Economic freedom and life satisfaction: A moderated mediation model with individual autonomy and national culture

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ABSTRACT

Previous research has shown that economic freedom is associated with life satisfaction. Nonetheless, how economic freedom affects life satisfaction remains relatively unexplored. Test results on a sample of 238,944 observations from 78 countries in the period from 1990 to 2020 show that individual autonomy is a possible channel (so-called mediator): whereas economic freedom is found to foster individual autonomy, individual autonomy in turn increases life satisfaction. The relationship between economic freedom and individual autonomy particularly concerns two subdimensions of economic freedom: sound money and freedom to trade internationally. The test results show that the indirect effect of economic freedom on life satisfaction through individual autonomy is significant and explains 18% of the total relationship between economic freedom and life satisfaction. Furthermore, we find that the strength of the relationship between individual autonomy and life satisfaction increases with individualism, one of Hofstede's dimensions of national culture (i.e., individualism is a moderator). This suggests a so-called moderated mediation model, in which the relationship between economic freedom and life satisfaction is mediated by individual autonomy and moderated by individualism.

1. Introduction

In the past few decades, a considerable amount of research has been dedicated to investigating the relationship between economic freedom and happiness or life satisfaction (Berggren and Bjørnskov, 2020).[1] The concept of economic freedom relates to institutions that facilitate the degree of personal choice, voluntary exchange, freedom of competition, and protection of privately owned property afforded by society (Gwartney and Lawson, 2003). It combines legal and economic institutions as well as economic policies and comprises five different subdimensions: small size of government, quality of the legal system and property rights, sound money, freedom to trade internationally, and no regulation of labour, product, and capital markets. The literature shows that overall economic freedom and the subdimensions of quality of the legal system, sound money and free trade mostly positively relate to life satisfaction (Bjørnskov et al., 2010; Graafland and Compen, 2015; Fereidouni et al., 2013; Gehring, 2013; Lin et al., 2017). The relationship is more ambiguous for small size of government (Bjørnskov et al., 2007, 2008; Kim and Kim, 2012; Flavin et al., 2014; Graafland and Compen, 2015; Graafland and Lous, 2018) and regulation (Boarini et al., 2013; Nikolaev, 2015; Gehring, 2013).

Notwithstanding the extensive literature on the relationship between economic freedom and life satisfaction, the mediating factors

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[1] Both happiness and life satisfaction are commonly used measures of subjective well-being. In this study, we focus on life satisfaction which is seen as more reflective, while happiness is seen as somewhat more instantaneous.

that can explain how economic freedom may increase life satisfaction, remain relatively unexplored. Previous research by Graafland and Compen (2015) and Graafland and Lous (2018) has shown that income per capita, social trust and income inequality may be factors through which (various subdimensions of) economic freedom may increase life satisfaction. A paper by Rasmussen (2006) identifies another possible mediator. It presents the story of Adam Smith, one of the biggest advocates of free market institutions, who nonetheless acknowledged that persistent pursuit of wealth can pose a great obstacle to one's tranquillity and contentment. This naturally raises a question: are there ways through which free market institutions increase individuals' happiness other than wealth? According to Adam Smith, individual autonomy might have the power to do so: "Commerce and manufactures gradually introduced order and good government, and with them, the liberty and security of individuals. This, though it has been the least observed, is by far the most important of all their effects." (Smith, 1981, III. iv.4) Commercial society comes with formal institutions, such as the rule of law, that stimulate the independence and security of citizens. This could in turn lead to increased happiness. After all, it might be autonomy freedom, instead of wealth, that brings people happiness. This way of thinking points at the possible role of individual autonomy as a mediator in the relationship between economic freedom and happiness.

The limited number of previous studies on the potential of economic institutions to affect individual autonomy have provided mixed findings. For example, Miljkovic (2018) only found a positive significant relationship between political institutions and individual autonomy, not between economic institutions and individual autonomy. On the other hand, Berggren and Gutmann (2020) found that both democracy and rule of law (a subdimension of economic freedom) positively influence individual autonomy, where rule of law is considered a more robust predictor. Nikolaev and Bennett (2016) found that individual autonomy is significantly related to economic freedom. Testing for the five subdimensions, they identified that only sound money is significantly related to individual autonomy. Pitlik and Rode (2016) found a positive relationship between overall economic freedom and individual autonomy. They did not research the relationship with subdimensions of economic freedom.

Smith's intuition that autonomy freedom, in turn, informs happiness is supported by recent literature that stresses the importance of individual autonomy as a predictor of life satisfaction, including Steckermeier (2021), Verme (2009), Inglehart et al. (2008), Johnson and Krueger (2006), and Veenhoven (2000). Some authors state that individual autonomy might even be a better predictor of social development than national income (Okulicz-Kozaryn, 2015; Stiglitz et al., 2009). This contrasts with an existing stream of literature that suggests income as the (main) mediator between formal economic institutions and life satisfaction (Ferrer-i-Carbonell, 2005; Graafland and Compen, 2015; Welsch, 2003).

Another gap in current literature on the relationship between economic freedom and life satisfaction concerns the role of moderators. Moderation models explain when an independent variable affects a dependent variable. The strength of this effect depends on the level of a third variable, the so-called moderator. Following Graafland (2020), we propose that national culture may moderate the mediated relationship between economic freedom and life satisfaction. More specifically, we surmise that individualism, which is one of the dimensions of national culture in the framework of Hofstede (1980, 2001), positively moderates the relationship between individual autonomy and life satisfaction, as individual autonomy is more important to people with an individualistic value orientation than to people with a collectivist culture.

Thus, this research focuses on the following research questions: does individual autonomy mediate the relationship between economic freedom and life satisfaction? And if so, how much does this mediation effect explain the relationship between economic freedom and life satisfaction? Third, the influence of which specific subdimension of economic freedom is mediated by individual autonomy? Fourth, what is the moderating influence of individualism in the mediated relationship between economic freedom and life satisfaction? These questions are explored on a repeated cross-sectional dataset that contains 238,944 observations from 78 countries from 1990 to 2020.

The rest of the paper is structured as follows. Section two presents the set of hypotheses. Next, the methodology section describes the data used and the empirical strategy. The fourth section reports the results. The final section provides the main conclusions.

2. Hypotheses

Whereas there is ample evidence that economic freedom may increase life satisfaction, there is less insight into how that effect comes about. Although economic freedom in itself may have a direct effect on life satisfaction, it is likely that a major part of its relationship with economic freedom is caused by mediation through other factors. Previous research has shown, for example, that economic freedom affects income per capita and productivity (De Haan and Sturm, 2000; Alexandre et al., 2022), social trust (Berggren and Jordahl, 2006), and income inequality (Compton et al., 2014; Bergh and Bjørnskov, 2021). Income, trust and income inequality in turn influence happiness or life satisfaction (Graafland and Compen, 2015; Graafland and Lous, 2018).

Another possible mechanism through which economic freedom might affect life satisfaction that has not been considered in previous studies is individual control or autonomy (also called autonomy freedom). Economic institutions and policies captured by economic freedom allow people to freely choose and exert control over their environment (Nikolaev and Bennett, 2016) and hence may increase individual autonomy. Following Verme (2009), we define individual autonomy as freedom of choice, which is related to the size of the opportunity set with mutually exclusive alternatives among which the individual can freely choose. It means that people can act in accordance with their own decisions and plans (Hayek, 1960). For this to be possible, there must be something to choose between and at the same time this choice must not be restricted by others, such as restrictive laws or oppressive systems (Veenhoven, 2000).

2.1. Effects of economic freedom on individual autonomy

To understand more how individual autonomy could mediate the relationship between economic freedom and life satisfaction, we consider how each of the five subdimensions of economic freedom may affect individual autonomy and how individual autonomy influences life satisfaction.

Regarding the subdimension of small size of government, one of the main indicators of growing government is an increase in taxes (Berggren and Jordahl, 2006). As taxes grow, less disposable income is left for individual actors. This leaves less space for individuals' own decisions and gives more power to outside influences, which translates into less individual autonomy (Bernholz, 1986). It should be noted, however, that an individual may also accept some restrictions due to higher taxes, if the government uses taxes to finance collective expenditure that increase the individual autonomy. An example is education that raises the capability and hence the autonomy of the individual.

The second subdimension of economic freedom, a good legal system that is durable and complies with rules that have been established and announced in advance, makes it possible for individuals to predict with reasonable precision how the government will use the coercive forces at its disposal in certain circumstances. Within the known rules of the game, everyone is free to pursue one's personal purposes in the certainty that the powers of the government will not be used to destroy the activities of the individual (Hayek, 1976). Further, it applies equally to everyone and does not disadvantage specific groups of the society to advantage others (Hayek, 1960). This helps to prevent situations where people command the property or even lives of others. Thus, a good legal system will lead to greater perception of procedural fairness and permit citizens to choose and pursue their own individual goals without any inappropriate influence from the government or other actors, leading to higher individual autonomy (Zywicki, 2003).

Third, sound money is money that is not simply manipulated by governments to pursue their own interests. For example, it is not vulnerable to sudden appreciation (or depreciation). Thus, sound money can restrict the power of government and in turn, increase individual autonomy (Von Mises, 1953).

Fourth, freedom to trade internationally makes it possible for actors to explore more opportunities to sell goods and services abroad and import goods and services from abroad. This makes them less dependent on the domestic market and enhances the set of options individuals can choose from when buying or selling goods and services, thus increasing individual autonomy (Nikitin and Elliott, 2000).

Finally, the effect of the regulation of labour, product, and capital markets on individual autonomy is rather difficult to predict. On the one hand, most government regulation aims to limit market imperfections and protect individuals from being mistreated by others. For example, labour market regulation ensures that workers receive decent compensation for their work effort, that their working hours are not too long and, in the most extreme cases, that they are not victims of labour exploitation (Davies, 2020). Similarly, regulation in the product market can help in mitigating market failures, such as monopolies, and in this way introduce more competitors to the market and hence more options from which consumers can choose. In theory, this suggests that regulation could increase individual autonomy. On the other hand, regulation is often initiated by certain interest groups aiming to maximize their own profits. This leads to regulation biased towards specific citizens, overall ineffective policies, or unnecessarily restrictive policies that limit the set of options for entrepreneurs and other economic actors (Boeri et al., 2000; Friedman, 1999). Thus, the direction of the overall effect of freedom from regulation on individual autonomy is somewhat ambiguous.

As for legal system, sound money, and trade freedom theoretical considerations indicate a positive relationship with individual autonomy, whereas for small government size and freedom from regulation the relationship is ambiguous, we expect that individual autonomy is positively related to overall economic freedom:

Hypothesis 1. Individual autonomy is positively related to economic freedom.

2.2. Effects of individual autonomy on life satisfaction

Individual autonomy is an important universal value that can contribute to well-being, but it does not necessarily have to. Steckermeier (2021) illustrates this by the example of a voluntary choice to give blood donation, as it may actually impair individual well being due to blood loss or a fear of needles. Still, although being conceptually distinct, we expect that there is a strong positive relationship between the two concepts. More individual autonomy provides people with more opportunities to follow their own preferences. If people themselves know best what will make them happy (Bauman, 1995; Brown, 1993), individual autonomy will foster their ability to enjoy life (Veenhoven, 2000).[2] It also enhances people's ability to adapt to change (Welzel and Inglehart, 2010). Furthermore, individual autonomy may foster life satisfaction because of its intrinsic value (Sen, 1987), independent from its consequences. Thus, having the freedom to choose without being restricted by external parties contributes to one's life satisfaction.

Verme (2009) adds that freedom of choice only increases life satisfaction if people have control over their lives. The degree of control thus regulates the intrinsic value that people attribute to freedom of choice. The perception of control improves human

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[2] Conservative social philosophy as well as behavioral economics, however, cast doubt on the assumption that people really know what is best for them, due, for example, to bounded rationality (Selten, 1990; Veenhoven, 2000). Research has shown that the freedom to choose among abundant opportunities may distort happiness (Iyengar and Lepper, 2000; Carmon et al., 2003; Schwartz, 2004). In a meta-analysis, Scheibehenne et al. (2010) showed, however, that choice overload is not unambiguously confirmed and rather likely to be contingent and dependent on certain pre-conditions.

functioning, in terms of, for example, performance, health-prevention behavior, escaping abusive relationships and being socially and politically active (Nikolaev and Bennett, 2016). Based on this argument, we use a measure of individual autonomy that combines freedom of choice with the degree of control (see also section 3.1).

Verme (2009) found that the sense of control and freedom people perceive over their lives predict life satisfaction better than any other known factor such as health, employment, income, marriage, or religion, across countries and within countries. Also Inglehart et al. (2008) found that free choice was, compared to other variables, by far the most important influence on whether subjective well-being rose or fell. Okulicz-Kozaryn (2015) found that individual autonomy positively affects happiness. He also states that individual autonomy is a better predictor of happiness than national income. Other research has shown that individual perceived autonomy is positively related to other components of subjective well being as well, such as more positive affect, less negative affect, and a more positive perspective on future, and makes people more trusting towards others (Steckermeier, 2021). This leads to our next hypothesis:

Hypothesis 2. Life satisfaction is positively related to individual autonomy.

2.3. Moderation by national culture

Whereas Inglehart et al. (2008) argued that the link between people's sense of freedom and life satisfaction seems universal, we expect that the relative importance of individual autonomy may vary across major cultural zones. Recently, some have argued that culture and institutions may jointly affect socioeconomic developments (Williamson and Mathers, 2011; Bisin and Verdier, 2017). Previous studies by Graafland (2020) and Graafland and De Jong (2022) showed, for example, that various dimensions of national culture may affect the impact of economic freedom on income per capita and life satisfaction. When focusing on the mediating role of individual autonomy, particularly individualism may be a relevant moderator in the relationship between economic freedom and happiness. Individualism versus collectivism is one of the six dimensions of national culture distinguished by Hofstede (1980, 2001). It describes the degree that people view themselves as "I'' or "We'". In collectivist societies, people belong to closed groups that take care of them in exchange for loyalty. In individualist societies, people mostly look after themselves and direct family. We surmise that the effect of economic freedom on life satisfaction is greater in countries with an individualistic than a collectivistic culture and that this greater effect originates from individualism moderating the relationship between individual autonomy and life satisfaction. The reason for this moderation effect is that people with an individualist value orientation attach a high value to individual freedom. We therefore expect that an increase in individual autonomy leads to a higher increase in happiness for people with an individualistic value orientation than for people with a collective value orientation. Based on this, we hypothesize that:

Hypothesis 3. Individualism positively moderates the relationship between individual autonomy and life satisfaction.

2.4. The moderated mediation model

As hypothesis 1 postulates that individual autonomy is positively related to economic freedom and hypothesis 2 predicts that life satisfaction is positively related to individual autonomy, combining these hypotheses leads us to expect that individual autonomy mediates the relationship between economic freedom on the one hand, and life satisfaction on the other. This leads to our final hypothesis:

Hypothesis 4. Individual autonomy positively mediates the relationship between economic freedom and life satisfaction.

The combination with hypothesis 3 leads to a so-called moderated mediation model, in which a mediation relationship is moderated by a fourth variable (Baron and Kenny, 1986; Zhao et al., 2010). Graphically, the moderated mediation model can be represented by Fig. 1.

Arrow a depicts the relationship between the independent variable(s), the (subdimensions of) economic freedom, and the mediator, individual autonomy. Arrow b reflects the relationship between the mediator and the dependent variable, life satisfaction. Arrow d depicts the effect that individualism has on the strength of the relationship between individual autonomy and life satisfaction. Arrow c represents possible direct effect(s) of the independent variable(s) on the dependent variable, that are not mediated by the mediator. The total effect of the independent variable(s) on the dependent variable is equal to the sum of the direct effect(s) and the indirect effect(s) as mediated by the mediator. The indirect effect is equivalent to the multiplication of the path a and the moderated path b.

3. Methodology

3.1. Measurement of core variables

Data for life satisfaction and individual autonomy is obtained from the European Values Survey (EVS) and the World Values Survey (WVS). Life satisfaction is measured on a scale from one to ten as an answer to the survey question "All things considered, how satisfied are you with your life as a whole these days?" Individual autonomy is measured by indicating how much freedom of choice and control over their lives individuals perceive themselves as having. The survey question is stated as follows: "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 […] to indicate how much freedom of choice and control you feel you have over the way your life turns out." This measure thus combines the two aspects of individual autonomy discussed in section 2.2, namely freedom of choice and control
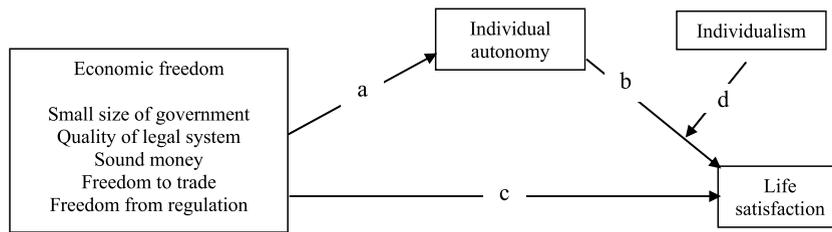
Fig. 1. The moderated mediation model.

over one's life. The answer is quantified on a scale from one to ten, where one stands for no choice at all and ten for a great deal of choice (Haerpfer et al., 2021). Verme (2009) also shows that this measure of individual autonomy is not a proxy of happiness.

The measures for economic freedom and its five subdimensions, small size of government, legal system and property rights, sound money, freedom to trade internationally, and freedom from regulation, are obtained from the Fraser Institute.[3] Each measure works on a scale from 0 to 10, where 10 is the maximum possible degree of economic freedom in that given subdimension. The data are available only with a two-year lag, so the index itself has a two-year lag. For a detailed overview of the indicators used for constructing the five subdimensions of economic freedom, see Appendix 1.

The country scores of individualism are downloaded from the Hofstede website.[4] Individualism is measured on a scale that runs from 0 (maximal collectivism) to 100 (maximal individualism).

3.2. Control variables

In the regression analysis, we controlled for various macro and micro control variables to minimize unobserved variable bias. First, we controlled for several factors that have been found in previous research to mediate the relationship between economic freedom and life satisfaction: income per capita (Graafland and Compen, 2015), social trust (Graafland and Compen, 2015), and income inequality (Graafland and Lous, 2018).[5] Income per capita is measured by GDP per capita based on purchasing power parity. This variable is significantly positively skewed, and so logarithmic transformation is applied to it. Social trust reflects how much trust people have in others. Trust is measured at the micro level and is collected by asking individuals whether they think that most people can be trusted. Their answer is either 1, you need to be very careful, or 2, most people can be trusted. We redefined this variable as a dummy variable (using 0 for low trust and 1 for high trust). Income inequality is measured by the Gini coefficient based on disposable income of the SWIID database (https://fsolt.org/swiid/). Furthermore, we added political freedom as macro control variable. Political freedom is measured by political rights[6] and civil liberties (Veenhoven, 2000; Ovaska and Takashima, 2006). Following Nikolaev and Bennett (2016) and Pitlik and Rode (2016), we additionally controlled for fixed effects for each year and each country. The dummies for individual years control for general fluctuations in the estimation period that affect individual autonomy and life satisfaction in all countries similarly, whereas the country fixed effects control for time invariant country unobserved heterogeneity.[7]

As control variables at the individual level, we used personal income, age, marital status, religion, gender, and (un)employment status (Bjørnskov et al., 2008; Haller and Hadler, 2006; Yeniaras and Akarsu, 2017). Since absolute income statistics are lacking in the World Values Survey data, we used income quintiles (Bjørnskov et al., 2008; Haller and Hadler, 2006). Religion is measured by the religiosity of individuals as indicated by the response to the question "How important is God in your life?" (measured on a Likert scale from 1 to 10), and by three dummies for religious affiliation (protestant Christianity, Muslim, and a-religious, with all other religions as the reference) (Bjørnskov et al., 2008; Haller and Hadler, 2006).

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[3] See https://www.fraserinstitute.org/economic-freedom/approach. Most research in economic freedom used this source. An alternative is the economic freedom index of the Heritage Foundation. Research that used both indicators, often found similar results (e.g., Graafland and Compen, 2015; Graafland and Lous, 2018).

[4] https://geerthofstede.com/research-and-vsm/dimension-data-matrix/.

[5] It should be noted that Cinelli et al. (2022) show that variables that mediate the relationship between independent and dependent variables are bad controls that may distort the regression results. To test for this so-called overcontrol bias, we also present regression analysis without controlling for GDP per capita, trust and income inequality.

[6] Political rights combines several measures clustered in three major topics: electoral process (e.g., free and fair elections), political pluralism and participation (e.g., right to organize political parties of one's own choice); and functioning of government (e.g., transparency). See: https://freedomhouse.org/reports/freedom-world/freedom-world-research-methodology.

[7] One reviewer suggested to control also for country specific linear time trends. However, this would substantially reduce the degrees of freedom for estimation of the macro variables. On average, the macro data contain 2,4 years per country in the current sample. One year is used for country fixed effects and adding a linear trend per country would require one additional year. Insofar country specific time trends (on top of the uniform time pattern we do control for) are present in both economic freedom, individual autonomy, and life satisfaction (and not in any of the other control variables), the estimation results might therefore be biased by unobserved heterogeneity.

3.3. Descriptives

After merging the data of all variables, we constructed a dataset of 238.299 observations from 78 countries in the period between 1990 and 2020. Whereas the macro data are panel data, micro data from WVS/EVS are not really panel data as the observations of different waves in WVS/EVS do not concern the same persons. Appendix 2 presents a list of the number of observations included in the sample per country..

Table 1 reports the descriptive statistics for all variables included in the analysis. This table suggests, for example, that an average observation in the sample has a life satisfaction score of 6.95 (out of 10) and a score for individual autonomy value of 6.96 (out of 10). Additionally, it is important to note that most countries included possess observations for more than one year. The number of observations varies across countries, and so the table does not show average values over countries, but average values over all observations.

3.4. Empirical strategy

The following equations are estimated:

$$AUT_{i,j,t} = \alpha_0 + \alpha_1 EF_{j,t} + \alpha_2 EF_{j,t}\, IND_j + \sum \alpha_p A_{j,p,t} + \sum \alpha_m A_{i,m,t} + \sum \alpha_t D_t + \sum \alpha_j D_j + \varepsilon_{i,t} \tag{1}$$

$$LS_{i,j,t} = \beta_0 + \beta_1 AUT_{i,j,t} + \beta_2 AUT_{i,j,t}\, IND_j + \beta_3 EF_{j,t} + \beta_4 EF_{j,t}\, IND_j$$

$$+ \sum \beta_p A_{j,p,t} + \sum \beta_m A_{i,m,t} + \sum \beta_t D_t + \sum \beta_j D_j + \varepsilon_{i,t} \tag{2}$$

All variables (except for the dummy variables) are standardized. AUT refers to individual autonomy, EF to economic freedom, LS to life satisfaction, and IND to individualism. Subscript i identifies individual, subscript j country, subscript t year, subscript p country control variables, subscript m individual control variables, D_t dummies for individual years, and D_j dummies for individual countries.[8] We also controlled for the interaction between economic freedom and individualism to test if the moderation by individualism only concerns the relationship between individual autonomy and life satisfaction (as hypothesized in Hypothesis 3) or also applies to the effect of economic freedom on individual autonomy and/or life satisfaction. Furthermore, we used robust standard errors clustered at the country level to avoid biases due to heteroscedasticity and the nested structure of individuals in countries. It is well known that standard regression analysis leads to an overestimation of the significance of the coefficient estimates of variables at the macro level, because the assumption that the errors are independently and identically distributed is violated (Pitlik and Rode, 2016).[9] We employed the conditional mixed process (CMP) estimator that estimates equations (1) and (2) simultaneously. The CMP modeling framework is essentially that of seemingly unrelated regressions (SUR). If the error terms of equations (1) and (2) are related, CMP is a more efficient estimator than standard OLS. Another advantage of CMP is that the dependent variables need not be continuous, but may also be binary, ordinal and categorical (as is the case for individual autonomy and life satisfaction) or based on interval measures. A third advantage of CMP is that the significance and magnitude of the indirect effects of economic freedom on life satisfaction through individual autonomy can be easily estimated.

As individualism is standardized (also in the interaction term, so-called centered interaction (Preacher et al., 2007)), the estimated linear effect of individual autonomy can be interpreted as the impact of individual autonomy when individualism equals 0. For countries with above average individualism, the interaction term increases the coefficient of individual autonomy whereas for countries with below average individualism, the interaction term decreases the coefficient of individual autonomy. Since we control for country fixed effects, a positive interaction effect thus means that in a country X with high individualism, a difference in individual autonomy between two persons A and B generates a larger difference in the life satisfaction between A and B than for two persons A′ and B′ with an identical difference in individual autonomy living in a country Y with low individualism.

Finally, it should be noted that we cannot derive strong conclusions on causality because the estimation results may be subject to endogeneity caused by omitted variable bias or simultaneity bias, which reduces the reliability of the mediation analysis (Bullock and Ha, 2011). For example, individual autonomy may reversely affect economic freedom if people with greater control over their lives are more likely to demand institutions consistent with the principles of economic freedom (Nikolaev and Bennett, 2016). To minimize endogeneity, we controlled for several macro and micro control variables (see section 3.2 above) as well as for time fixed effects and country fixed effects. Country fixed effects prevent endogeneity caused by time-invariant confounding factors that simultaneously correlate with both economic freedom, autonomy and/or life satisfaction. Furthermore, in the robustness analysis we performed bounds analysis, allowing for extreme forms of correlation between the variables of main interest and unobservables that cannot be controlled for (Oster, 2019). Third, we investigated the possibility of using instrumental variables. In a literature review of Berggren

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[8] Although including country fixed effects has some advantages (see below), a disadvantage is that they do not allow the estimation of the linear effect of individualism as individualism is time-invariant. In the robustness analysis we also estimated a model with country random effects model that allows estimation of the linear effect of individualism as a control variable.

[9] In our sample, we have 78 clusters. Monte Carlo simulations suggest that 50 clusters are more than sufficient for valid and reliable inference (Primo et al., 2007). To further test the robustness of our findings, we also included a wild bootstrap procedure in the robustness analysis as recommended by Roodman et al. (2019).

Table 1
Data sources and descriptives.[a].

Variable	Mean	SD	Min	Max	Source
Main variables					
Life satisfaction	6.95	2.32	1	10	WVS/EVS
Individual autonomy	6.96	2.33	1	10	WVS/EVS
Economic freedom	7.03	1.05	3.65	8.67	Fraser Institute
Small size government	6.57	1.00	3.03	9.04	Fraser Institute
Legal system and property rights	6.21	1.67	2.41	8.93	Fraser Institute
Sound money	8.07	1.99	1.26	9.89	Fraser Institute
Freedom to trade	7.41	1.46	1.44	9.78	Fraser Institute
Freedom from regulation	6.93	1.17	2.41	8.99	Fraser Institute
Individualism	47.36	24.18	0	91	Hofstede
Macro control variables					
GDP per capita	25,653	18,297	1,286	94,155	World Bank
Income inequality	36.58	9.61	21	63.1	SWIID
Political rights	5.61	1.80	1	7	Freedom House
Civil liberty	5.41	1.60	1	7	Freedom House
Micro control variables					
Income scale	4.77	2.47	0	10	WVS/EVS
Social trust	0.31	0.46	0	1	WVS/EVS
Age	43.1	16.8	15	99	WVS/EVS
Marital status	0.62	0.48	0	1	WVS/EVS
Gender (male)	0.48	0.50	0	1	WVS/EVS
Full employed	0.39	0.49	0	1	WVS/EVS
Unemployed	0.08	0.27	0	1	WVS/EVS
Religiosity	7.10	3.24	1	10	WVS/EVS
Protestant	0.14	0.34	0	1	WVS/EVS
Muslim	0.14	0.35	0	1	WVS/EVS
Non-religious	0.16	0.37	0	1	WVS/EVS

[a] The number of observations is 238,299. The number of countries is 78.

and Bjørnskov (2020), only two studies used instrumental variables for economic freedom. One of these two used individualism as instrument, but this variable is not a proper instrument in this research as it may also influence individual autonomy. Another study used geographical data and share of English native speaking as instruments, but these are time-invariant and therefore captured by the country fixed effects.[10] Because of these limitations, we used an alternative approach and tested for reverse causality from individual autonomy and life satisfaction on economic freedom by using consumption of spirits as instrumental variable (see section 4.3 below).

4. Results

4.1. Multiple regression analysis

The empirical results for the regression analysis of individual autonomy are presented in Table 2.[11] In the first column, the effect of the overall economic freedom index is reported. The following five columns present the effects of each of the five subdimensions of economic freedom. Table 2 shows that overall economic freedom has a significant positive effect on individual autonomy, which supports hypothesis 1. The magnitude of the effect is, however, relatively small (with a standardized coefficient of 0.10, which is comparable to the standardized coefficient of 0.085 estimated both by Nikolaev and Bennett (2016) and Pitlik and Rode (2016)). Test results for the five subdimensions of economic freedom indicate that the overall effect is driven by sound money and trade freedom. For the macro control variables, we find that only income inequality (negatively) significantly affects individual autonomy. This suggests that individual autonomy flourishes more in egalitarian than non-egalitarian societies. For the micro control variables, we find a significant positive effect of income scale, social trust, male gender, employment status, and religiosity.[12] Individual autonomy is negatively related to age and employment.

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[10] Faria and Montesinos (2009) also employed latitude as IV for economic freedom as well as (time-invariant) legal origin and settler mortality rates and population density in 1500. Johansson et al. (2022) used data of immigrants to rule out reverse causality. In our research this would entail linking the individual autonomy to economic freedom in the immigrants' countries of origin rather than in their countries of residence. Unfortunately, the WVS and EVS do not include data of immigrants' countries of origin.

[11] For the bivariate correlation matrix, see the online Table A1.

[12] If we add education as additional individual control variable, as one reviewer suggested, we find a significant positive effect on individual autonomy of 0.06 and no effect on life satisfaction. The other estimation results do not change. It should be noted, however, that variables that mediate the relationship between economic freedom and individual autonomy are bad controls, because including them leads to overcontrol bias (Cinelli et al., 2022). As education has been shown to be dependent on economic freedom (Stroup, 2007; Feldmann, 2017) and affects individual autonomy, it should be classified as a bad control variable. For that reason, we refrained from including education as an additional control variable in our main analysis.

Table 2
CMP estimation results for individual autonomy.[a]

	1	2	3	4	5	6
Main variables						
Overall economic freedom (EF)	0.10***					
-Small size government		0.05				
-Legal system			0.02			
-Sound money				0.07**		
-Freedom to trade					0.06*	
-Freedom from regulation						0.03
Interaction EF and individualism	−0.04	−0.08	−0.06	−0.01	0.01	−0.03
Macro control variables						
GDP per capita	−0.03	0.14*	0.13	0.02	0.07	0.07
Income inequality	−0.22*	−0.25**	−0.23**	−0.19**	−0.25**	−0.21**
Political rights	0.00	0.01	0.01	0.02	0.00	0.01
Civil liberty	−0.01	0.01	0.02	−0.01	0.02	0.01
Micro control variables						
Income scale	0.10***	0.10***	0.10***	0.10***	0.10***	0.10***
Social trust	0.04***	0.04***	0.04***	0.04***	0.04***	0.04***
Ln Age	−0.04***	−0.04***	−0.04***	−0.04***	−0.04***	−0.04***
Marital status	0.01	0.01	0.01	0.01	0.01	0.01
Gender (male)	0.05***	0.05***	0.05***	0.05***	0.05***	0.05***
Full employed	0.05***	0.05***	0.05***	0.05***	0.05***	0.05***
Unemployed	−0.09***	−0.09***	−0.09***	−0.09***	−0.09***	−0.09***
Religiosity	0.05***	0.05***	0.05***	0.05***	0.05***	0.05***
Protestant	0.02	0.02	0.02	0.02	0.02	0.02
Muslim	−0.06	−0.05	−0.06	−0.06	−0.06	−0.06
Non-religious	−0.01	−0.02	−0.02	−0.02	−0.02	−0.02
R^2	0.11	0.11	0.11	0.11	0.11	0.11

[a] N = 238,944. Controlled for country and time fixed effects. Standardized coefficients. Robust and country clustered standard errors. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Finally, the interaction between economic freedom and individualism does not affect individual autonomy. This suggests that, insofar individualism moderates the mediated relationship between economic freedom and life satisfaction, it only concerns the relationship between individual autonomy and life satisfaction.

Table 3 reports the estimation results for life satisfaction. Again, the first column presents the effect of the overall economic freedom index, columns 2–5 the effects of each of the five subdimensions of economic freedom. In all models, individual autonomy has a significant positive effect on life satisfaction that is stronger than for any other explanatory variable. This provides support for hypothesis 2. Also, the interaction term of individual autonomy and individualism is significant and positive. [13] In contract, the interaction term for economic freedom and individualism is insignificant. This provides support for hypothesis 3 and shows that the moderation of the relationship between economic freedom and life satisfaction by individualism is due to the moderation of the effect of individual autonomy on life satisfaction. Furthermore, in the first column, the overall economic freedom index is found to have a direct positive effect on life satisfaction. When we test for each subdimension of economic freedom, we find that legal system, sound money and freedom from regulation show a significant positive direct relationship with life satisfaction. Previous research has also indicated that the various subdimensions of economic freedom increase happiness or life satisfaction. For example, Fereidouni et al. (2013), Gehring (2013) and Graafland and Compen (2015) found that the subdimension of the quality of the legal system stimulates life satisfaction.

To illustrate the magnitude of the interaction effects estimated in (the first column of) Table 3, Fig. 2 depicts the relationship between (standardized) individual autonomy and (standardized) life satisfaction for three different values of (standardized) individualism. Also the predictive margins of 95% confidence intervals are depicted. Fig. 2 shows that the steepness of the depicted lines, expressing the marginal effect of individual autonomy on life satisfaction, increases with individualism (IND).

For the macro control variables, again only income inequality is found to be statistically significant. For the micro control variables, life satisfaction is robustly found to be positively related to income scale, social trust, marital status, religiosity, and protestant affiliation, and negatively to age, male gender, full employment, and unemployment status.

4.2. Mediation analysis

Table 4 presents the results of the mediation analysis. The test statistics show that individual autonomy significantly mediates the

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[13] As individualism is standardized, we used the so-called moderator centering approach, centering the moderator (individualism) at zero. An advantage of using the centered moderator approach is that it enables simple tests of conditional indirect effects that we applied in section 4.2 (Preacher et al., 2007). Because of centering, adding the interaction effect between autonomy and individualism hardly affects the linear effect of individual autonomy: if we drop the interaction term, the linear effect of individual autonomy declines from 0.32 to 0.31 in all columns of Table 3.

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J. Graafland   *European Journal of Political Economy xxx (xxxx) xxx*

Table 3
CMP estimation results for life satisfaction.[a]

	1	2	3	4	5	6
Main variables						
Individual autonomy (AUT)	0.32***	0.32***	0.32***	0.32***	0.32***	0.32***
Interaction AUT and individualism	0.05***	0.05***	0.05***	0.05***	0.05***	0.05***
Economic freedom (EF)	0.17***					
-Small size government		0.01				
-Legal system			0.16*			
-Sound money				0.12***		
-Freedom to trade					0.06	
-Freedom from regulation						0.10**
Interaction EF and individualism	−0.02	−0.10*	−0.04	0.02	0.01	−0.05
Macro control variables						
GDP per capita	−0.06	0.22	0.11	0.00	0.12	0.03
Income inequality	−0.24**	−0.25**	−0.23*	−0.18**	−0.27**	−0.22*
Political rights	−0.04	−0.02	−0.05	−0.02	−0.03	−0.03
Civil liberty	0.00	0.03	0.04	−0.01	0.04	0.02
Micro control variables						
Income scale	0.11***	0.11***	0.11***	0.11***	0.11***	0.11***
Social trust	0.05***	0.05***	0.04***	0.05***	0.05***	0.05***
Ln Age	−0.05***	−0.05***	−0.05***	−0.06***	−0.06***	−0.05***
Marital status	0.14***	0.14***	0.14***	0.14***	0.14***	0.15***
Gender (male)	−0.02*	−0.02*	−0.02*	−0.02*	−0.02*	−0.02**
Full employed	−0.02**	−0.02**	−0.02**	−0.02**	−0.02**	−0.02**
Unemployed	−0.22***	−0.22***	−0.22***	−0.22***	−0.22***	−0.22***
Religiosity	0.08***	0.08***	0.08***	0.08***	0.08***	0.08***
Protestant	0.05***	0.06***	0.06***	0.05***	0.05***	0.06***
Muslim	0.03	0.04	0.03	0.01	0.03	0.03
Non-religious	−0.02*	−0.03**	−0.03**	−0.02	−0.03**	−0.03*
R^2	0.29	0.28	0.28	0.29	0.28	0.28

[a] N = 238,944. Controlled for country and time fixed effects. Standardized coefficients. Robust and country clustered standard errors. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.
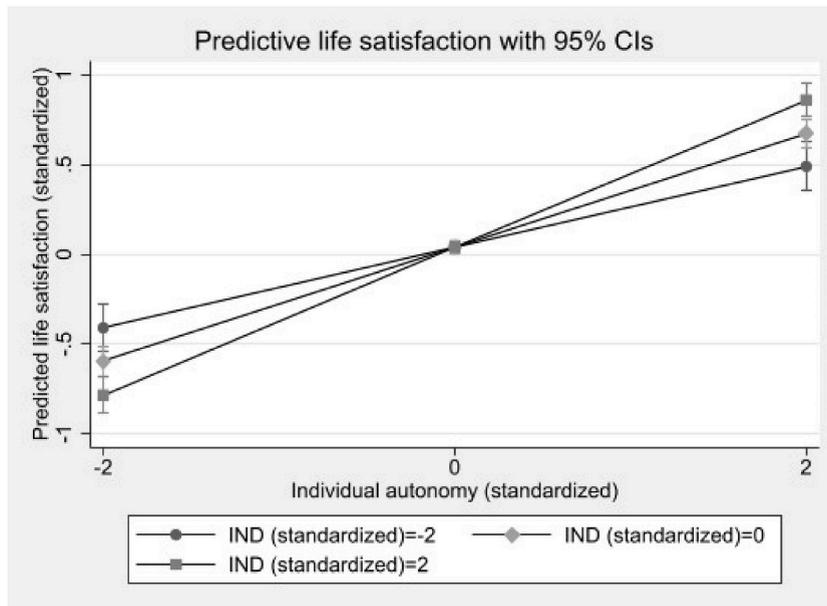

Fig. 2. Relation between individual autonomy and life satisfaction contingent on individualism.

positive effects of overall economic freedom, sound money and freedom to trade on life satisfaction. No significant mediation is found for the other subdimensions of economic freedom. Also, the interaction term between individual autonomy and individualism significantly positively mediates the relationship between economic freedom and life satisfaction. Combining the indirect effects with the direct effects, we find so-called complementary mediation. This is a type of mediation where both direct and indirect effects are present, and they are of the same direction (Zhao et al., 2010).

Table 4
Direct, indirect and total effects of economic freedom on life satisfaction.[a]

	Economic freedom	Small size government	Legal system	Sound money	Freedom to trade	Freedom from regulation
Direct effect (β_3)	0.169***	0.012	0.157*	0.119***	0.060	0.100**
Total indirect effect	0.037***	0.018	0.006	0.026***	0.023*	0.012
-linear ($\alpha_1 \beta_1$)	0.033***	0.016	0.005	0.023***	0.020*	0.011
-moderated ($\alpha_1 \beta_2$)	0.005***	0.002	0.001	0.003**	0.003	0.002
Total effect	0.206***	0.029	0.164	0.144***	0.083	0.112**

[a] CMP estimator. Controlled for country and time fixed effects. Standardized coefficients. Robust and country clustered standard errors. *p < 0.05; **p < 0.01; ***p < 0.001. The symbols between brackets refer to coefficients in equations (1) and (2).

Based on these results, we conclude that hypothesis 4 is supported. However, it should be noted that the mediation effect is relatively small in comparison to the direct effect of economic freedom on life satisfaction. For overall economic freedom, about 18% of the total effect (direct plus indirect effects) of economic freedom on life satisfaction can be explained by the mediation through individual autonomy and its interaction with individualism. This small effect is due to the relatively small effect of economic freedom on individual autonomy (see above).

To illustrate the size of the total effect of economic freedom on life satisfaction, we used Table 4 to calculate how the difference in economic freedom between Nigeria (the country with the lowest economic freedom in our sample) and Denmark (a country with a relatively high economic freedom) affects their life satisfaction. The predicted difference in life satisfaction is 1.14, which explains 70% of the total difference in (average) life satisfaction between the two countries.

4.3. Robustness analysis

In this section we report various types of robustness analysis.

First, we tested for non-linearity in the relationship between economic freedom and individual autonomy. Nikolaev and Bennett (2016) and Pitlik and Rode (2016) argued that non-linearity may arise due to the so-called "paradox of choice" hypothesis. Beyond a certain level, economic freedom institutions may provide consumers with such large array of options that it reduces rather than increases their perception of individual control (Iyengar and Lepper, 2000; Carmon et al., 2003; Schwartz, 2004). Iyengar and Lepper (2000) found that people perform better in a limited-choice context than in an abundant-choice context. One of the explanations is that the experience of opportunity costs of the option that consumers finally select increases the more alternatives there are from which to choose. However, when adding economic freedom quadratic as an additional independent variable, we found no indication of non-linearity for the effect of overall economic freedom or for any of its subdimensions on individual autonomy.

Second, we employed alternative estimation methods. First, we used a random effects model, also known as mixed linear model (XTMIXED in Stata). A disadvantage of this type of multilevel modeling is that it has to make assumptions about the distribution of error terms at all levels of the model structure. To the extent that those assumptions do not hold, the reliability of the estimation will suffer (Primo et al., 2007). Monte Carlo studies showed that for multilevel models, a sample size of 60 countries is required (Meuleman and Billiet, 2009). This condition is met in our sample. An advantage of multilevel random effects model is that we explicitly test for the linear effect of individualism (see also footnote 8). We therefore reran the regressions to test the robustness of the results using multilevel modelling with random effects, instead of using a fixed effects model with country clustered standard errors. The estimation results of the core results are reported in Table 5. Comparison with Tables 3 and 4 shows that all results are robust. The linear effect of individualism is insignificant. If we test for all subdimensions of economic freedom, the results are also very similar to those reported in Tables 3 and 4

Table 5
Alternative estimation techniques.

	Multilevel random effects model[a]		Fixed effects model with wild bootstrap[b]	
	Individual autonomy	Life satisfaction	Individual autonomy	Life satisfaction
Economic Freedom (EF)	0.10***		0.10***	
Individualism (IND)	−0.09	−0.02		
EF * IND	−0.03	−0.02	−0.04	−0.02
Individual autonomy (AUT)		0.32***		0.32***
AUT * IND		0.05***		0.05**
Economic freedom (β_3)		0.17***		0.17**
Mediation analysis				
Total indirect effect	0.037***		0.037***	
-linear ($\alpha_1 \beta_1$)	0.032***		0.032***	
-moderated ($\alpha_1 \beta_2$)	0.005***		0.005**	
Total effect	0.203***		0.201***	

[a] Controlled for time fixed effects and all other macro and micro control variables reported in Tables 2 and 3. *p < 0.05; **p < 0.01; ***p < 0.001.[b] Controlled for time fixed effects and country fixed effects and all other macro and micro control variables reported in Tables 2 and 3. Wild bootstrapped p-values based on 999 replications (using XTREG and Stata syntax boottest).

To further test the robustness of the estimation of standard errors of country variables, we used the wild bootstrap procedure recommended by Roodman et al. (2019) (see also footnote 9), using the boottest facility in Stata. As Stata does not facilitate boottest for CMP and XTMIXED estimators, we applied it to standard fixed effects model (XTREG). The results are reported in Table 5. Again, all core results are highly robust, only the significance of the interaction term of individual autonomy and individualism slightly decreases.[14]

Third, we performed bound analysis as proposed by Oster (2019) to investigate the potential significance of omitted variable bias using the Stata syntax psacalc.[15] Bounds analysis uses changes in the estimation results that result from dropping all control variable as a (reverse) indication of the changes that would occur if all potential omitted control variables would have been taken into account.

Table 6 reports the so-called coefficient of proportionality (δ). To determine its cut off value, we follow Oster in assuming that the unobserved control variables should not be more important than the observed control variables in explaining the treatment ($\delta = 1$) and that the maximal R^2 if all potential omitted variables were to be included equals 1.3 of the R^2 estimated with all observed control variables (which is empirically validated by Oster using randomized studies). For the effects of economic freedom and individual autonomy on life satisfaction, $\delta > 1$, which indicates that the findings are robust to extreme forms of correlation with unobserved control variables. For the effect of economic freedom on individual autonomy, δ is less than (although close to) 1, which suggests that this coefficient is not robust to extreme forms of correlation with unobserved control variables. Distinguishing the five subdimensions of economic freedom, $\delta > 1$ for the effects of legal system, sound money and freedom to trade on life satisfaction and for the effects of small size government, sound money and freedom to trade on individual autonomy. The negative δ for the interaction effect illustrates that including all control variables increases rather than decreases its coefficient.

The bounds analysis proposed by Oster (2019) assumes that the observed control variables are good control variables, that affect both the independent and the dependent variable, without being dependent on the independent variable itself. If a control variable is dependent on the independent variable and could mediate the relationship between the independent and dependent variable, including it leads to over control bias (Cinelli et al., 2022) and then the bounds analysis of Oster (2019) may overestimate the unobserved variable bias. This is relevant in our study, as several of our control variables may be dependent on economic freedom (e.g., GDP per capita, income inequality, social trust, and possibly also income scale, employment, and unemployment). If economic freedom increases GDP per capita, and GDP per capita in turn increases individual autonomy, including GDP per capita as control variable takes away some of the effect of economic freedom on individual autonomy. To test for overcontrol bias, we therefore ran robustness analysis without these control variables. The results are reported in Table 7. Dropping GDP per capita, income inequality, trust, income scale, employed, unemployed, or the combination of these six control variables (last column in Table 7) hardly changes the main findings reported in Table 4. Hence, we conclude that our main results are not distorted by overcontrol bias.

Fifth, following Graafland (2020), we additionally tested for moderation of the direct relationship between economic freedom and life satisfaction by long-term orientation, which is another dimension of national culture in the framework of Hofstede. Graafland (2020) argued that the influence of economic freedom on life satisfaction depends on how people make use of their freedom. If people and companies are future-oriented, they will use the freedom that economic freedom institutions allow them to make investments that stimulate their welfare in the long-term and delay individual or collective gratification.

If we added the interaction between economic freedom and long-term orientation as control variable, the test results showed a significant positive effect on happiness of 0.06 (p-value = 0.048, see Table 8), supporting the results of Graafland (2020). All other results did not change. However, the number of countries included in the estimation decreased from 78 to 68 (because of missing data of long-term orientation for some countries in our sample). The result suggests that long-term orientation is more important than individualism as moderator in the relationship between economic freedom and life satisfaction: if standardized long-term orientation increases from 0 to 1, the standardized effect of economic freedom on life satisfaction increases by 0.06, whereas if standardized individualism increases from 0 to 1, it only increases by 0.005 (see Table 4).

Finally, we tested for reverse causality from individual autonomy and life satisfaction to economic freedom. For this purpose, we used per capita consumption of spirits as instrumental variable for average individual autonomy per country. Rode (2013) used this variable earlier as instrumental variable for happiness in its reverse relation with economic freedom. He argues that large variations of individual happiness are due to differences in personality and that personality factors are linked to the prevalence of alcoholism, which in turn is closely connected to spirit consumption. Rode (2013) adds that it is important to distinguish this variable from the total consumption of alcohol per capita, which bears little relation to the presence of alcoholism. The consumption of spirits observes the particular structure of alcohol consumption in a given country, rather than the total intake of alcohol per inhabitant. While it could be argued that the latter is directly related to formal institutions through factors like prohibition, religion, etc., the former picks up personality factors that are not likely to directly affect formal institutions. Aggregate per capita spirit consumption therefore makes a good instrument for life satisfaction in its reverse effect on economic freedom. Controlling for all macro control variables and average trust, faith, and unemployment per country, we found that average individual autonomy and life satisfaction per country are significantly negatively affected by per capita consumption of spirits (see Appendix 3). As theoretically happiness may influence institutions through social trust (Rode, 2013), we dropped social trust as control variable in the IV estimation of economic freedom to prevent overcontrol bias. Appendix 3 shows that economic freedom is not significantly related to instrumented individual autonomy (p value = 0.928) or instrumented life satisfaction (p value = 0.957). These results indicate that the significant positive effects of economic freedom on individual autonomy and on life satisfaction are not driven by reverse causality.

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[14] The robustness of the findings indicates that the findings in Tables 2 and 3 are not due to the specific features of CMP.
[15] This syntax is applicable when using the XTREG estimator.

Table 6
Bounds analysis: coefficient of proportionality.[a]

	Economic freedom	Small size government	Legal system	Sound money	Freedom to trade	Freedom from regulation
EF → AUT (α_1)	0.91	2.15	0.25	1.01	8.68	0.25
AUT → LS (β_1)	3.64	3.58	3.62	3.63	3.60	3.64
AUT*IND → LS (β_2)	−3.71	−3.68	−3.68	−3.69	−3.72	−3.71
EF → LS (β_3)	1.54	0.48	2.75	1.55	12.85	0.83

[a] Using XTREG estimator in Stata and Stata syntax psacalc.

Table 7
Tests on overcontrol bias.[a]

Excluding:	GDP per capita	Income inequality	Social trust	Income scale	Employed	Unemployed	All
Direct effect (β_3)	0.152***	0.178***	0.166***	0.131***	0.168***	0.166***	0.153***
Total indirect effect	0.033***	0.039***	0.038***	0.038***	0.037***	0.037***	0.037***
-linear ($\alpha_1 \beta_1$)	0.029***	0.034***	0.033***	0.034***	0.033***	0.033***	0.033***
-moderated ($\alpha_1 \beta_2$)	0.004***	0.005**	0.005***	0.004**	0.005***	0.005***	0.004**
Total effect	0.185***	0.216***	0.204***	0.169***	0.206***	0.203***	0.190***

[a] Using CMP estimator. Controlled for country and time fixed effects. Standardized coefficients. Robust and country clustered standard errors. *$p <$ 0.05; **$p <$ 0.01; ***$p <$ 0.001. The symbols between brackets refer to coefficients in equations (1) and (2).

Table 8
Estimation results with long-term orientation as additional moderator.[a]

	Individual autonomy	Life satisfaction
Overall economic freedom (EF)	0.10***	0.17***
Individual autonomy (AUT)		0.32***
Interaction AUT and individualism		0.04***
Interaction EF and individualism	−0.04	−0.03
Interaction EF and long-term orientation	0.00	0.06*

[a] CMP estimator. Controlled for country and time fixed effects and all other control variables reported. In Tables 2 and 3 Standardized coefficients. Robust and country clustered standard errors. *$p <$ 0.05; **$p <$ 0.01; ***$p <$ 0.001. Number of observations: 222,158. Number of countries: 68.

5. Conclusions

This paper is the first that tests the importance of individual autonomy as a channel through which economic freedom affects happiness. Rather little is known about why (areas of) economic freedom is associated with life satisfaction. This study helps to gain more understanding through which channels do economic institutions foster life satisfaction. We found that individual autonomy increases life satisfaction more than any other variable, which supports previous research by Verme (2009), Inglehart et al. (2008), and Okulicz-Kozaryn (2015). Individual autonomy, in turn, is found to depend on economic freedom and is shown to mediate the relationship between life satisfaction and economic freedom. The magnitude of the mediation effect is, however, rather small. Adam Smith's intuition that by far the most important of all the effects of good economic institutions on well being is the increase in liberty and security of individuals, is only partly supported, as individual autonomy can only explain about 18% of the total relationship between economic freedom and life satisfaction. Of the five subdimensions of economic freedom, the mediation effect is only significant for sound money and freedom to trade. Furthermore, our research is the first that identifies a moderating role of individualism in the relationship between individual autonomy and life satisfaction, and hence in the relationship between economic freedom and life satisfaction. This opens a new avenue of research into the importance of national culture as a moderator in the research to the factors that drive happiness.

The relatively small magnitude of the mediation effect suggests that the relationship between economic freedom and life satisfaction is predominantly due to other factors than the intangible value of individual autonomy. To further insight into the relationship between economic freedom and happiness, future research could therefore focus on other mediating and moderating factors. Possible examples of mediators are tolerance, entrepreneurship (Bjørnskov and Foss, 2008; Nyström, 2008; Murphy et al., 2020), intensity and duration of economic crisis (Bjørnskov, 2016), education (Stroup, 2007; Feldmann, 2017), and health (Stroup, 2007), as economic research has shown that these variables relate positively to economic freedom as well as to happiness. For example, Berggren and Nilsson (2013) found that economic freedom stimulates tolerance, whereas Steckermeier (2021) estimated that tolerance is positively related to happiness. This suggests that tolerance has also the potential to mediate the relationship between economic freedom and wellbeing. These mediation models could be further enriched by incorporating moderators in the mediated or direct relationship between economic freedom and happiness. Examples are other dimensions of national culture and economic conditions. Furthermore, other caveats of current research mentioned by Berggren and Bjørnskov (2020) is that few results are fully robust across studies, indicating the need to consider local conditions in each case, and that only few studies tackle the issue of endogeneity.

Declaration of competing interest

This paper was not supported by external funding. The authors declare no conflict of interest.

Data availability

Data will be made available on request.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ejpoleco.2023.102448.

Appendix 1

Sub-indicators used to create subdimensions of economic freedom

Subdimension of economic freedom	Sub-indicators
Small size of government	A. Government consumption
	B. Transfers and subsidies
	C. Government enterprises and investment
	D. Top marginal tax rate
	E. State ownership of assets
Legal system and property rights	A. Judicial independence
	B. Impartial courts
	C. Protection of property rights
	D. Military interference in rule of law and politics
	E. Integrity of the legal system
	F. Legal enforcement of contracts
	G. Regulatory costs of the sale of real property
	H. Reliability of police
	I. Business costs of crime
	J. Gender Disparity Adjustment
Sound money	A. Money growth
	B. Standard deviation of inflation
	C. Inflation: most recent year
	D. Freedom to own foreign currency bank accounts
Freedom to trade internationally	A. Tariffs
	B. Regulatory trade barriers
	C. Black-market exchange rates
	D. Controls of the movement of capital and people
Freedom from regulation	A. Credit market regulation
	B. Labour market regulation
	C. Business regulation

Source: https://www.fraserinstitute.org/economic-freedom/approach.

Appendix 2

Number of observations per country

Central and South America		Western Europe		Post-communist Europe		Africa		Asia		Other	
Argentina	1,756	Austria	3,719	Albania	897	Algeria	949	Armenia	2,410	Australia	4,437
Brazil	1,453	Belgium	2,929	Bulgaria	2,053	Burkina Faso	1,100	Bangladesh	1,135	Canada	3,423
Chile	4,294	Denmark	4,797	Croatia	3,220			China	2,244	New	1,433
Colombia	4,192	Finland	3,305	Czech Republic	2,823	Egypt	5,679	Georgia	1,964	Zealand	
Dominican Republic	313	France	3,618	Estonia	4,209	Ethiopia	1,258	India	6,627	United States	7,311
		Germany	7,757	Hungary	920	Mali	889	Indonesia	2,300		
Ecuador	1,195	Greece	805	Latvia	1,916	Morocco	2,863	Iran	4,173		
El Salvador	975	Iceland	2,263	Lithuania	1,816	Nigeria	4,272	Japan	4,825		
Guatemala	937	Ireland	1,701	Poland	3,299	South Africa	10,440	Jordan	2,230		
Mexico	6,879	Italy	4,272	Romania	3,486			Kyrgyzstan	1,404		

Appendix 2 (*continued*)

Central and South America		Western Europe		Post-communist Europe		Africa		Asia		Other	
Peru	4,882	Luxembourg	585	Russia	7,170	Uganda	516	Malaysia	2,494		
Uruguay	2,505	Malta	703	Serbia	269	Zambia	1,157	Pakistan	2,502		
		Netherlands	5,081	Slovakia	2,087	Zimbabwe	2,311	Philippines	2,365		
		Norway	3,952	Slovenia	2,445			Singapore	3,340		
		Portugal	1,071	Ukraine	4,237			South Korea	3,486		
		Spain	6,406					Thailand	2,530		
		Sweden	3,979					Turkey	7,181		
		Switzerland	4,718					Vietnam	1,363		
		United Kingdom	3,194								
11		19		15		11		18		4	

Appendix 3
Estimation results of IV regression[a]

	Individual autonomy	Life satisfaction	Economic freedom
Per capita consumption of spirits	−0.06 (0.000)	−0.10 (0.000)	
Individual autonomy[b]			0.07 (0.928)[c]
Individual life satisfaction[b]			0.03 (0.957)[c]
Number of observations	305	308	238

[a] Standardized coefficients. *P*-values between parentheses. Controlled for GDP per capita, income inequality, political rights, civil liberty, social trust, religiosity and unemployment.

[b] Instrumented by per capita consumption of spirits.

[c] Excluding social trust as control variable.

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