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# Give me liberty and give me control: Economic freedom, control perceptions and the paradox of choice

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## ABSTRACT

We explore the relationship between individual control perceptions and the degree to which a country's institutions and policies are consistent with the principles of economic freedom. Using data from the World Values Surveys (WVS) and the Economic Freedom of the World (EFW) index, we find that people living in more economically free countries are more likely to perceive greater control over their lives. This effect is not diminishing at higher levels of economic freedom. One possible channel that explains this relationship is the perception of procedural fairness and social mobility. Decomposing the EFW index, we further find that the area of sound money is what drives the results.

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## 1. Introduction

Over the past several decades, numerous studies in behavioral psychology have documented overwhelming evidence that the extent to which people *believe* that they have freedom of choice and control over their environment is critically important to the way in which they cope with stress, engage in challenges, work towards success, or even enjoy life. Many of these studies are part of a literature that focuses on the effects of locus of control, also known as “internal-external control,” which is a measure of personality first developed in the 1950s by psychologists at Ohio State University.

The locus of control construct is based on the idea that people vary in the degree to which they believe they are in control of their own lives (Rotter, 1966). On the one hand, people who believe that their trajectory in life depends on controllable factors such as effort and skill have internal locus of control. On the other hand, people who believe that the outcome of their actions depends on uncontrollable factors such as destiny or luck have external locus of control.

The important lesson from the literature on control perceptions is that even after controlling for socio-economic background and intelligence, people with internal locus of control are more successful in multiple domains of life. People who believe that

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they have greater control over their life, for instance, are more likely to persevere in the face of adversity, to pursue achievement related behavior, engage in morally relevant action, and are less susceptible to group pressure.<sup>1</sup> These tools of coping with life's challenges ultimately leaves people with higher control perceptions more satisfied with their lives.

While the personality traits that affect individuals' locus of control are often believed to be genetically determined, a large number of experimental studies, starting with the seminal work of *Maier and Seligman (1976)* on learned helplessness, suggest that these personality traits can be influenced by the environment in which individuals live and hence can be learned.<sup>2</sup> Previous studies, for example, attribute the development of such traits to factors such as family upbringing, socio-economic background, cultural stability, and experiences of effort that lead to rewards (*Lefcourt, 2014*). Far less is understood about the macroeconomic and institutional determinants of control perceptions. Are more economically free countries more likely to produce individuals who believe that their actions matter? And are people who live in more economically developed societies more likely to perceive higher levels of control over their lives? The answers to these questions are important for policy analysis and have far reaching consequences for health, wealth, and happiness.

In this study, we build on this line of research by exploring to what extent the institutional environment in a country influences people's perception of control. All choices require a degree of freedom, and institutions consistent with the principles of economic freedom—personal choice, voluntary exchange, freedom to enter markets and compete, and security of privately owned property (*Gwartney et al., 2014*)—allow people to freely choose, learn, innovate, and exert control over their environment. Economic freedom therefore allows individuals to pursue the type of lives that they value the most while maximizing their autonomy and developing their talents. By raising the cost of discrimination, economic freedom also maximizes cooperation and enhances people's sense of relatedness, especially in the work and market places.

More importantly, societies with a high degree of economic freedom are characterized by automatic feedback mechanisms, including the price system and profit and loss accounting, which act to coordinate economic activity and allow people to learn that their choices have consequences (*Hayek, 1945*). A large literature in economics shows that countries with institutions consistent with the principles of economic freedom tend to experience higher growth rates, less unemployment, and higher investment in human, physical, and social capital.<sup>3</sup> Consequently, people who live in countries with greater levels of economic freedom are more likely to associate their efforts and productive activities (e.g., obtaining a higher education or starting a business) with higher economic and social rewards (*Baumol, 1990*). Thus, we expect that higher levels of economic freedom will be linked to greater perception of procedural fairness and social mobility, which in turn will lead to higher perception of control and subjective well-being.

Higher levels of economic freedom may, however, lead to more restlessness, higher material aspirations, and decision paralysis as more responsibility is placed on the individual to make the right choice in a world with more options and uncertainty. The so called “paradox of choice” hypothesis argues that more freedom of choice leads to lower perception of control and ultimately to dissatisfaction (*Schwartz, 2004*). Numerous studies also find that economic development improves subjective well-being, but only up to a point (e.g., see *Easterlin et al., 2011*). If the paradox of choice hypothesis is correct, then we should expect to see diminishing returns from economic freedom and/or development.

To test our hypotheses, we merge data from the widely used Economic Freedom of the World (EFW) index with the latest release of the World Values Survey (WVS) integrated longitudinal dataset. This provides a pooled cross-sectional dataset containing >190,000 individual observations representing 84 countries spanning the period 1981–2012. Using multi-level OLS econometric models that control for a large set of individual characteristics and macroeconomic variables as well as country and year dummies, our results provide support for the hypothesis that individuals living in countries with higher levels of economic freedom are more likely to perceive greater control over their lives. The relationship is robust and, if causal, our estimates suggest that, all else equal, a unit increase in EFW is associated with a 0.167 to 0.257-point increase in control perceptions (on a 10-point scale). The magnitude of this effect is economically significant as the gain in control perceptions from a one-unit increase in EFW is enough to offset the loss in control associated with individual unemployment.

The positive relationship between economic freedom and control perceptions does not appear to be diminishing at higher levels of economic freedom and does not appear to be conditional on the level of economic development. In this sense, we do not find evidence supportive of the “paradox of choice” hypothesis. We also decompose the EFW index to examine how the five areas of the index correlate with control perceptions. The results suggest that the area of sound money is the primary driver of the main results.

Finally, we explore how economic freedom is related to perceptions of procedural fairness and social mobility and find that, consistent with our main hypothesis, people who live in countries with higher levels of economic freedom are more likely to believe that everyone has a chance to escape poverty and that if people are living in need, it is because of their own efforts as opposed to social injustice. They are also more likely to believe that the proper role of government is to preserve freedom.

Although the results support our hypotheses, they should be treated with caution due to the cross-sectional nature of the data. Specifically, challenges related to omitted variable bias and reverse causality are potentially problematic in the absence of experimental data, which is unfeasible for this type of study. First, it is possible that omitted variables which influence both economic freedom and control perceptions bias the estimates. Although we cannot completely control for unobserved heterogeneity, we

<sup>1</sup> For a comprehensive review of this literature, see *Lefcourt (2014)*.

<sup>2</sup> See *Bouton (2007)* for a contemporary review of the various learning and behavioral theories, including learned helplessness.

<sup>3</sup> For a recent review of the empirical economic freedom literature, see *Hall and Lawson (2014)*.

attempt to mitigate this problem by including a large set of socio-demographic variables as well as providing some preliminary panel estimations (using country level averages) that help us account for unobserved time-invariant country characteristics.

Another important issue that makes causal inference especially difficult in the context of our analysis is reverse causality. Are people who live in countries with higher level of economic freedom more likely to perceive higher level of control over their lives or are people who believe they have greater control over their lives more likely to demand institutions consistent with the principles of economic freedom? The latter is plausible given the previous findings that people with internal locus of control are more politically active and place higher value on personal responsibility and freedom. Alesina and Glaeser (2004), for example, argue that Europeans favor more redistributive policies because they are more likely to believe that luck determines economic outcomes.

Our objective, however, is to examine patterns and associations across a wide range of countries and development levels, focusing on external validity. Tackling internal validity issues is therefore left for future research. As such, our results should be viewed as highlighting promising trends for future research rather than confirmed causal relationships.

The remainder of the paper is organized as follows. A literature review is provided in Section 2, followed in Section 3 by a description of the data. Section 4 presents the main empirical results and Section 5 the results from a number of non-linear specifications that test for the paradox of choice hypothesis. Section 6 decomposes the EFW index to examine how the five main areas correlate with control perceptions. Section 7 explores how economic freedom correlates with perceptions of procedural fairness and social mobility, which are potential channels that affect control perceptions. Country-level control perception averages are derived in Section 8 to exploit the panel dimension of our dataset, and concluding remarks are offered in Section 9.

## 2. Literature review

Developing a deeper understanding of the relationship between individuals' perception of control and economic freedom is important for several reasons. First, a number of studies have recently suggested that the sense of control and freedom people perceive over their lives is one of the strongest determinants of subjective well-being. Using data from the WVS, Verme (2009) finds that the perception of freedom of choice and control is the strongest predictor of life satisfaction. Doyle and Youn (2000) argue that several personality characteristics linked to happiness are unified by a freedom-control dimension. Furthermore, Csikszentmihalyi's (2014) research on "flow" suggests that the highest feeling of personal happiness is achieved when a person is fully involved in a self-selected task and activity.

Second, the perception of control is essential to adequate human functioning. Numerous studies find that the sense of control is a powerful motivator that affects individual choices.<sup>4</sup> People with internal locus of control, for example, tend to perform better academically (Findley and Cooper, 1983), have more effective health-prevention behaviors (Cobb-Clark et al., 2014), save more for the future (Cobb-Clark et al., 2013), and invest more time searching for a job (Caliendo and Cobb-Clark, 2015). They are also more likely to try to escape abusive relationships and drug addiction (Armitage et al., 1999), to be more socially and politically active (Levenson and Miller, 1976), and ultimately report higher levels of subjective well-being (Verme, 2009).

In this study, we build on this line of research by examining the institutional determinants of control perceptions. We propose two possible channels through which economic freedom may influence people's perception of control: (1) socio-economic outcomes and (2) procedural utility. First, a large body of theoretical and empirical literature links economic freedom to a number of positive socio-economic outcomes, including: economic growth and development (De Haan et al., 2006; Faria and Montesinos, 2009); human and physical capital investment (Dawson, 1998; Gwartney et al., 2006; Hall et al., 2010); quality of life (Nikolaev, 2014); labor market outcomes (Feldmann, 2007; Heller and Stephenson, 2014); poverty alleviation (Gwartney and Connors, 2010); less cronyism and greater equality (Bennett and Cebula, 2015); social trust (Berggren and Jordahl, 2006); improved human rights (Blume and Voigt, 2007); less crime (Bjørnskov, 2015); and peacefulness (de Soysa and Fjelde, 2010). Thus, people who live in countries with a higher level of economic freedom will face more real opportunities on the labor and product market places that will leave them with a greater sense of freedom of choice. More importantly, the promise of higher economic and social rewards will leave people believing that their choices matter and encourage them to use their talents in a productive way (Baumol, 1990).

However, it is also possible that too much freedom of choice leaves people with less perception of control. According to Schwartz (2004), more choice is not necessarily better. Beyond some optimal level, more choices become overwhelming and lead to decision paralysis and less sense of control. Even if individuals are able to overcome this paralysis, their decisions often leave them less satisfied due to greater regret, escalated expectations, and self-blame. The so-called "paradox of choice" has been offered as an explanation for the rise of clinical depression in the United States in the past several decades, along with the stagnating happiness levels of Americans since the 1970s.

This criticism is especially important for policy analysis because freedom of choice is viewed as one the hallmarks of market capitalism—it is what drives competition, encourages innovation, and promotes economic development and social progress. Individual freedom is also at the foundation of liberal democracy and is the core of the narrative that fuels the American Dream. Some economists (Easterly, 2013; Inglehart et al., 2008; Sen, 1999) suggest that maximizing freedom should be the ultimate goal of development. Free choice enhances the ability of individuals to help themselves, a concept known as "agency aspect," and is valuable in and of itself because it allows individuals to pursue the kind of lives they value the most.

<sup>4</sup> For a review of this literature, see Iyengar (2011).

Second, individuals derive utility not just by outcomes, but also by the processes that lead to these outcomes (Frey et al., 2004). In this sense, the institutions under which people live provide an independent source of utility, *procedural utility*, because they supply feedback information that influences how individuals perceive their own sense of self. In this regard, social scientists have identified three different psychological needs that are essential to human flourishing and well-being: (1) autonomy, the capacity of rational individuals to make non-coerced choices; (2) relatedness, the desire to feel connected to others and be respected as a member of social groups; and (3) competence, the ability to control the external and inner environments effectively. By emphasizing personal choice, increasing tolerance (Berggren and Nilsson, 2013), and encouraging productive entrepreneurship (Baumol, 1990), economic freedom allows individuals to maximize their welfare by promoting each one of these psychological needs. The end result will be greater sense of control and subjective well-being. Welzel (2013), for example, develops a theory of emancipation based on the human desire for an existence free from domination. He argues that free agency leads to the emergence of emancipative values, which then lead to a higher level of psychological well-being as people gain control over their society's agenda.

Thus, we hypothesize that economic freedom enhances the real opportunities or human capabilities (Sen, 1985), the presence of valuable options and alternatives that allow individuals to choose a course of action they value the most, and leaves them with a greater sense of control over their lives. According to Schwartz (2004), it is not just the individual choice set that causes the "paradox of choice." Rather, this paradox will be evident even in an environment that offers more choices in general. For example, choosing between 30 different jams could be a paralyzing decision, but living in an environment in which one has to decide what kind of career to pursue, how to invest their retirement savings, where to grocery shop, or which health insurance policy is best for their lifestyle (i.e., having more choices on the meta level) will lead to similar levels of frustration, even if these choices present valuable alternatives. We expect, then, that the paradox of choice hypothesis will be evident even at the macro level as Schwartz (2004) argues, and, if correct, we should see diminishing returns from economic freedom and/or development.

To the best of our knowledge, only one other study examines the relationship between control perceptions and economic freedom. Using data from the WVS, Pitlik and Rode (2014) find a positive relationship between economic freedom and control perceptions and provide evidence that economic freedom exerts a relatively stronger positive impact among low income individuals. Our paper differs from that of Pitlik and Rode (2014) in four important aspects. First, since the survey data spans the period 1980–2012, our baseline specifications include year dummies. This is important because there may be general changes over time as well as survey-wave specific responses (e.g., due to the question order). In addition, we exploit the panel nature of the data and, as a robustness test, provide estimations based on fixed effects and random effects models that allow us to account for time-invariant country specific characteristics. Second, we test for potential non-linear effects, i.e., the paradox of choice hypothesis. Third, we decompose the EFW index to examine the potentially heterogeneous effects of the five major areas. Finally, we investigate the effect of two possible channels, perceptions of procedural fairness and social mobility, which may influence control perceptions and be linked to locus of control.<sup>5</sup> It is important to note that the research in this paper and that of Pitlik and Rode (2014) was carried out independently and simultaneously.

### 3. Data

Variable descriptions and summary statistics for all of the data utilized are provided in Tables 1 and 2, respectively.

#### 3.1. Control perceptions

The dependent variable in all of our main econometric models is control perceptions. It comes from the following question asked in the World Values Survey (WVS): "Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means 'no choice at all' and 10 means 'a great deal of choice' to indicate how much freedom of choice and control you feel you have over the way your life turns out." It is thus a categorical variable ranging from 1 to 10 that is increasing in the degree to which individuals perceive that they have control over their lives. Our dataset consists of >250,000 individual observations, representing 84 countries over the period 1981–2012. As indicated by Fig. 1, control perceptions exhibit significant variation across individuals, as responses range from 0 to 10 with a mean of 6.75 and standard deviation of 2.48. They also exhibit considerable variation across countries, as the average control perceptions measure by country ranges from 5.4 to 8.3, with a mean of 6.9 and standard deviation of 0.70. Fig. 2 reports the mean control perceptions measure by country.

#### 3.2. Economic freedom

The independent variable of interest is the degree to which a country's institutions and policies are consistent with economic freedom. Following a large body of empirical literature, we use the Fraser Institute's Economic Freedom of the World index (EFW). The index is comprised of 43 variables that are assigned to five major areas: (EF1) Size of Government; (EF2) Legal Structure and Security of Property Rights; (EF3) Sound Money; (EF4) Freedom to Trade Internationally; and (EF5) Regulation

<sup>5</sup> While Pitlik and Rode interpret their dependent variable, control perceptions, to represent locus of control, we are more cautious in making this claim. Locus of control is a complex concept that, in its most widely used form, is derived from a 29-item scale that includes questions about luck, hard work, opportunity, heredity, education, social mobility, perceived fairness, trust, attitudes towards the role of the government, etc. (Rotter, 1966).

**Table 1**

Definition and sources of variables.

Main variables	Description	Source
<i>Macro variables</i>		
Economic freedom	Index measuring the degree to which policies and institutions are consistent with the concept of economic freedom. 0 'least free' to 10 'most free'	Fraser Institute, Gwartney et al. (2012) <a href="http://www.freetheworld.com/">http://www.freetheworld.com/</a>
Log GDP	Natural log of real GDP per capita (2005 PPP-adjusted US dollars)	World Bank Development Indicators <a href="https://pwt.sas.upenn.edu/">https://pwt.sas.upenn.edu/</a>
Inflation	Rate of inflation.	World Development Indicators <a href="http://data.worldbank.org/data-catalog/world-development-indicators">http://data.worldbank.org/data-catalog/world-development-indicators</a>
Unemployment	The share of labor force that is unemployed.	World Development Indicators <a href="http://data.worldbank.org/data-catalog/world-development-indicators">http://data.worldbank.org/data-catalog/world-development-indicators</a>
<i>Micro variables</i>		
Control perception	Data was collected with the question: "Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means "no choice at all" and 10 means "a great deal of choice" to indicate how much freedom of choice and control you feel you have over the way your life turns out.	All microeconomic variables came from the WVS/EVS Integrated datas 1981–2014 file. <a href="http://www.wvsevsdb.com/wvs">http://www.wvsevsdb.com/wvs</a>
Income	Scale of incomes 1 'lowest step' to 10 'highest step'	
Age	Age in years.	
Male	Gender dummy (1: Male, 0: Female)	
Tertiary education	Dummy for tertiary (college) education	
Marital status	Dummies for 'married', 'divorced', and 'single'	
Employment status	Dummies for 'employed full-time', 'part-time', 'self-employed', 'retired', 'housewife', 'student', 'unemployed', and 'other than above'	
<i>Fairness/mobility perceptions</i>		
Hard work	Dummy variable for values below 5 associated with the question: "In the long run, hard work usually bring better life." The scale used is from '1' completely agree to '10' completely disagree.	
Laziness	Dummy variable equal to '1' for the response "people are living in need because of laziness or lack of willpower" and '0' for the response "people are living in need because of injustice in society."	
Escape	Dummy equal to '1' if the respondent answered that "people have a chance to escape poverty" and '0' for the claim that "people have little chance to escape poverty"	
Conservative	Dummy equal to '1' if the person identified as a conservative, i.e., they answered 7 or above on a 10 point scale that measures conservative political ideology.	
Gov role	Dummy equal to '1' if the respondent answered "Government's role is to respect the personal freedom" and '0' for "to maintain order in society."	

of Credit, Labor, and Business. Each component is rated on a 0–10 scale that reflects the distribution of the underlying data. The five area ratings reflect the average of the component ratings, and the composite index reflects the average of the five areas. Data on economic freedom is available in five year intervals prior to 2000 and annually afterwards (Gwartney et al., 2014).<sup>6</sup>

### 3.3. Procedural fairness and mobility perceptions

As described in section two, locus of control is a multidimensional concept that, in addition to individuals' perceptions about freedom of choice, also incorporates an individual's perception of procedural fairness and social mobility, as well as their attitude towards the role of government, among other factors. Although it is beyond the scope of the current study to develop a multidimensional measure of locus of control, the above factors may serve as an intermediary channels through which the institutional environment of a country affects one's control perception. Following Bjørnskov et al. (2013), we utilize four alternative dummy variables derived from the WVS that serve as proxies for fairness and mobility perception: (1) *Hard Work*; (2) *Laziness*; (3) *Escape*; and (4) *Conservative*.<sup>7</sup> These variables have furthermore been used by Alesina and Glaeser (2004) to examine attitudes towards

<sup>6</sup> Because EFW data are only available for years ending in five and zero prior to 2000 and WVS survey data are sometimes available during intervening years before 2000, we match WVS observations to the closest EFW country-year observation.

<sup>7</sup> The choice of proxy variables by Bjørnskov et al. (2013) is informed by definitions employed by Alesina and La Ferrara (2005) and Corneo and Grüner (2002).



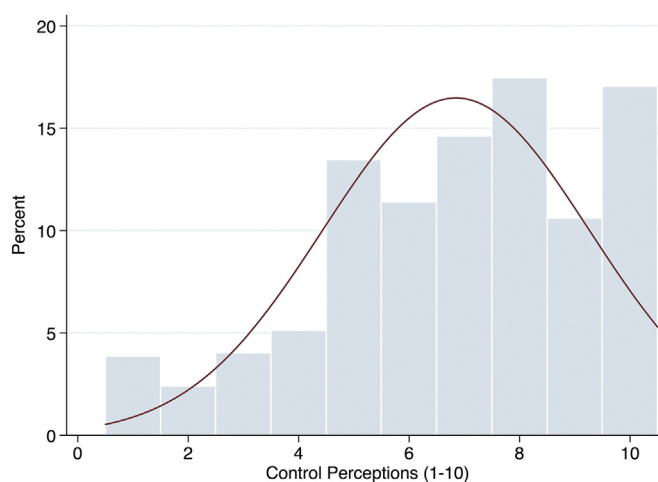
**Table 2**

Summary statistics.

Main variables	Observations	Mean	St. dev.	Min	Max
<i>Macro variables</i>					
Economic freedom	163	6.47	1.22	2	9.15
A1: Gov size	163	6.10	1.44	0.65	9.93
A2: legal system	163	5.95	1.66	1.43	9.62
A3: sound money	163	7.13	2.45	0.00	9.89
A4: Int trade	163	6.90	1.75	0.00	10.00
A5: Regulation	163	6.20	1.35	1.00	9.43
Log GDP per capita (PPP)	180	9.29	0.99	6.74	11.75
Inflation	163	20.27	75.65	−2.43	1058.37
Unemployment	163	9.37	6.42	1.2	36.4
<i>Micro variables</i>					
Control perceptions	265,512	6.94	2.39	1	10
Hard work	235,779	0.70	0.46	0	1
Escape	62,344	0.39	0.49	0	1
Lazy	59,828	0.29	0.45	0	1
Conservative	231,878	0.33	0.47	0	1
Gov role	61,779	0.42	0.49	0	1
Income	238,391	4.69	2.35	1	10
Age	261,548	40.70	16.23	13	99
Kids	258,007	1.91	1.84	0	8
Male	261,046	0.49	0.42	0	1
College education	238,154	0.23	0.42	0	1
<i>Marital status</i>					
Divorced	263,935	0.11	0.31	0	1
Single	263,935	0.26	0.44	0	1
<i>Work status</i>					
Part time	259,888	0.08	0.28	0	1
Self-employed	259,888	0.12	0.32	0	1
Retired	259,888	0.12	0.32	0	1
Housewife	259,888	0.14	0.35	0	1
Student	259,888	0.08	0.29	0	1
Unemployed	259,888	0.09	0.29	0	1
Other	259,888	0.02	0.13	0	1

Summary statistics limited to sample of observations for which EFW and control perceptions data available.

social mobility, fairness, and redistribution. We also utilize an additional variable from the WVS that indicates one's attitude towards the role of government in preserving freedom, (5) *Gov Role*. All five of these alternative procedural fairness and mobility perception variables are dichotomous in nature. For example, the variable *escape* represents a dummy equal to '1' if the

**Fig. 1.** Distribution of perceptions of control responses.

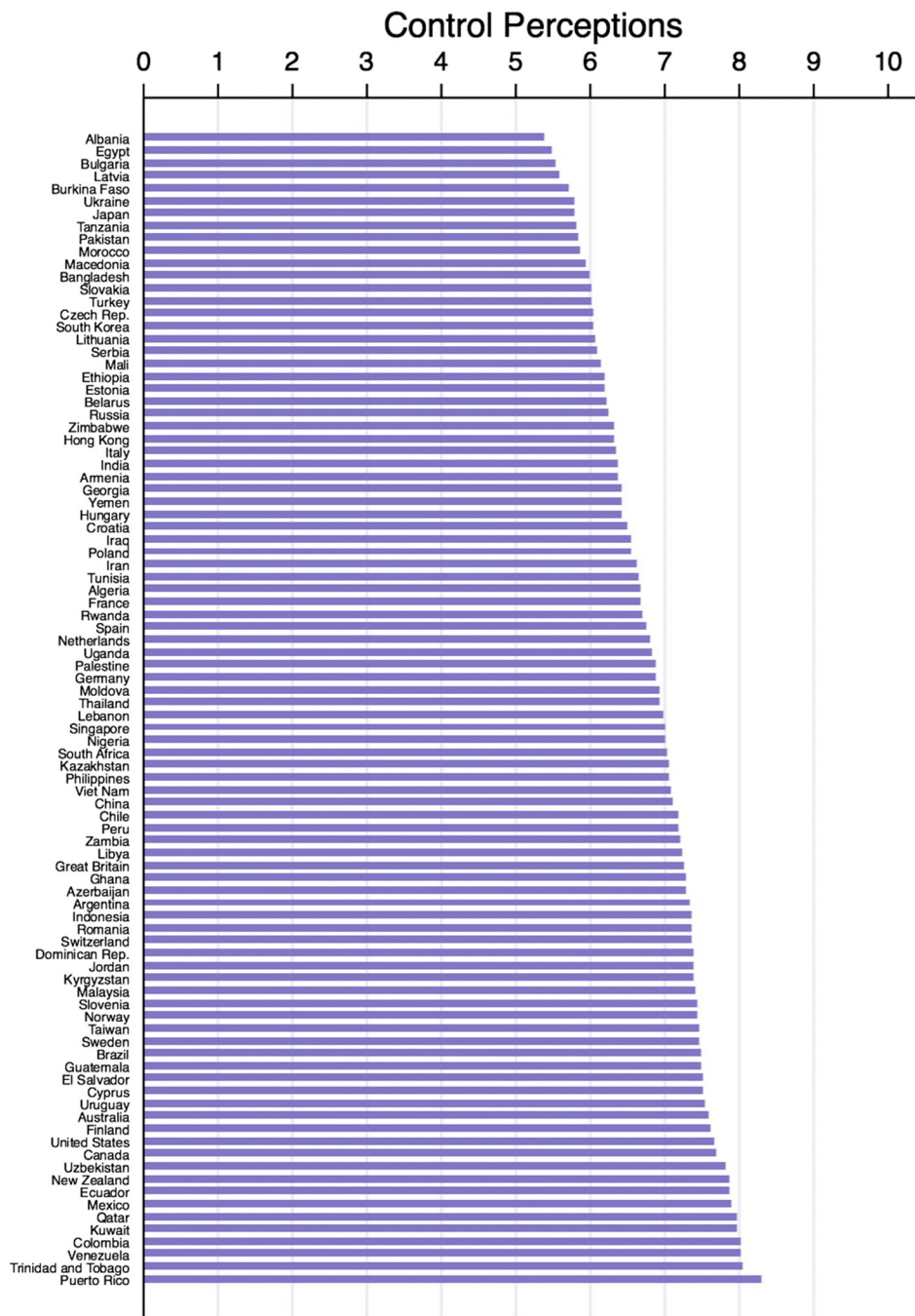


Fig. 2. Mean control perceptions by country.

respondent expressed the belief that “people have a chance to escape poverty” and ‘0’ if they agreed with the statement “people have little chance to escape poverty.” The remaining variables are defined in Table 1.

### 3.4. Microeconomic control variables

Our analysis controls for a wide variety of individual-level characteristics that potentially affect control perceptions. These include categorical variables such as relative income, marital status, gender, tertiary educational attainment, and employment status, as well as discrete variables such as number of children and age. These data are from the WVS.

### 3.5. Macroeconomic control variables

We control for several macroeconomic variables that potentially influence individual control perceptions, including the log of real PPP-adjusted GDP per capita (*Log GDP*), the inflation rate (*inflation*) and the unemployment rate (*unemployment*). Data on Log GDP, inflation and unemployment are from the World Bank World Development Indicators.

## 4. Empirical results

In order to assess the relationship between control perceptions and economic freedom, we use a multi-level pooled ordinary least squares (POLS) model with country, regional, and year effects, as described by Eq. (1),<sup>8</sup> where *Control* represents control perception of individual *i* in country *c* at time *t*; *EFW* denotes economic freedom in country *c* at time *t*; *X* is a vector of individual-level characteristics including age and its square, gender, employment status, marital status, and income rank; *Z* is a vector of country-level macroeconomic variables including log of GDP, inflation and unemployment;  $\tau_c$  and  $\eta_t$  are country and time effects; and  $\nu_{i,c}$  is the i.i.d. error term.<sup>9</sup> All results utilize robust standard errors to control for cross-sectional heterogeneity (White, 1980), and error terms are clustered at the country-level to control for the so-called Moulton bias (Moulton, 1986).<sup>10</sup>

$$\text{Control}_{ict} = \beta \text{EFW}_{ct} + \gamma' \mathbf{X} + \phi' \mathbf{Z} + \tau_c + \eta_t + \nu_{ict} \quad (1)$$

Table 3 presents our main results. Model 1 includes only the individual-level characteristics as a baseline before introducing country-level variables to the analysis. Both age and its square are statistically significant at 10% or better, with the former negatively and the latter positively correlated with control perception, suggesting the existence of a U-shaped relationship between age and control perception. Males and college graduates perceive, on average, greater control over their lives relative to females and non-college graduates, respectively. Self-employed individuals perceive, on average, greater control over their lives than individuals with full-time employment, while housewives, students, unemployed people, and those reporting “other” employment perceive less control over their lives than individuals with a full-time job. One’s perception of control over their life is positively and significantly influenced, both statistically and practically, by their income level.<sup>11</sup> Divorced individuals report lower levels of control perceptions than married persons. Having children does not significantly influence control perceptions, all else equal.

Model 2 of Table 3 adds *EFW* to the specification. *EFW* is statistically significant at the 1% level and the estimated coefficient suggests that, all else equal, a unit increase in economic freedom is associated with a 0.167 point increase in control perception. Statistically, the magnitude of the effect of *EFW* is large relative to the individual-level characteristics as the standardized coefficient on *EFW* is 0.085, whereas the largest standardized coefficients among the microeconomic controls, which exhibit similar partial effects as obtained in the baseline estimation, are observed for the income rank variables (0.008 to 0.096).

Model 3 adds Log GDP to the specification from model 2, serving as the baseline estimate. Log GDP is negative and statistically significant at the 10% level, which may be an indication of the “paradox of choice” hypothesis. Controlling for Log GDP, *EFW* remains positively and significantly (statistically at the 1% level) correlated with control perceptions, and the coefficient increases to 0.202, suggesting that all else equal, a standard deviation increase in economic freedom is associated with a 0.103 standard deviation increase in control perceptions.

Model 4 of Table 3 adds two additional macroeconomic variables to the specification from model 3 – the inflation and unemployment rates. All of the macroeconomic variables are statistically significant, but *EFW* enters positively and is statistically significant with a coefficient of 0.257, exhibiting a larger partial effect than in model 3. In this final and most complete model, the positive effect of one-unit increase in the *EFW* is more than enough to offset the negative effect of individual unemployment on control perceptions, which is  $-0.236$ .<sup>12</sup>

## 5. Paradox of choice? Testing for non-linear effects

Next, we test “the paradox of choice” hypothesis, or whether the relationships between control perceptions and (i) economic freedom and (ii) economic development are non-linear and exhibit diminishing returns. The results are presented in Table 4.

<sup>8</sup> The set of regional dummies includes dichotomous variable for Europe and Central Asia, Middle East and North Africa, Latin America and Caribbean, South Asia, Sub-Saharan Africa, North America, East Asia and Pacific. The primary motivation to control for regional effects is to account for the well-known Latin America and Post-Communist biases.

<sup>9</sup> With the exception of age, all of the individual characteristic variables are either categorical or dichotomous. See Tables 1 and 2 for variable descriptions and descriptive statistics, respectively.

<sup>10</sup> Although the dependent variable, control perceptions, is a categorical variable and technically requires ordered logit estimation, we choose to report the results from OLS fixed effects regressions. We do this for two reasons. First, consistent with Ferrer-i-Carbonell and Frijters (2004), who show that the estimations from OLS and ordered logit regressions hardly differ in the context of survey research using subjective data, our results are nearly identical for ordered logit and OLS specifications. Second, several of our models test for the interaction effect of different variables, and Ai and Norton (2003) show that interactive coefficients in ordered logit regressions are more difficult to interpret than commonly assumed. Analogous logit model estimates are available upon request.

<sup>11</sup> Pitlik and Rode (2014) interact relative income with *EFW*, finding that the positive effect of economic freedom on control perception is greater for lower income groups. In results not reported but available upon request, we find similar results.

<sup>12</sup> The results are robust to the inclusion of controls for individual health, trust and religiosity. These results are omitted because it is highly likely that these three variables are endogenous.



**Table 3**

Effect of EFW on control perceptions.

	(1)		(2)		(3)		(4)	
	coef	se	coef	se	coef	se	coef	se
EFW			0.167***	(0.062)	0.202***	(0.072)	0.257***	(0.088)
Log GDP					−0.351*	(0.207)	−0.614***	(0.229)
Inflation							−0.001***	(0.000)
Unemployment							0.046*	(0.026)
Age	−0.015***	(0.004)	−0.014***	(0.004)	−0.013***	(0.004)	−0.017***	(0.005)
Age squared	0.014***	(0.004)	0.013***	(0.004)	0.012***	(0.004)	0.017***	(0.005)
Male	0.093***	(0.025)	0.076***	(0.026)	0.069**	(0.026)	0.028	(0.030)
Marital status								
Divorced	−0.083***	(0.027)	−0.082***	(0.031)	−0.085**	(0.032)	−0.085**	(0.034)
Single	−0.012	(0.025)	−0.018	(0.028)	−0.017	(0.029)	−0.019	(0.031)
College	0.154***	(0.020)	0.147***	(0.023)	0.151***	(0.023)	0.153***	(0.022)
Kids	0.003	(0.010)	−0.001	(0.011)	−0.005	(0.012)	−0.012	(0.015)
Employment								
Part Time	−0.063**	(0.026)	−0.060**	(0.027)	−0.064**	(0.027)	−0.066**	(0.027)
Self	0.040	(0.031)	0.033	(0.033)	0.022	(0.034)	0.075*	(0.038)
Retired	−0.106**	(0.043)	−0.064*	(0.038)	−0.069*	(0.039)	−0.080**	(0.037)
Housewife	−0.225***	(0.035)	−0.206***	(0.039)	−0.190***	(0.040)	−0.141***	(0.046)
Student	−0.118**	(0.048)	−0.142***	(0.047)	−0.141***	(0.048)	−0.072*	(0.040)
Unemployed	−0.247***	(0.031)	−0.255***	(0.032)	−0.258***	(0.034)	−0.236***	(0.040)
Other	−0.264***	(0.056)	−0.286***	(0.060)	−0.277***	(0.060)	−0.319***	(0.079)
Income scale								
2	0.076*	(0.044)	0.063	(0.043)	0.070	(0.045)	0.107**	(0.052)
3	0.194***	(0.059)	0.185***	(0.058)	0.192***	(0.060)	0.263***	(0.060)
4	0.399***	(0.066)	0.387***	(0.065)	0.396***	(0.067)	0.440***	(0.065)
5	0.510***	(0.074)	0.475***	(0.075)	0.484***	(0.077)	0.536***	(0.076)
6	0.666***	(0.075)	0.626***	(0.079)	0.640***	(0.080)	0.676***	(0.083)
7	0.818***	(0.080)	0.778***	(0.083)	0.788***	(0.085)	0.789***	(0.089)
8	0.979***	(0.081)	0.926***	(0.085)	0.937***	(0.086)	0.900***	(0.089)
9	1.026***	(0.086)	0.953***	(0.090)	0.974***	(0.092)	0.912***	(0.091)
10	1.077***	(0.083)	1.003***	(0.085)	1.035***	(0.086)	1.005***	(0.082)
Constant	6.328***	(0.197)	5.279***	(0.462)	8.159***	(1.703)	9.807***	(1.704)
Country dummies	✓		✓		✓		✓	
Year dummies	✓		✓		✓		✓	
Observations	243,543		204,968		195,713		139,455	
Adj. R-squared	0.124		0.119		0.123		0.130	

Dependent variable is control perception. All regressions include country, regional, and year dummies. Robust standard errors clustered at the country level reported in parenthesis. The categories 'female', 'married', 'less than tertiary education', and "income scale '1'" were used as a base category and therefore omitted. Results are robust to the inclusion of controls for health, trust, and religiosity, with the EFW variable significant in all models above at least at the 0.05 level.

\*\*\*  $p < 0.01$ .

\*\*  $p < 0.05$ .

\*  $p < 0.1$ .

Model 1 adds an interaction term between EFW and Log GDP to model 3 from Table 3 to test whether the effect of EFW is conditional on the level of economic development, and vice versa. The constitutive Log GDP term remains negative and is highly significant statistically, while the constitutive EFW term is not statistically significant. Although the interaction between EFW and Log GDP is not statistically significant at conventionally accepted levels, the positive coefficient suggests that the negative effect of economic development on control perceptions is mitigated in the presence of higher levels of economic freedom.

Model 2 in Table 4 includes Log GDP and its square. EFW enters positively and is highly significant with a coefficient of 0.183. Both Log GDP terms are statistically significant at the 1% level, with the linear and squared terms entering positively and negatively, respectively, and forming an inverted U-shaped curve. All else equal, the effect of economic development on control perceptions turns from positive to negative at a level of GDP per capita of \$1688 ( $\exp[-(\frac{2.705}{2 \times -0.182})]$ ). Only 7.4% of the individuals in the sample live in a country below this threshold, suggesting that economic development is negatively associated with control perceptions for the vast majority of individuals in the sample, all else equal.

Model 3 in Table 4 drops the Log GDP squared term and adds EFW squared, allowing for a non-linear control perceptions-EFW relationship. The linear and quadratic EFW terms enter negatively and positively, respectively, although only the quadratic term is statistically significant (at the 1% level). Log GDP is meanwhile negative and highly significant statistically. Model 4 includes squared terms of both EFW and Log GDP. Both EFW terms are statistically significant at 5% or better in this specification and form a U-shaped curve, while both Log GDP terms are significant statistically but form an inverted U-shaped curve. The control perceptions-EFW curves estimated in models 3 and 4 have a vortex at EFW levels of 1.09 and 2.67, respectively. None of the individuals in the sample live in a country with an EFW score below this threshold, suggesting that within the sample, EFW is positively associated with control perceptions, reinforcing the main results reported in Table 3. The estimated vortex of the

**Table 4**

Paradox of choice? Non-linear effects of EFW on control perceptions.

	(1)	(2)	(3)	(4)	(5)	(6)
EFW	0.013 (0.124)	0.183*** (0.017)	−0.050 (0.073)	−0.171** (0.075)		0.169** (0.074)
Log GDP	−0.475*** (0.099)	2.705*** (0.457)	−0.390*** (0.060)	3.099*** (0.463)	−0.405* (0.213)	
EFW*Log GDP	0.021 (0.014)					
EFW <sup>2</sup>			0.023*** (0.006)	0.032*** (0.007)		
(Log GDP) <sup>2</sup>		−0.182*** (0.027)		−0.209*** (0.027)		
EFW <sup>(p1)</sup>					−3.182 (2.994)	
EFW <sup>(p2)</sup>					1.307 (0.985)	
(Log GDP) <sup>(p1)</sup>						0.027 (0.020)
(Log GDP) <sup>(p2)</sup>						−0.012 (0.008)
(p1)					0	3
(p2)					0	3
Controls	✓	✓	✓	✓	✓	✓
Country Dummies	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓
Observations	195,713	195,713	195,713	195,713	195,713	195,713
Adj. R-squared	0.123	0.123	0.123	0.123	0.123	0.123

Dependent variable is control perception. All regressions include country and regional fixed effects and all control variables from model (2) in Table 3. Robust errors clustered at the country level are reported in parenthesis. The categories 'female', 'married', 'very poor health', 'less than tertiary education', 'cannot trust others' and 'income scale '1'' were omitted because they are used as a base category. Fractional polynomials of EFW and Log GDP are reported in models 5 and 6, respectively,  $p_1$  and  $p_2$  are the powers selected from the power vector for  $m \leq 2$  that provide the best fit using the method described by Royston and Altman (1994).

\*\*\*  $p < 0.01$ .

\*\*  $p < 0.05$ .

\*  $p < 0.1$ .

control perceptions-development curve is \$1848. Only 6.6% of individuals in the sample live in a country below this threshold, suggesting again that economic development is negatively associated with control perceptions for the vast majority of individuals.

The quadratic polynomials specified in models 2–4 of Table 4 are a subset of the family of fractional polynomials available to fit potentially non-linear relationships. Fractional polynomials allow for a much wider range of shapes to be obtained by allowing for flexible parameterization of continuous variables. Models 5 and 6 report the results from the fractional polynomial regression method suggested by Royston and Sauerbrei (2008) to find the fractional polynomial of degree  $m \leq 2$  that best fits the data for EFW and Log GDP, respectively. These models are described by Eq. (2), where  $W_c$  represent EFW (model 5) or Log GDP (model 6), and  $(p_1)$  and  $(p_2)$  denote the powers from the set  $P = \{-2, -1, -0.5, 0, 0.5, 1, 2, 3\}$  that minimizes deviance, and the round bracket notation signifies the Box–Tidwell transformation (Royston and Altman 1994).<sup>13</sup>

$$\text{Control}_{ict} = \beta_0 + \beta_1 W_{ct}^{(p_1)} + \beta_2 W_{ct}^{(p_2)} + \gamma' \mathbf{X} + \varphi' \mathbf{Z} + v_{ict} \quad (2)$$

Fractional polynomial regression allows for repeated powers and Royston and Altman (1994) show that each time a power repeats in a fractional polynomial of  $x$ , it is multiplied by  $\ln x$ . The lowest deviance fractional polynomial for EFW has powers  $p_1 = p_2 = 0$ , while the lowest deviation fractional polynomial for Log GDP has powers  $p_1 = p_2 = 3$ . As such the coefficients reported in models 5 and 6 pertain to the equation  $\text{Control} = \beta_0 + \beta_1 W^{p_1} + \beta_2 (W^{p_1} \times \ln W) + \gamma' \mathbf{X} + \varphi' \mathbf{Z}$ .  $\beta_1$  and  $\beta_2$  are negative and positive in model 5, but neither EFW term is statistically significant, while Log GDP remains negative and statistically significant in this specification. The Log GDP terms take the opposite signs in model 6, but neither is statistically significant. EFW maintains a positive sign and is statistically significant in this specification.

Overall, the results from Table 4 provide very little evidence supporting the paradox of choice hypothesis. The cumulative results suggest a positive linear effect of EFW on control perceptions, and although the evidence suggests a curvilinear relationship between the level of development and control perceptions, the estimated threshold of development for which the effect is negative applies to a limited minority of the observations in the sample, all else equal.

<sup>13</sup> For the Box–Tidwell transformation:  $X^{(p_1)} = X^{p_1}$  if  $p_1 \neq 0$  and  $\ln X$  if  $p_1 = 0$ .

**Table 5**

Correlation matrix – areas of the EFW index.

	A1: Gov size	A2: legal system	A3: sound money	A4: Int trade	A5: regulation
EF1: Gov size	1.000				
EF2: legal system	−0.239	1.000			
EF3: sound money	0.075	0.431	1.000		
EF4: Int trade	0.066	0.544	0.514	1.000	
EF5: Regulation	0.208	0.444	0.631	0.5360	1.000

Note: Sample limited to observations for which control perceptions data available.

## 6. Decomposing the EFW index

As described in section two, the EFW index is comprised of five major areas. Table 5 reports the pairwise correlations between the five areas. With the exception of the size of government area (EF1), the five areas are moderately well correlated, as the correlations range from 0.43 to 0.63. The correlation between EF1 and the other four areas is significantly weaker, as the highest correlation of −0.239 is with the legal system area (EF2). Although some of the areas of the EFW index are moderately well-correlated, the areas nonetheless appear to represent different aspects of the institutional and policy environment of a country. As such, we decompose the index to examine the partial effects of the individual areas of economic freedom on control perceptions.<sup>14</sup>

Table 6 reports estimates analogous to model 2 of Table 3 after decomposing the economic freedom index. Model 1 simultaneously controls for all 5 areas of the EFW index. Among the economic freedom areas, only sound money (EF3) is statistically significant at the 5% level or better. Because the economic freedom areas are cross correlated to some extent, including them all in the same model may bias the coefficients downwards and increase the standard errors, increasing the probability of type II error. Models 2–6 control for the individual EFW areas one at a time. While all areas of the EFW index except for EF1 (Gov. Size) have a positive coefficient, only area EF3 (Sound Money) is statistically significant (at the 1% level). The partial effect of EF3 is 0.105 and is moderately lower than that the 0.135 coefficient obtained in model 1.

## 7. Perceptions of procedural fairness and social mobility

Next we examine an additional channel through which economic freedom may influence control perceptions. Our hypothesis is that individuals who live in counties with higher levels of economic freedom are more likely to believe that their actions, choices and efforts matter more because more economically free countries rely to a greater extent on the price system and profit and loss accounting as mechanisms to provide market feedback in a diversity of product and labor markets, providing individuals with greater opportunities to experience situations in which their decisions correspond to economic and social rewards or punishments, as explained in section two. Consequently, we expect to see that people who live in societies with greater levels of economic freedom will perceive greater procedural fairness and opportunity for social mobility, which will in turn lead to a greater perception of control. As described in Section 3.3, we employ five alternative measures of perceived procedural fairness and social mobility to examine potential channels through which economic freedom impacts control perceptions. These variables are also described in Table 1. Although each of the dependent variables is dichotomous, the results from linear probability estimation are reported in Table 7.<sup>15</sup>

The results from Table 7 indicate that neither economic freedom nor economic development is associated with how people perceive the long-run pay off from their work (model 1); however, people in more economically free and developed societies are more likely to believe that poor people have a chance of escaping poverty (model 2) and that people live in need because of their own efforts instead of the social system (model 3). These last two variables can be seen as an indirect measure of both perceived fairness and social mobility. They are also linked to the concept of locus of control and suggestive that economic freedom may promote the development of personality traits associated with internal locus of control.

Interestingly, model 4 suggests that economic freedom and development do not affect individual's political ideology. Nevertheless, according to model 5, people in more economically free and developed societies are more likely to believe that the role of government is to foster and protect individual freedom as opposed to establish social order. These results are in line with our hypothesis that economic freedom affects the perception of control through the channels of social mobility and perceived fairness, but only touch the surface of a wide range of variables that may impact the personality traits that determine locus of control.

Finally, in model 6 we present evidence that all of the mobility and fairness variables are associated with a higher level of control perceptions. EFW remains positive and highly statistically significant after controlling for the measures of procedural fairness and social mobility perceptions that serve as potential mediators of the effects of EFW on control perceptions. This suggests that the effect of economic freedom goes beyond the perception of mobility and fairness, although the results are suggestive that this is a likely channel through which the relationship works.

<sup>14</sup> Decomposition of the EFW index has precedent in the empirical economic freedom and growth literature (e.g. Carlsson and Lundström, 2002; Dawson, 2003)

<sup>15</sup> We report linear probability estimates to maintain consistency with the other results of this paper. The results are similar using logit estimation and available upon request.

**Table 6**

Effects of EFW areas on control perceptions.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Log GDP	−0.148 (0.267)	0.011 (0.252)	−0.185 (0.191)	−0.254 (0.195)	−0.098 (0.190)	−0.113 (0.176)
EFW1: Gov size	0.046 (0.064)	−0.078 (0.088)				
EFW2: legal system	0.135 (0.101)		0.162 (0.105)			
EFW3: sound money	0.131*** (0.051)			0.105*** (0.035)		
EFW4: Int trade	−0.043 (0.079)				0.007 (0.056)	
EFW5: regulation	−0.159 (0.132)					0.028 (0.069)
Controls	✓	✓	✓	✓	✓	✓
Country dummies	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓
Observations	191,520	144,770	195,716	199,482	197,236	196,417
Adj. R-squared	0.120	0.124	0.121	0.124	0.122	0.121

Dependent variable is control perception. All regressions include country and regional fixed effects and all control variables from model (2) in Table 3. Robust errors clustered at the country level are reported in parenthesis. The categories 'female', 'married', 'very poor health', 'less than tertiary education', 'cannot trust others' and 'income scale '1'' were omitted because they are used as a base category.

\*\*\*  $p < 0.01$ .\*\*  $p < 0.05$ .\*  $p < 0.1$ .

## 8. Panel regressions

As a final robustness check, we exploit the panel nature of the WVS data and run several specifications that use as a dependent variable the mean level of control perceptions for each country in the sample that was surveyed for at least two years. This creates an unbalanced panel of about 60 countries in our most complete model, which allows the estimation of regressions with both spatial and temporal variation. For example, a fixed-effects estimation uses *within* country variation over time and allows us to control for unobserved country-level characteristics if they are time invariant.

To determine which model, random or fixed-effects, is more appropriate, we first run a Hausman test (model 3 of Table 8), which examines the differences in the variance-covariance structure. The  $p$ -value of 0.779 indicates that there are no significant

**Table 7**

Effect of EFW on procedural fairness &amp; social mobility perceptions.

Variables	(1) Hard work	(2) Escape	(3) Lazy	(4) Conservative	(5) Gov role	(6) Control
EFW	0.002 (0.015)	1.108*** (0.085)	3.331*** (0.127)	−0.002 (0.010)	2.200*** (0.103)	3.206*** (0.959)
Log GDP	−0.101* (0.057)	0.486*** (0.031)	1.411*** (0.050)	−0.162*** (0.042)	1.555*** (0.042)	4.313*** (0.279)
Hard work						0.202** (0.073)
Escape						0.303*** (0.095)
Lazy						0.144** (0.055)
Conservative						0.234 (0.140)
Gov role						0.142* (0.072)
Controls	✓	✓	✓	✓	✓	✓
Country dummies	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓
Observations	154,935	38,217	36,001	151,751	37,108	29,062
Adj. R-squared	0.055	0.154	0.122	0.071	0.088	0.159

All regressions are estimated using OLS and include country, regional, and year dummies as well as all control variables from model (2) in Table 3. Robust standard errors clustered at the country level are reported in parenthesis. The categories 'female', 'married', 'very poor health', 'less than tertiary education', 'cannot trust others' and 'income scale '1'' were omitted because they are used as a base category.

\*\*\*  $p < 0.01$ .\*\*  $p < 0.05$ .\*  $p < 0.1$ .

**Table 8**

Panel regressions, control perceptions.

	(1)		(2)		(3)		(4)		(5)	
	FE		RE		FE		RE		RE - AR (1)	
EFW	0.207***	(0.052)	0.202***	(0.042)	0.350***	(0.116)	0.189**	(0.082)	0.223***	(0.075)
Log GDP					−0.681*	(0.345)	0.059	(0.124)	0.184*	(0.110)
Unemployment					0.035	(0.021)	0.010	(0.013)	−0.002	(0.011)
Inflation					−0.001	(0.001)	−0.001	(0.001)	−0.001	(0.000)
Constant	5.543***	(0.348)	5.513***	(0.292)	10.685***	(2.816)	5.035***	(1.022)	3.622***	(0.900)
Region dummies	X		X		X		✓		✓	
Year dummies	X		X		✓		✓		X	
Observations	194		194		123		123		123	
R-squared (overall)	0.137		0.1373		0.631		0.559		0.403	
Countries	92		92		60		60		60	

Dependent variable in all regressions is the mean perception of control in a country. Robust standard errors clustered at the country level are reported in parentheses. Models (1) and (3) are estimated using a fixed-effects model. Models (2) and (4) are estimated with a random-effects model.

\*\*\*  $p < 0.01$ .

\*\*  $p < 0.05$ .

\*  $p < 0.1$ .

differences between the coefficients from the random-effects and fixed-effects model. In this case, the random effects model is preferable because it is more efficient; however, we also report results from the fixed-effects specification as a robustness test. Furthermore, we perform a Breusch–Pagan LM test for random effects vs pooled OLS. The results ( $p$ -value  $< 0.01$ ) indicate that a random effects model is more appropriate.

Table 8 reports results from our panel estimations. Models 1 and 2 report the results from parsimonious fixed and random effects specifications, respectively, that include EFW as the sole regressor. Since EFW is likely to affect control perceptions through the channels of economic development, this parsimonious specification allows us to evaluate the overall effect of EFW on control perceptions. The results in both models suggest that the coefficient on EFW is highly statistically significant and positively correlated with the mean level of control perceptions in a country. Next, model 3 and 4 repeat this exercise while adding controls for the log of GDP, unemployment, inflation, as well as region and year dummies. The results are consistent with the previous findings so far—higher levels of economic freedom are associated with a higher level of mean control perceptions. While economic freedom is statistically significant at the 1% level, the log of GDP, unemployment, and inflation variables are not significant statistically.

It is highly likely, however, that the extent to which people perceive control over their lives today is affected by their control perceptions in previous periods. The Baltagi LBI test statistic for the modified Durbin Watson test suggests that the error terms are negatively correlated. Furthermore, the Wooldridge (2002) test for first-order serial correlation is also significant at the 1% level. Therefore, the final column (6) of Table 8 presents the results from a random-effects model with AR(1) correction for serial correlation. Again, the coefficient on EFW is positive and statistically significant. In this final and most complete regression, the log of GDP also has a positive sign, suggesting that a higher level of economic development is positively correlated with the mean control perceptions in a country.

## 9. Discussion

This paper examines the hypothesis that individuals living in countries with high levels of economic freedom (EFW) perceive greater control over their lives. Using multi-level models which control for country and year effects, the empirical evidence presented here is consistent with this hypothesis and the results of Pitlik and Rode (2014). It is important to note that many of the control variables included in our analysis such as GDP per capita, personal income, and educational attainment are positively correlated with both control perceptions and EFW. Including these variables biases the coefficient on EFW downward. Thus, our estimates, which range from 0.167 to 0.257, provide a lower bound of the partial effect of economic freedom on control perceptions.

We also test the so-called paradox of choice hypothesis by examining potential non-linear relationships between control perceptions and both economic freedom and economic development, but find little evidence in support of the hypothesis. Furthermore, we decompose the EFW index to examine how the five areas individually influence the perception of control, finding that only the sound money area is significantly associated with the degree of control that individuals perceive they have over their lives.

Furthermore, we explore additional channels through which economic freedom potentially impacts control perceptions. The results indicate that individuals living in countries with more economic freedom are more likely to perceive greater procedural fairness and opportunity for social mobility, as well as believe that the role of government is to preserve freedom. Lastly, we derive the average control perceptions measure at the country level to exploit the panel nature of our dataset. The results from fixed and random effects estimations provide further support for our earlier findings that economic freedom is associated with higher level of control perceptions.

As with all empirical analyses, there are several limitations to our study. First, while we control for a large number of personal characteristics and macroeconomic variables as well as country and year effects, it is possible that our models omit other



important determinants of control perceptions, resulting in omitted variable bias. Next is the issue of causality. Implicit in our analysis is the idea that individuals living in more economically free countries experience greater control over their lives, but it is also possible that countries whose residents exhibit high internal locus of control establish institutions and policies that are more consistent with the principles of economic freedom. Empirically demonstrating causality is beyond the scope of this paper, but would be a fruitful area for future research.

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