacy increases political participation, differently from more general measures of education. This effect is causal in regressions where instrumental variables account for potential endogeneity issues.

The paper is organized as follows. Section **2** describes the data and the empirical strategy. Section **3** analyzes the relationship between different measures of education, among which financial literacy, and voter turnout. Section **4** focuses on the relationship between financial literacy and voter turnout. Section **5** concludes.

2. Data and empirical strategy

The dataset includes information on education and electoral participation for one hundred advanced and developing countries observed over the 1990-2014 period. It considers average values of the variables over the period and focuses on long-term associations.

Elections. Data on parliamentary elections, electoral rules and forms of government are from the database by the International Institute for Democracy and Electoral Assistance (IDEA, 2014). Using the Freedom House average indicator of political rights and civil liberties, this paper considers advanced and developing countries classified as "democracies". More specifically, a country is considered a (free or partially free) democracy if the index, that ranges between one (free) and seven (not free), is less or equal to five (Persson and Tabellini, 2004; Fumagalli and Narciso, 2012).

Education. General education is measured using completion rates in primary, secondary and tertiary school from the Education Attainment Dataset compiled by Barro and Lee (2013). The indicator of financial literacy is from the Standard & Poor's Ratings Services Global Financial Literacy Survey (2014). The survey gathers information through 150.000 interviews and includes four questions over the concepts of basic numeracy, interest compounding, inflation, and risk diversification. A person is defined financially literate if she correctly answered to three out of four questions, and the financial literacy index considers the percentage of financially literate people in a country. The survey, administered in 2014, covers over 140 countries.

In the data, countries with higher secondary and tertiary completion rates are countries with a higher level of financial literacy, although the correlation is just around 0.4 and 0.5, respectively (see table A.2). Descriptive evidence on the association between voter turnout and financial literacy, in figure 1, shows a positive and significant association across countries. Countries where the level of basic economic and financial competences is higher are countries where electoral participation is higher.

The role of school completion and financial literacy as long-term determinants of voter turnout is analyzed using empirical models

$$VT_j = \alpha_0 + \alpha_1 EDU_j + \boldsymbol{X_j}'\boldsymbol{\beta} + \varepsilon_j. \quad (1)$$

where voter turnout (VT) in country j is regressed on the level of education (EDU) and a vector of socio-economic determinants ($\boldsymbol{X}$). The model (1) is estimated using OLS estimators in section **3**, OLS and IV techniques in section **4**.

3. Education and electoral participation

As a first gauge on the data, the first columns of table 1 report the results on bivariate associations between voter turnout and different measures of education. In the data under analysis, voter turnout is significantly higher in countries where financial literacy is higher (column 1) and where a higher percentage of people completed secondary and tertiary schools (columns 3 and 4).

Of course, voter turnout depends on several factors other than education. The results in columns from 5 to 8 of table 1 are from the baseline version of model (1). More specifically, it includes control variables for socio-economic factors: GDP per capita, trade openness, the size of the population (in logs) to account for the weight of a single vote and for the probability of a voter to be pivotal and dependency ratios that proxy for the age structure of the population. It also include a dummy variable for OECD countries and a dummy variable that accounts for compulsory voting. In column 5, financial literacy is positively and significantly associated to voter turnout when controlling for socio-economic and institutional factors. Instead, school completion rates are no more significant in columns from 6 to 8. In all specification, turnout is lower at significant levels in countries that are more open to trade and where voting is compulsory.

As a robustness check on the (ir)relevance of general education to voter turnout across countries, the results from using data on school enrollment and years in school by Barro and Lee's dataset convey the same message. In table 2, enrolment in primary, secondary, and tertiary school and average years of schooling are not significantly associated to voter turnout in regressions that control for socio-economic determinants of electoral participation. Only bivariate associations

between voter turnout and secondary school enrolment or years of schooling are positive and precisely estimated.

4. Financial literacy and electoral participation

The evidence in tables 1 and 2 suggests that across advanced and developing countries observed over the 1990-2014 period, electoral participation is not associated to general schooling, measured by school completion and enrollment rates, in regressions that control for socio-economic and institutional determinants of voter turnout. Financial literacy, instead, seems to capture a relevant dimension of human capital that is associated to higher electoral participation. This section tests if the finding of a positive relationship between voter turnout and the level of economic-specific competences is robust to controlling for other potentially confounding factors and when endogeneity issues are taken into account.

Several studies in the literature analyzed the determinants of voter turnout. As a first robustness check, the positive and significant association between voter turnout and financial literacy hold in column 1 of table 3 that reports the results from a specification including geographic variables for World Bank's continental location. The next two columns of table 3 control for the possibility that electoral participation depends on constitutional variables as electoral rules and the form of government (Persson and Tabellini, 2004; Fumagalli and Narciso, 2012). Voter turnout is not significantly associated to electoral rules, measured by the "majoritarian" system dummy (column 2), nor significantly lower in countries with a presidential form of government (column 3), differently from what found in Fumagalli and Narciso (2012). To control for the possibility that people participation is lower in more ethnically fragmented societies (Alesina et al., 2003), the specification in column 4 includes an indicator of ethnic fractionalization. In column 5, a dummy variable that takes value one if the country was ever a colony accounts for the relevance of colonial history (Acemoglu et al., 2001). The main finding of a positive and significant association of voter turnout and financial literacy hold in all columns, when controlling for these factors one by one or all together - in the last column of table 3, in the smaller sample for which data on all these variables are available.

Next, let relax the assumption that financial literacy is exogenous to electoral participation. To identify the causal effect of financial literacy on voter turnout, if any, financial literacy is instrumented using legal origin dummies as coded by La Porta et al. (1999). The original legal institutional set-up is arguably associated to financial literacy, a country-specific characteristic that does not vary much over time (Lo Prete, 2018), but not directly relevant to voter turnout in recent parliamentary elections. The estimates from two-stage least squares models are reported in table 4.

The test statistics at the bottom of the table indicate that the exclusion restrictions are valid in regressions where, according to the specification test, financial literacy cannot be treated as an exogenous regressor (column 1, 3 and 6), and that the instruments are not weak (the Kleibergen–Paap F statistics being close to 10). In all specifications of table 4, financial literacy has a positive effect on voter turnout. Based on the estimates in column 1 to provide a sense of magnitude, a one standard deviation increase in financial literacy leads to a 14 increase in voter turnout.

Finally, the results in table 5 provide further test the robustness of previous results. In the first column, the Freedom House average indicator of political rights and civil liberties controls for differences in the quality of democratic institutions across the sample under analysis. Column 2 and 3, instead, show the results from splitting the sample to consider the average values of all the variables over the 1990s and the 2000s, respectively. In all regressions, the main result of a positive effect of financial literacy on electoral participation holds.

5. Concluding remarks

This work documents that, in a sample of developed and developing countries observed over the 1990-2014 period, financial literacy has a positive effect on electoral participation. Instead, measures of school completion are not significantly associated to voter turnout in regressions that control for socio-economic and institutional factors.

The present study provides interesting insights on the relevance of economic- and finance-specific competences to electoral participation. In countries where more people are financially literate, electoral participation is higher and a larger portion of the society participates in the political process. This can represent an important element to understand the complex process whereby people express a preference at polls.

Finding that financial literacy is a relevant dimension of what can be considered the "numeric" component of civic engagement, paves the way for further analyses and considerations on the importance of this specific form of human capital to people's participation to political life and citizen engagement. A companion paper, for instance, documents that financial literacy is also relevant to democratic policy outcomes, suggesting that people's understanding of the economic and financial content of policy proposals may be a "qualitative" and so far neglected dimension of the broad concept of civic engagement (Lo Prete, 2019).

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Data Appendix

Table A.1. Descriptive statistics

Variable name	N.	Mean	Std. Dev.	Min	Max
Voter turnout	100	67.8	13.8	27.6	95.1
Financial literacy	100	39.2	14.2	14.0	71.0
Primary school completion	92	17.4	9.1	1.6	44.3
Secondary school completion	92	26.0	13.6	1.1	59.3
Tertiary school completion	92	7.7	5.5	0.2	22.6
Primary school enrollment	92	28.4	14.3	4.0	64.2
Secondary school enrollment	92	44.3	17.9	4.5	76.9
Tertiary school enrollment	92	13.6	9.7	0.3	47.8
Average years of total schooling	92	8.3	2.6	0.3	12.7
Population (millions)	100	30.4	49.0	0.3	287.1
GDP per capita	99	15015	18860	249	91500
Trade	99	82.0	49.3	22.4	361.3
OECD	100	0.3	0.5	0	1
Compulsory	100	0.2	0.4	0	1
Dependency ratio	99	61.6	6.2	47.3	71.3
Majoritarian	80	0.3	0.5	0	1
Presidential	100	0.7	0.5	0	1
Ethnic	99	0.4	0.3	0.0	0.9
Ever colony	74	0.8	0.4	0	1
Legal origin, Anglo-Saxon	99	0.3	0.5	0	1
Legal origin, French	99	0.4	0.5	0	1
Legal origin, Scandinavian	99	0.0	0.2	0	1
Legal origin, Socialist	99	0.2	0.4	0	1

Note: the table reports information on the variables not transformed.

Table A.2. Correlation between measures of education

	Financial literacy	Primary school completion	Secondary school completion	Tertiary school completion
Financial literacy	1			
Primary school completion	-0.08	1		
Secondary school completion	0.36	-0.34	1	
Tertiary school completion	0.51	-0.18	0.52	1

Figure 1

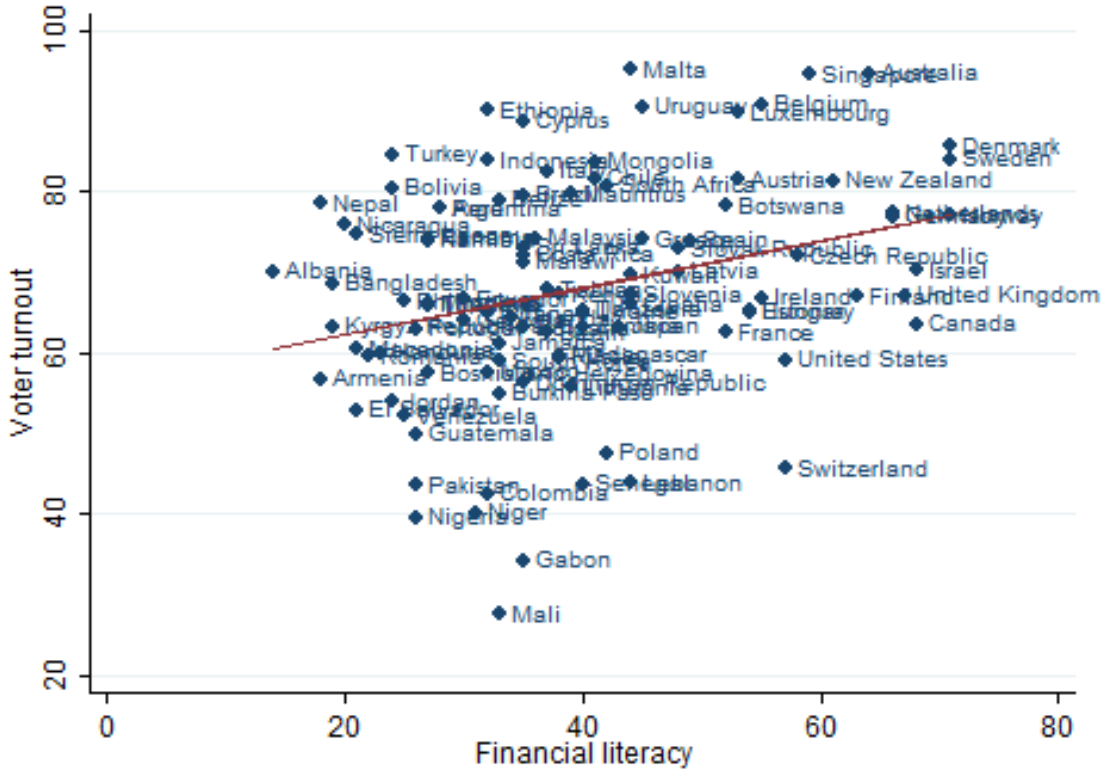
Voter turnout
100
80
60
40
20
0
20
40
60
80
Financial literacy
Malta
Uruguay
Ethiopia
Cyprus
Turkey
Indonesia
Mongolia
Bolivia
Nepal
Nicaragua
Albania
Bangladesh
Kyrgyz Republic
Armenia
Jordan
El Salvador
Venezuela
Guatemala
Pakistan
Colombia
Niger
Poland
Gabon
Mali
Austria
New Zealand
Botswana
Czech Republic
Israel
Ireland
Canada
France
United States
Switzerland
Denmark
Sweden
Belgium

Table 1. Education and voter turnout

Dependent variable:	Voter turnout							
Column:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Financial literacy	0.29				0.33			
	3.62				*2.42*			
Primary education		0.21				0.14		
		1.50				*0.92*		
Secondary education			0.19				-0.11	
			1.64				*-0.75*	
Tertiary education				0.46				-0.27
				1.78				*-1.06*
GDP per capita					-4.32	-1.28	-1.50	-0.95
					-1.47	*-0.46*	*-0.52*	*-0.35*
Trade					0.87	0.78	0.95	0.85
					2.00	*1.66*	*1.64*	*1.78*
Population					-1.03	-1.58	-1.85	-1.66
					-0.86	*-1.34*	*-1.58*	*-1.39*
Dep. ratio					1.20	1.14	0.70	0.60
					0.37	*0.33*	*0.21*	*0.18*
OECD					1.81	3.67	4.60	4.67
					0.44	*0.97*	*1.22*	*1.25*
Compulsory					10.30	8.42	8.83	9.58
					2.98	*2.42*	*2.68*	*3.12*
R-squared	0.09	0.02	0.04	0.04	0.24	0.25	0.24	0.25
Observations	100	92	92	92	99	91	91	91

Notes: Robust standard errors. OLS estimates. T-statistics in italics.

Table 2. Other measures of education and voter turnout

Dependent variable:	Voter turnout							
Column:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Primary school enrollment	0.02				0.09			
	0.27				*0.79*			
Secondary school enrollment		0.21				0.10		
		2.65				*0.95*		
Tertiary school enrollment			0.18				-0.16	
			1.22				*-1.18*	
Average years of schooling				1.67				0.58
				2.79				*0.70*
Population					-1.73	-1.42	-1.54	-1.54
					-1.47	*-1.17*	*-1.24*	*-1.30*
GDP per capita					-1.29	-1.01	-0.67	-1.40
					-0.47	*-0.36*	*-0.24*	*-0.51*
Dep. ratio					0.83	0.52	0.81	0.61
					1.64	*0.96*	*1.73*	*1.23*
Trade					0.78	0.62	0.53	0.72
					0.23	*0.18*	*0.16*	*0.22*
OECD					4.38	3.77	4.45	3.32
					1.17	*1.00*	*1.20*	*0.85*
Compulsory					8.22	10.18	9.25	9.60
					2.25	*3.05*	*3.00*	*3.06*
R-squared	0.001	0.082	0.017	0.105	0.246	0.246	0.245	0.242
Observations	92	92	92	92	91	91	91	91

Notes: Robust standard errors. OLS estimates. T-statistics in italics.

Table 3. Financial literacy and voter turnout

Dependent variable: Voter turnout						
Column:	(1)	(2)	(3)	(4)	(5)	(6)
Financial literacy	0.36	0.32	0.37	0.34	0.41	0.33
	2.30	*2.11*	*2.15*	*2.28*	*3.65*	*3.26*
Population	-1.90	-1.72	-0.26	-1.00	-2.13	-3.00
	-1.45	*-1.35*	*-0.17*	*-0.83*	*-1.48*	*-1.51*
GDP per capita	-6.89	-7.49	-4.93	-4.41	-4.06	-4.30
	-1.87	*-2.09*	*-1.44*	*-1.48*	*-1.43*	*-1.31*
Dep. ratio	1.29	1.35	1.09	0.82	0.68	0.71
	2.45	*2.67*	*2.23*	*1.99*	*1.80*	*1.64*
Trade	-0.64	-0.74	3.11	1.37	-0.53	-6.16
	-0.17	*-0.20*	*0.92*	*0.42*	*-0.16*	*-1.30*
OECD	4.88	5.13	-0.88	1.02	-1.62	-0.09
	0.96	*1.00*	*-0.17*	*0.22*	*-0.43*	*-0.02*
Compulsory	8.66	9.07	10.83	10.17	15.38	18.74
	1.87	*1.87*	*2.72*	*2.87*	*4.87*	*4.65*
Majoritarian		-5.16				-2.61
		-1.55				*-0.95*
Presidential			2.64			-6.30
			0.73			*-2.84*
Ethnic				-3.76		-8.09
				-0.49		*-0.85*
Ever colony					-3.45	-4.78
					-0.85	*-0.89*
Regional controls	yes	no	no	no	no	yes
R-squared	0.31	0.33	0.26	0.24	0.43	0.69
Observations	99	99	80	98	73	58

Notes: Robust standard errors. OLS estimates. T-statistics in italics.

Table 4. Instrumental variables' approach

Dependent variable: Voter turnout						
Column:	(1)	(2)	(3)	(4)	(5)	(6)
Financial literacy	1.00	0.79	1.13	0.90	0.51	0.34
	2.83	*2.51*	*3.70*	*2.99*	*2.07*	*1.93*
Population	-2.12	-1.04	-0.35	-0.92	-2.09	-2.99
	-1.72	*-0.89*	*-0.21*	*-0.75*	*-1.53*	*-1.79*
GDP per capita	-12.21	-9.00	-11.02	-9.02	-5.01	-4.45
	-2.91	*-2.51*	*-2.83*	*-2.53*	*-1.44*	*-1.61*
Dep. ratio	1.70	1.35	1.58	1.21	0.76	0.72
	3.31	*2.69*	*3.01*	*2.54*	*1.90*	*2.03*
Trade	-2.84	-0.76	1.63	-0.21	-0.77	-6.11
	-0.73	*-0.24*	*0.43*	*-0.06*	*-0.25*	*-1.49*
OECD	-1.62	-4.60	-11.22	-6.78	-2.83	-0.27
	-0.28	*-0.82*	*-1.66*	*-1.14*	*-0.67*	*-0.07*
Compulsory	10.48	13.31	13.51	12.99	16.02	18.78
	2.21	*3.32*	*2.93*	*3.35*	*4.39*	*5.68*
Majoritarian		-4.18				-2.55
		-1.12				*-1.00*
Presidential			-1.61			-6.37
			-0.43			*-3.25*
Ethnic				-7.39		-8.09
				-1.01		*-1.02*
Ever colony					-3.74	-4.83
					-0.94	*-1.01*
Regional controls	yes	no	no	no	no	yes
Over-ident. restrictions	3.97	9.78	5.27	11.10	8.02	1.05
	[0.26]	[0.02]	[0.15]	[0.01]	[0.05]	[0.59]
Specification test	2.80	1.73	5.64	2.59	0.48	0.19
	[0.09]	[0.19]	[0.02]	[0.11]	[0.49]	[0.66]
Weak identification test	7.27	10.40	16.24	7.86	7.48	9.76
Observations	99	99	80	98	73	58

Notes: Robust standard errors. T-statistic in italics, *p*-values in square brackets. Statistics in column 5 computed by the *ivreg2* (Baum et al. 2007) Stata module. Test of over-identifying restrictions, under the null that all instrumental variables are orthogonal to the second-stage error term. Specification test, under the null: estimates from OLS and IV are both consistent. Weak identification test: Kleibergen–Paap Wald rk F statistic, robust to non-i.i.d. errors.

Table 5. Robustness checks

Dependent variable: Voter turnout			
Sample	All	2000s	1990s
Column:	(1)	(2)	(3)
Financial literacy	0.34	0.43	0.35
	2.03	*1.98*	*1.80*
Population	-2.70	-2.26	-1.49
	-1.56	*-1.60*	*-0.61*
GDP per capita	-4.95	-2.10	-4.91
	-1.85	*-0.44*	*-1.14*
Dep. ratio	0.59	0.34	0.93
	1.33	*0.63*	*2.05*
Trade	-5.42	-3.09	-2.41
	-1.24	*-0.69*	*-0.56*
OECD	-0.95	-2.74	-3.49
	-0.23	*-0.70*	*-0.64*
Compulsory	19.11	19.94	18.02
	5.64	*5.33*	*4.57*
Majoritarian	-6.40	-1.24	-3.85
	-3.38	*-0.45*	*-1.39*
Presidential	-2.41	-7.12	-4.13
	-1.01	*-3.37*	*-1.38*
Ethnic	-6.81	-3.95	-18.64
	-0.83	*-0.48*	*-2.14*
Ever colony	-5.09	-5.34	-3.81
	-1.06	*-1.15*	*-0.73*
Freedom house	-1.47		
	-0.75		
Regional controls	yes	yes	yes
Over-ident. restrictions	0.74	0.67	6.17
	[0.69]	[1.05]	0.05
Specification test	0.29	1.32	0.06
	[0.59]	[0.25]	0.81
Weak identification test	10.51	7.07	12.18
Observations	58	57	55

Notes: Robust standard errors. T-statistic in italics, *p*-values in square brackets. Statistics in column 5 computed by the *ivreg2* (Baum et al. 2007) Stata module. Test of over-identifying restrictions, under the null that all instrumental variables are orthogonal to the second-stage error term. Specification test, under the null: estimates from OLS and IV are both consistent. Weak identification test: Kleibergen–Paap Wald rk F statistic, robust to non-i.i.d. errors.