Journal of Behavioral and Experimental Economics 109 (2024) 102187

Contents lists available at ScienceDirect

Journal of Behavioral and Experimental Economics

journal homepage: www.elsevier.com/locate/jbee

Socioeconomic determinants of happiness: Empirical evidence from developed and developing countries

Deepak Kumar Behera [a,*], Dil B Rahut [b], M Padmaja [c], Ajit Kumar Dash [d]

[a] Department of Economics and Finance, The Business School, RMIT International University Vietnam, Ho Chi Minh 700000, Vietnam
[b] Asian Development Bank Institute (ADBI), Tokyo 100-6008, Japan
[c] Department of Humanities and Social Sciences, National Institute of Technology Tiruhcirappalli, Tamil Nadu 620015, India
[d] Department of Economics, Birla Global University, Bhubaneswar 751029, India

ARTICLE INFO

JEL classification:
D60
I31
I38
Z180
D78

Keywords:
Happiness determinants
Socioeconomic factors
Social support
Freedom to make life choices
Air pollution exposure
Gender inequality
Easterlin paradox

ABSTRACT

This study aims to understand the factors that contribute to people's happiness or life satisfaction in 166 countries (51 developed, 115 developing) from 2005 to 2020. The study considers the effects of various socio-economic factors, such as per capita income, social support, freedom to make life choices, perception of corruption, air pollution exposure, and gender inequality, on the level of happiness. We used panel two-way robust fixed effects and panel quantile regression for empirical analysis. The results show that per capita income, social support, and freedom to make life choices positively impact happiness, while air pollution exposure has a negative impact. However, gender inequality does not significantly affect happiness levels. These findings highlight the relevance of the Easterlin Paradox, which suggests that income can mediate happiness by promoting emotional well-being, gender equality, and a clean environment. Therefore, policymakers should focus on creating a more holistic approach to improving the well-being and happiness of its citizens.

1. Introduction

Income is considered a better measure of a person's standard of living and is associated with a person's purchasing power of goods and services that lead to the desired level of satisfaction. But the main issue is whether money can buy the desired level of life satisfaction or happiness in this globalized competitive world. Many studies have explored the nexus between happiness and per capita income using individual survey data as well as macro data collected from the World Value, Survey-2022[1](Inglehart et al., 2022). The majority of them use happiness in different connotations, such as the life ladder, life satisfaction, subjective well-being, life evaluation, and emotional well-being. In this study, we have used happiness or life satisfaction interchangeably, which is measured in the life ladder score (0–10) based on the World Happiness Report (Helliwell et al., 2021). The highest position on the ladder represents the best life, whereas the lowest position on the ladder shows the worst possible life of an individual. There is no apprehension in the literature about the role of income in making someone wealthier and achieving more satisfaction. Still, the debate arises about whether income alone can make someone mentally and physically healthy, reduce loneliness, and improve emotional well-being.

Using the Gallup–Healthways well-being index,[2] Kahneman and Deaton (2010) found that subjective well-being has two aspects: emotional well-being[3] and life evaluation.[4] They found that emotional

* Corresponding author.
E-mail address: deepak.behera@rmit.edu.vn (D.K. Behera).

[1] The World Value Survey (WVS) study the social, political, economic, religious and cultural value of the people in the world. WVS shows how the values of the given country/society have been changing over time rather than how the values of a selected group of people (panel) have been changing over their lives.

[2] Gallup-Healthways well-being index is a daily survey of individuals conducted by the Gallup Organisation on subjective well-being.

[3] Emotional well-being is measured by an individual's emotional experiences yesterday. The emotional quality of an individual's experience means the frequency and intensity of experiences of joy, stress, sadness, anger, and affection that make one's life pleasant or unpleasant.

[4] Life evaluation refers to a person's thoughts/feelings about his or her life. Life evaluation mostly ask questions about life satisfaction: How satisfied are you with your life as a whole these days? This is measured through a life ladder scale in which 0 is the worst possible life for you and 10 is the best possible life for you.

https://doi.org/10.1016/j.socec.2024.102187
Received 24 June 2023; Received in revised form 18 February 2024; Accepted 19 February 2024
Available online 25 February 2024

well-being and life evaluation impact people's lives differently. For instance, better income and education are more closely related to life evaluation, while health, caregiving, loneliness, and smoking are relatively stronger predictors of daily emotions in individuals' lives. Ugur (2021a) examines the relationship between income and happiness for individuals residing in Turkey, using data from 2003 to 2017. The study finds a positive and statistically significant relationship between household absolute income and happiness. But, the increase in relative income between households, between rural and urban areas, and between men and women reduces happiness. Ugur (2021b) investigates the relationships between income inequality and individuals' subjective well-being in 51 countries from 1990 to 2014; the findings show that inequality is negatively associated with life satisfaction and happiness for both lower- and higher-income groups. The literature also agrees that happiness is subjective in nature and context-specific, hence, an absolute increase in income or increase in the standard of living without assessing other parameters of happiness or life satisfaction such as social cohesion and status, culture, trust, and environmental factors cannot measure the level of happiness (Kingdon & Knight, 2007; Luechinger & Raschky, 2009; Lun & Bond, 2013).

A few studies have used the Easterlin Paradox[5] theory to evaluate whether the relationship between per capita income and individual happiness is linear or nonlinear (Muresan & Ciumas, 2020; Mureşan, Ciumaş & Achim, 2020). They argued that happiness and income relationship are complex notions of economic and social research due to their nonlinear nature and argued that money cannot always buy happiness. Several studies have also discussed the U-shape or inverted U-shape relationship between income and happiness to show its nonlinearity (Blanchflower, 2021). This is clearly visible when comparing the world gross domestic product (GDP) and the global happiness score, which shows that the world GDP increased from $48.22 trillion in 2000 to $86.65 trillion, but the level of subjective well-being has not increased at a similar growth trajectory for many countries (World Bank, 2022).

The evidence by Easterlin drew a widespread attention of researchers to study the relationship between income and happiness, creating a highly influential impact on economic policies (Easterlin, 1974; Easterline & O'Connor, 2022). Using thirty surveys from 1946 to 1970, covering nineteen countries, including eleven in Asia, Africa, and Latin America, Easterlin (1974) finds a positive association between income and happiness in every single survey, and the highest economic status group was happier than the lowest. But Easterlin (1974) did not explore the country-level differences in the relationships between happiness and income over time. One of the initial pieces of evidence on time-series data on the United States, Easterlin (1974) finds evidence of a lack of increase in happiness despite a significant increase in economic prosperity in the United States. Following this, many researchers have examined the relationship between income and happiness (Paul & Guilbert, 2013; Bartolini & Sarracino, 2014) and found results supporting the Easterlin Paradox. However, a set of studies finds a positive relationship between income (economic growth) and individual well-being (level of happiness) across countries (Seidlitz & Diener, 1993; Diener et al., 2000 Veenhoven, 1991; Stevenson & Wolfers, 2008; Angeles, 2011; Tauseef, 2022). These authors reported a positive association between income level and individual well-being. Lun and Bond's (2013) findings highlight a positive link between engaging in religious and spiritual practices and both life satisfaction and happiness. This suggests that individuals actively involved in spiritual activities tend to experience higher well-being levels, emphasizing the multifaceted nature of this association.

According to Easterline and O'Connor (2022), people with higher incomes tend to feel happier when they compare their income to those with less. In contrast, those with lower incomes may feel unhappy when they compare their income to those who are better off. However, as incomes rise across the population, the income of one's comparison group also rises, which cancels out the positive effect of income growth on happiness. Although income is positively related to happiness at a particular time, the long-term growth rates of income and happiness are not significantly related. The evidence is mixed and unclear regarding whether income growth leads to an increase in happiness. Therefore, it is crucial to consider other socioeconomic, environmental, and cultural factors of a country while studying this issue.

This study examines the socioeconomic determinants of happiness (i.e., life satisfaction) of 166 countries (51 developed, 115 developing) from 2005 to 2020. The study has included socioeconomic factors as explanatory variables, such as per capita income, social support, freedom to make life choices, perception of corruption, and a country's positive and negative effects on an individual's emotional well-being characteristics. Further, we included two control variables: air pollution exposure (a proxy for environmental factors) and the gender inequality index (proxy for cultural factors) in our analysis. We employed panel two-way robust fixed effects and simultaneous quantile regression for empirical analysis. The selection of these variables is based on existing literature, which suggests that these socioeconomic variables are important determinants of individual well-being or happiness (Karademas, 2006; Haller & Hadler, 2004; Ciziceno & Travaglino, 2019). The present study contributes to the existing literature in two ways: (i) examining the distributional heterogeneity impact of income on happiness by comparing developed and developing countries, and (ii) adopting environmental and cultural factors to assess the level of happiness and income, which is a unique attempt in happiness studies.

The remaining part of the paper is organized as follows: Section 2 critically discusses existing literature on the determinants of happiness. Section 3 reports data and methodology. Section 4 discusses the findings, and Section 5 concludes.

2. Review of literature

The notable work by Easterlin in 1974 developed a scientific method to address the relationship between economic growth and happiness. Happiness is defined as a state of mind rather than a feeling or emotion (Veenhoven & Veehoven, 1984). Previous studies have alternatively used "satisfaction", "subjective well-being", and "happiness" as analogous terms (Van Praag et al., 2003; Seidlitz & Diener, 1993). Diener et al. (2000) define happiness as a cognitive and affective self-evaluation of a person's life. Happiness is often defined as determined by materialistic well-being in terms of wealth and income. However, the results are mixed, showing that happiness is not proportional to the level of income, as suggested by Easterlin (1974) and Easterlin and O'Connor (2022). For better understanding, the available stock of literature can be grouped into the following categories:

2.1. Happiness and income

Mentzakis and Moro (2009) find evidence favoring the Easterlin Paradox using the British Household Panel Surveys from 1996 to 2003; their results show that the higher-income group enjoys higher subjective well-being than the low-income group. Angeles (2011) finds evidence that refutes the Easterlin Paradox in the context of the United States since the 1970s—his analysis indicates that the effects of per capita GDP square do not reduce happiness. Peer group income is one of the crucial determinants of happiness. Income of the peer group negatively impacts individual happiness in Australia (Paul & Guilbert, 2013); hence, income relative to peers matters rather than the absolute income of individuals.

Bartolini and Sarracino (2014) confirm the Easterlin Paradox using a sample of cross-country data from 27 countries from the World Values

[5] The Easterlin Paradox states that at a point in time, happiness shows a positive relationship with income both between and within nations (Easterline and O'Connor, 2022).

Survey- European Values Study database (WVS/EVS). Using panel data from a household survey in Viet Nam, La et al. (2020) find that income comparison between two groups in a society negatively impacts people's subjective well-being. Borrero et al. (2013) used data from 197 countries to examine the facilitating role of situational and cultural moderators in the relationship between wealth and happiness—the results indicate that collectivism helps individuals achieve high happiness levels even in adverse scenarios. Asadullah et al. (2018) examine subjective well-being determinants using the General Social Survey in the People's Republic of China from 2005 to 2010 and observe that the higher-income group, urban residents, and females are happier. Better schooling, health, and employment also add to a higher level of subjective well-being.

2.2. Happiness and social support

The existing research shows that individuals with high social support have a lower level of distress than others with low social support (Siedlecki et al., 2014; Mitchell et al., 2011). Individuals with high social support have low distress; and thus, a higher level of happiness. Therefore, citizens of countries with higher social support will have greater happiness. Karademas (2006) applied structural equation modeling on a sample of 201 individuals and investigated the mediating role of optimism on the relationship between self-efficacy, social support, and well-being. The findings reveal that optimism partially mediates the relationship between self-efficacy and social support for happiness. Mei et al. (2021) examined the link between social support, resilience, and happiness during the COVID-19 pandemic using data from 104 Malaysian adults and found a positive association between social support, resilience, and happiness.

2.3. Happiness and freedom of choice

Some existing literature confirms a positive association between happiness and freedom of choice. As freedom to make a choice gives individuals an opportunity to choose and live the life of their choice, it makes them satisfied and happy; thus, people living in countries with greater freedom to make a choice enjoy a higher level of happiness. Haller and Hadler (2004) examine the relationship between freedom of choice and happiness using data from 41 nations from the World Value Survey and conclude that freedom of choice significantly impacts individual well-being or happiness. Another study by Inglehart et al. (2008) concludes that individuals in countries with more liberty and freedom of choice experience increased happiness. Besides freedom of choice, national institutions also play a critical role in people's happiness as institutions either restrain or enable individuals to exercise their rights. In line with this, Verme (2009), using cross-country data from the World and European Values surveys, finds that a nation's institutional setting significantly impacts an individual's well-being.

Using the United States data, Belasen and Hafer (2012, 2013) observe that the level of economic freedom does not affect an individual's well-being, while a change in the level of economic freedom over time significantly increases an individual's well-being. Thus, it is not the level of economic freedom but the improvement in the level of freedom that drives happiness. Koohborfardhaghighi et al. (2022) find evidence that individual happiness is strongly linked to freedom of choice and individuals' experiences in their relationships. However, against the normal expectation, Spruk and Kešeljević (2015) use cross-country data and find a negative relationship between economic freedom and happiness. It can be concluded that under normal circumstances, economic freedom or improvement in economic freedom generally improves happiness.

2.4. Happiness and perception of corruption

Corruption is prevalent in many countries at different levels and intensity. Corruption creates distortion, leads to abuse of power and exploitation, and slows down the process of economic development, leading to frustration and unhappiness (Arvin & Lew, 2014). Ciziceno and Travaglino (2019) find that corruption indirectly affects an individual's well-being through institutional trust in the United States, the Middle East, and North Africa. Using data from the European Value Survey, Rodríguez-Pose and Maslauskaite (2011) conclude that in addition to GDP, institutional factors such as corruption, decentralization, and government spending also affect an individual's well-being in Eastern and Central Europe. Many studies find that corruption has a negative effect on happiness (Helliwell 2006; Rothstein 2010). Similarly, Wu and Zhu (2016) find that there is a negative effect of individual experiences of corruption on happiness, which is moderated by the general corruption environment of a country. Finally, the existing literature confirms that citizens of countries with lower corruption and better institutions have higher levels of happiness (Kim & Kim, 2012; Youssef & Diab, 2021).

2.5. Happiness and individual's emotional well-being

Sujarwoto, Tampubolon and Pierewan (2018) emphasize that, beyond individual traits, factors like government services significantly influence happiness and life satisfaction in Indonesia. Similarly, Selim's (2008) research in Turkey demonstrates that the nation's negative indicators, such as unemployment and demographic imbalances, decrease happiness, while positive factors like income and health status increase happiness levels. A broader cross-country study contends that a nation's negative impact of income inequality detrimentally affects life satisfaction (Verme 2011). In the context of Serbia, Jovanović and Joshanloo (2022) reveal a strong positive link between emotional judgment and life satisfaction, with negative emotional judgments having only mild adverse effects consistently observed across age groups. Consequently, a nation's positive and negative emotional influences emerge as critical determinants in shaping people's levels of happiness.

2.6. Happiness and environmental health (i.e., air pollution exposure)

Recent literature highlights the importance of non-income aspects of life satisfaction in determining levels of happiness (Cuñado and De Gracia, 2013; Welsch 2006, 2007; Luechinger & Raschky 2009; MacKerron & Mourato 2009). These studies show that various sets of factors other than income, such as air pollution, influence the happiness levels of various countries. Cuñado and De Gracia (2013) explored the relationship between environment and happiness in the context of Spain and reported that climate change and air pollution contribute to regional differences in happiness. Streimikiene (2015) developed the concept of assessing the environmental dimension in the quality of life measurements in Lithuania and other European Union member states using indicators such as air quality. The findings indicate a significant role of environmental factors in life satisfaction across these countries. Similarly, many studies have found the negative influence of air pollution on happiness across various countries (Welsch 2006, 2007; Luechinger & Raschky 2009; MacKerron & Mourato 2009). Following the existing literature, we use air pollution exposure (particulate matter PM2.5 micrograms per cubic meter) as an environmental factor indicator influencing happiness.

2.7. Happiness and cultural factors (i.e., gender inequality)

Cultural factors such as gender norms and gender inequality are another dimension that influences happiness. Schyns (1988) examines the role of economic and cultural factors in determining the happiness index using cross-country data and finds that around 40 countries report a significant relationship between happiness and economic and cultural factors. Using data from 60 countries, Mookerjee and Beron (2005) find that higher religious fractionalization reduces happiness, whereas higher gender equality improves happiness. Recent literature provides

Table 1
Description of variables.

Variable	Definition and Measurement	Data Source
Happiness/Life Ladder (i.e., subjective well-being or happiness score or life satisfaction)	Steps are numbered from 0 at the bottom to 10 at the top of the ladder (varies from 0 to 10). So, 0 = worst, 10 = best; or 0 = bottom, 10 = top. The top of the ladder represents the best possible life, and the bottom represents the worst possible life.	World Happiness Report (2021)
Per capita gross domestic product (PCGDP)	PCGDP is in purchasing power parity (PPP) at constant 2017 international dollar prices.	World Development Indicators (2021)
Social support	Social support is the national average of the binary responses (0 or 1) to the Gallup World Poll (GWP) question. If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them? (0 = No, 1 = Yes)	World Happiness Report (2021)
Freedom to make life choices	Freedom to make life choices is the national average of responses to the GWP question. Are you satisfied or dissatisfied with your freedom to choose what you do with your life? (0 = dissatisfied, 1 = satisfied)	World Happiness Report (2021)
Perceptions of corruption	Perceptions of corruption is the national average of the survey responses to two questions in the GWP. Is corruption widespread throughout the government or not? and Is corruption widespread within businesses or not? The overall perception is just the average of the two. (0 = no corruption 1 = corruption)	World Happiness Report (2021)
Country's positive affect on emotional well-being	Positive affect is defined as the average of three positive affect measures in the GWP: happiness, laughter, and enjoyment. Positive affect measures are the responses to the following question: Did you experience positive emotional feelings (i.e., happiness, laughter, and enjoyment) during most of the day yesterday?	World Happiness Report (2021)
Country's negative affect on emotional well-being	Negative affect is defined as the average of three negative affect measures in the GWP: worry, sadness, and anger. Negative affect measures are the responses to the following question: Did you experience the negative emotional feelings (i.e., worry, sadness, and anger) during most of the day yesterday?	World Happiness Report (2021)
Air pollution exposure	PM2.5 air pollution, mean annual exposure (micrograms per cubic meter). Exposure is calculated by weighting mean annual concentrations of PM2.5 by population in urban and rural areas.	OECD Statistics (2021)
Gender inequality index (GII)	GII is a composite metric of gender inequality using three dimensions: reproductive health, empowerment, and the labor market. It ranges from 0, where women and men fare equally, to 1, where one gender fares as poorly as possible in all measured dimensions. A low GII value indicates low inequality between women and men while a high GII value indicates high inequality between women and men.	Human Development Report (2021)

Notes: Human Development Report 2021–22 data can be found in https://hdr.undp.org/ human-development-report-2021–22. Air pollution exposure data extracted from OECD.Stat. https://stats.oecd.org/Index.aspx?DataSetCode=EXP_PM2_5 (accessed 28 August 2023).
Source: Compiled by author.

more evidence on gender equality and its effect on life satisfaction (Meisenbarg & Woodley 2015; Audette et al. 2018). The measurement of gender inequality is complex, and existing studies have used various indicators. Following the standard literature of Audette et al. (2018) and Ugur (2021b), our current study uses the gender inequality index as the measure of the cultural dimensions of the society.

This literature review section indicates the complex nature of happiness or life satisfaction. Hence, this paper will examine how various complex socioeconomic, environmental, and cultural factors influence an individual's happiness and how happiness varies among developed and developing countries.

3. Methodology

3.1. Data sources

Table 1 presents the description of variables adopted in this study for data analysis. Our outcome variable is happiness, also called the life satisfaction indicator, and is measured through a life ladder score (0–10). The highest position on the ladder represents the best life, whereas the lowest position on the ladder shows the worst possible life of an individual. Per capita GDP (PCGDP) at constant prices is our main predictor variable, which reflects the effects of income on happiness in both developed and developing economies.

Additionally, we include several control variables such as social support, freedom to make life choices, perceptions of corruption, the country's positive or negative effects on an individual's emotional well-being, air pollution exposure (a proxy for environmental health), and gender inequality (a proxy for cultural factors), which might mediate the causal effects between income and happiness. Social support is a binary response (Yes = 1, No = 0) of getting help from relatives during trouble. Freedom to make life choices is a binary response (0 = dissatisfied or 1 = satisfied) of an individual's freedom to choose what they do with their life. Perceptions of corruption are the average of the individual responses (0 = no corruption or 1 = corruption) whether corruption is widespread throughout the government. The country's positive effect is the average of three positive emotional well-being measures —*happiness, laughter, and enjoyment*, whereas the country's negative effect is the average of three negative emotional well-being measures—*worry, sadness, and anger*. Air pollution exposure is an indicator of environmental health, measured by the annual concentration of PM2.5 by population in rural and urban areas. The gender inequality index is an indicator of the cultural dimensions of a country—whether inequality between men and women is low (=0) or high (=1), which is based on three criteria: *reproductive health, empowerment, and the labor market.*

The dependent and control variables used in this study were extracted from the World Happiness Report 2021, while GDP per capita was taken from the World Development Indicators (WDI) database (World Bank 2021). Air pollution exposure data were obtained from the OECD statistics database,[6] and the gender inequality index was acquired from the Human Development Report 2021–22. These data were collected from 166 countries (51 developed and 115 developing) from 2005 to 2020. For our analysis, finally, we used unbalanced panel data with a total observation of 1775 (594 from developed countries and 1181 from developing countries).

Table 2 presents the descriptive statistics and coefficient correlation of the variables used in the study. In developed countries, the average happiness or life satisfaction score is 7 on the ladder, and the minimum

[6] Air pollution exposure data extracted from OECD.Stat. https://stats.oecd.org/Index.aspx?DataSetCode=EXP_PM2_5 (accessed 28 August 2023).

Table 2
Descriptive statistics and correlation results of variables.

Variables	Descriptive statistics				Correlation
	Mean	Max	Min	Std. Dev.	Happiness
	Developed Countries (Observations: 549)				
Happiness	6.549	8.019	4.667	0.772	1
Per capita GDP (US$)	42,792	116,284	15,369	17,700	0.539
Social support	0.904	0.987	0.646	0.054	0.608
Freedom to make life choices	0.810	0.971	0.369	0.127	0.693
Perception of corruption	0.638	0.983	0.035	0.248	–0.696
Country's positive affect	0.751	0.906	0.473	0.087	0.650
Country's negative affect	0.242	0.514	0.107	0.062	–0.443
Air pollution exposure	14.803	96	5	10.049	–0.337
Gender inequality index	0.148	0.66	0.013	0.106	–0.359
	Developing countries (Observations: 1081)				
Happiness	4.934	7.615	2.375	0.885	1
Per capita GDP	8743	32,215	740	6429	0.572
Social support	0.766	0.968	0.290	0.120	0.576
Freedom to make life choices	0.714	0.985	0.258	0.137	0.346
Perception of corruption	0.802	0.977	0.078	0.119	0.037
Country's positive affect	0.694	0.944	0.322	0.110	0.453
Country's negative affect	0.282	0.599	0.103	0.088	–0.111
Air pollution exposure	32.913	107.910	10.320	17.343	–0.348
Gender inequality index	0.458	0.774	0.103	0.147	–0.470

Source: Author's estimation.

Table 3
Regression results I.

Variables	Developed countries	Developing countries
ln (per capita GDP)	0.726**	0.561*
	(0.302)	(0.328)
Social support	1.368*	1.700***
	(0.713)	(0.333)
Freedom to make life choices	0.840**	0.317
	(0.350)	(0.225)
Perceptions of corruption	–0.316	–0.921***
	(0.296)	(0.339)
Country's positive affect	1.149***	1.671***
	(0.382)	(0.422)
Country's negative affect	–2.912***	–0.136
	(0.641)	(0.513)
ln (air pollution exposure)	–0.395***	–0.0250
	(0.112)	(0.156)
Gender inequality index	1.009	0.827
	(1.014)	(0.633)
Constant	–2.016	–2.149
	(3.241)	(3.006)
Country fixed effect	Yes	Yes
Time effect	Yes	Yes
Cluster robust	Yes	Yes
Observations	549	1081
R-squared	0.461	0.186
Number of countries	46	93

Notes: ln= Natural logarithm; Robust standard errors in parentheses.
*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$. Dependent variable is happiness, measured through a life ladder score (0–10). The highest position on the ladder represents the best life, whereas the lowest position shows the worst possible life of an individual.
Source: Author's estimation.

and maximum scores are between 5 and 8. In contrast, in developing countries, the average happiness or life satisfaction score is 5 on the ladder, and the minimum and maximum scores are between 2 and 8. The correlation results in developed countries show that GDP per capita, social support, and freedom to make life choices are positively correlated with happiness. On the other hand, the perception of corruption, air pollution exposure, and gender inequality are negatively associated with life satisfaction or happiness. Further, a country's positive effect on an individual's emotional well-being (i.e., happiness, laughter, and enjoyment) is positive. In contrast, a country's negative effect on an individual's emotional well-being (i.e., worry, sadness, and anger) is negatively correlated with happiness. Although correlation results provide preliminary evidence about the relationships between happiness, GDP per capita, and other socioeconomic factors, the degree and causal relationships can be assessed using regression techniques, as represented in the following sections.

3.2. Methods

This study has used a two-way cluster robust panel fixed effects model to estimate the response of independent variables to dependent variables by controlling both country and time effects in the regression model. The cluster robust options in the regression model will provide an unbiased and consistent estimator by removing heteroscedasticity and autocorrelation problems from the error term. The two-way cluster robust fixed effects model is shown in Eq. (1).

$$Happiness_{it} = \beta_1 + \beta_2 \ln PCGDP_{it} + \beta_3 Social_{it} + \beta_4 Freedom_{it} + \beta_5 Corruption_{it} + \beta_6 Positive_{it} + \beta_7 Negative_{it} + \beta_8 \ln Airpollution_{it} + \beta_9 Genderinequality_{it} + \alpha_i + \gamma_t + \mu_{it} \quad (1)$$

Eq. (1) shows that happiness is a linear function of per capita GDP (PCGDP), social support, freedom to make life choices, perception of corruption, a country's positive effect and negative effect on an individual's emotional well-being, air pollution exposure, and gender inequality; where $\beta_1$is intercept (i.e., constant) and $\beta_2 - \beta_9$ are slope parameters; α_i denotes country-specific unobserved effects; $\gamma_t$denotes time-specific effects;μ_{it} denotes disturbances error term; ln denotes natural logarithmic, $'i$denotes cross-sectional unit (i.e., country), and denotes time.

Additionally, we assume that there might be a nonlinear relationship[7] between happiness and per capita income; therefore, we used the

[7] Nonlinear model such as inclusion of square term suggests a curvilinear or quadratic relationship. In Eq. 1, B2 coefficient represents the linear effects of PCGDP on happiness while in Eq. 2, shows the quadratic effects (either U shaped or inverted U shaped) on happiness respectively. For instance, if GDP has a positive linear effect but a diminishing quadratic effect, it implies that economic growth positively influences happiness up to a certain point, after which the impact diminishes or vice-versa.

GDP per capita square ($PCGDP^2$) to estimate the growth of happiness, while income growth is doubled. Second, we used the intersection model[8] between per capita income and other variables (i.e., social support, freedom to make life choices, perception of corruption, a country's positive effect, and a country's negative effect on individual emotional well-being, air pollution exposure, gender inequality index) to examine the combined effects on happiness in both developing and developed economies. Therefore, the two-way cluster robust fixed effects model using the intersection model is shown in Eq. (2).

$$\begin{aligned} Happiness_{it} &= \beta_1 + \beta_2 \ln PCGDP^2{}_{it} + \beta_3 \ln(PCGDP * Social)_{it} \\ &+ \beta_4 \ln(PCGDP * Freedom)_{it} + \beta_5 \ln(PCGDP * Corruption)_{it} \\ &+ \beta_6 \ln(PCGDP * Positive)_{it} \\ &+ \beta_7 \ln(PCGDP * Negative)_{it} \beta_8 \ln(PCGDP * Airpollution)_{it} \\ &+ \beta_9 \ln(PCGDP * Genderinequality)_{it} + \alpha_i + \gamma_t + \mu_{it} \end{aligned} \quad (2)$$

Eq. (2) shows happiness is a nonlinear function of $PCGDP^2$ and intersection variables. Our econometric regression model aims to examine the Easterlin Paradox, which states that happiness shows a positive relationship with income at a particular time, but in the long run, the growth of happiness and income are not significantly related (Easterlin and O'Connor 2020). As our time period is short and the unit-root test did not exhibit any nonstationary variables (see Appendix, Table A2), we did not estimate any long-run co-integration test to examine the co-movement between happiness and income. Instead, we examine whether happiness is determined by the combined effects of income as well as other socioeconomic parameters.

Further, this study employed a simultaneous quantile regression model to show the effects of socioeconomic factors on happiness scores across the distribution of quantiles.[9] The panel quantile regression (QR) model suggested by Koenker and Bassett (1978) estimates the average effects of independent variables on outcome variables across quantiles and captures unobserved distributional heterogeneity in the panel data. The study followed the below quantile regression function, as Koenkar (2005) suggested.

$$Qy_{ij}(\tau|x_{ij}) = \alpha_i + x_{ij}^T \beta(\tau) \quad (3)$$

Eq. (3) shows the conditional quantile function of the response of *jth* observations on the *ith* individual y_{ij}; *Happiness*. α_i, shows an intercept of the conditional quantiles of the response; x_{ij}denotes independent variables and effects of the x_{ij}will be on variation quantile, τ, of interest.

This panel quantile regression is a robust model to minimize the errors in disturbances terms that might arise in heteroscedasticity and cross-sectional dependency. Additionally, we performed a post-estimation diagnostic test, such as the quantile slope equality test and symmetric quantiles test, to examine the validity of our model. We adopted a quantile regression approach to measure the distribution of happiness based on past literature (Lee, Chen & Peng 2021). While selecting variables to measure happiness, we followed Borghesi and Vercelli (2012) and Ram (2009).

4. Results and discussion

4.1. Determinants of happiness in developed and developing countries

Table 3 presents determinants of happiness in both developed and developing countries using a two-way cluster robust fixed effects regression model.[10] Results show that happiness is positively and significantly associated with per capita income, social support, freedom to make life choices, and the country's positive emotional well-being in developed and developing countries. The happiness or life satisfaction score increases at 0.726 units and 0.561 units if per capita GDP increases by 1 % annually in developed and developing economies. Our study contradicts Ng et al. (2019), who found that life satisfaction and its determinants differ in developed and developing countries. On the contrary, our study finds that per capita income is directly associated with happiness for both groups of countries (developed and developing).

In the current study, the social support variable emerges as a major determinant of happiness, with a coefficient value of 1.368 and 1.700 in developed and developing countries, respectively. Social support indicates comfort, trust within the society, and the ability to get support during distress, which can potentially increase happiness. The coefficient of *freedom to make life choices* is significant at 5 % level of significance and positive (0.840) in developed countries, while it is positive but insignificant in developing countries. This result indicates that in developed countries where the standard of living is high, freedom to make life choices matters a lot in developed countries. However, the freedom to make life choices is not important for people in developing countries where the standard of living is low, and individuals struggle to sustain their livelihood and improve their living conditions.

Results show that the impact of corruption on happiness is negative and statistically significant (–0.921) in developing countries, while its impact is not significant in developed countries. This may be because corruption is low in developed countries, and there may not be much variation in the value of this variable. The coefficient of the variable *country's negative affect on emotional well-being* is negative but statistically significant only for developed countries. It implies that if the country's negative effects as measured through an individual's emotional well-being (i.e., worry, sadness, and anger) increase by 1 unit, the happiness level will decline by 2.912 units. The relationship between happiness and the gender inequality index is positive but insignificant in both developed and developing countries. Air pollution exposure and happiness are negatively related; the result shows that a 1 % increase in the annual concentration of PM2.5 reduces happiness by 0.395 units in developed countries. The reason for the negative relationship between air pollution exposure and happiness can be explained by the fact that air pollution reduces the quality of life through adverse impacts on health, particularly of children.

Results provide a robust estimator because the model used in this study captured both country-level fixed and time-trend effects.[11] We also omitted the variability in the error term by using the cluster robust fixed effects model.

[8] Interaction terms are added to regression models to account for the possibility that the effect of one variable on the dependent variable may vary depending on the level of another variable. Consider a regression model with interaction term of income and social support, and their impact on happiness in Eq. 2. The coefficient β_3 represents the interaction effect between income and social support on happiness. The statistical significance of β_3 indicates that the joint effect of income and social support significantly influences happiness beyond their individual effects. A positive β_3 suggests that the impact of income on happiness varies depending on the level of social support, and vice versa. For a one-unit increase in income, the change in happiness is depends on the level of social support. Similarly, for a one-unit increase in social support, the change in happiness is depends on the level of income. The interaction effect is practically significant as it suggests that the combined influence of income and social support has a notable impact on individuals' reported happiness.

[9] Interpreting quantile regression involves understanding how the relationship between variables changes across different quantiles of the dependent variable. Unlike ordinary least squares (OLS) regression, which estimates the conditional mean of the dependent variable, quantile regression allows you to explore the impact of independent variables on different quantiles of the distribution.

[10] The Hausman test for the selection of fixed effect/random effects and; the use of time effect in the fixed effects model are presented in the Appendix, Table A1. Additionally, other pre-estimation tests such as multicollinearity, heteroscedasticity, and auto-correlation are also reported in Table A1.

[11] One-way fixed effects with cluster robust results are not reported in the paper but are available on request.

Table 4
Regression results II.

Variables	Developed countries	Developing countries
ln (per capita GDP square)	–0.426	–0.802**
	(0.305)	(0.325)
ln (per capita GDP × social support)	1.073*	0.978***
	(0.557)	(0.225)
ln (per capita GDP × freedom to make life choices)	0.587***	0.263*
	(0.208)	(0.147)
ln (per capita GDP × perception of corruption)	–0.0803	–0.192
	(0.104)	(0.328)
ln (per capita GDP × country's positive affect)	0.843***	1.103***
	(0.275)	(0.265)
ln (per capita GDP × country's negative affect)	–0.648***	–0.0733
	(0.167)	(0.132)
ln (per capita GDP × air pollution exposure)	–0.419***	–0.0183
	(0.121)	(0.163)
ln (per capita GDP × gender inequality index)	0.214*	0.119
	(0.122)	(0.162)
Constant	0.104	0.792
	(3.150)	(2.992)
Country fixed effect	Yes	Yes
Time effect	Yes	Yes
Cluster robust	Yes	Yes
Observations	549	1081
R-squared	0.450	0.173
Number of countries	46	93

Notes: ln= Natural logarithm; Robust standard errors in parentheses.
*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$. Dependent variable is happiness, measured through a life ladder score (0–10).
Source: Author's estimation.

4.2. Determinants of happiness using nonlinear model

Table 4 examined the determinants of happiness using control variables such as per capita GDP square ($PCGDP^2$) and other intersection variables to show any nonlinear relationships. The results show that $PCGDP^2$ has a negative and statistically significant relationship with happiness in developing economies. The statistically significant coefficient for ln ($PCGDP^2$) (-0.802, $p < 0.01$) reveals a concerning trend: as per capita income doubles, happiness decreases by 0.802 units in developing countries. The observed inverted U-shaped relationship implies that while initial economic growth enhances happiness, further increases may have detrimental effects on well-being in developing countries.[12] This finding challenges the conventional assumption that continuous economic growth equates to sustained well-being. The study contributes new insights by challenging prior research and revealing the complexity of the relationship between income and happiness in developing countries. The non-significant coefficient (-0.426) fails to provide conclusive evidence of a relationship between per capita income squared and happiness in developed countries. The absence of statistical significance raises questions about the relevance of this variable in understanding happiness dynamics in developed economies.

The exploration of combined effects, as outlined in Table 4, unveils a nuanced interplay between per capita GDP (PCGDP) and various social factors on happiness across both developed and developing countries. Notably, a surge in per capita income, coupled with improvements in social support, freedom of life choices, and positive emotional well-being, exhibits a positive correlation with happiness, transcending economic boundaries. This underscores the universal significance of holistic well-being beyond mere economic indicators.

Contrarily, the study uncovers a disconcerting trend within developed countries. When accompanied by an upswing in negative emotional well-being (e.g., worry, sadness, anger), the rise in per capita income manifests a reduction in happiness. This critical observation prompts an essential interrogation of the emotional toll associated with economic progress in advanced economies, challenging the conventional narrative of perpetual well-being linked to financial prosperity.

The analysis suggests that the interaction between corruption and per capita income lacks significant influence on happiness. This counterintuitive finding implies that a simultaneous rise in corruption could offset the positive impact of increased per capita GDP. This intricacy underscores the need for a more profound understanding of the intricate relationship between economic growth and corruption in shaping individuals' well-being.

The significant negative coefficient of the interaction term between PCGDP and air pollution exposure exclusively in developed countries raises alarms. It indicates that, even with a rise in per capita income, the adverse effects of air pollution persistently impede happiness. This insight challenges assumptions about the resilience of well-being in economically affluent societies and urges a more holistic consideration of environmental factors in well-being assessments.

In developed nations, the positive and significant interaction between PCGDP and the gender inequality index introduces a paradox. The revelation that increasing gender inequality does not necessarily diminish the positive impact of rising per capita income on happiness prompts a critical examination of societal values and gender dynamics within the context of economic progress.

In conclusion, the study emphasizes the inadequacy of income as the sole determinant of happiness. While a financial upswing contributes to well-being, its efficacy is contingent on a confluence of factors. Social support, freedom of life choices, effective corruption control, a nation's positive impact on emotional well-being, and a minimal negative effect are identified as indispensable drivers of holistic satisfaction. The study thus challenges simplistic notions and underscores the multidimensional nature of well-being, urging policymakers to adopt comprehensive approaches that extend beyond economic metrics.

Prior studies, like Bartolini and Sarracino (2014), overlooked the nonlinear aspects of income's impact on happiness. This study challenges that oversight. Contrary to the belief that more income always means more happiness, our research in developing countries reveals an inverted U-shaped relationship. Happiness increases with income until a tipping point, after which further income growth correlates with reduced happiness. We go beyond traditional models, introducing interaction terms to understand how socioeconomic variables moderate the income-happiness link. This methodological twist offers fresh insights into nuanced dynamics. The study not only enriches our understanding of income's impact on happiness but also uncovers new paradigms in socioeconomic interactions, challenging existing norms. This research prompts a reevaluation of established theories and calls for a deeper dive into income thresholds and additional moderating factors. The evolving landscape invites further exploration of the intricate link between income and happiness.

4.3. Measuring determinants of happiness across quantiles in developed countries

Table 5 displays the outcomes of the quantile regression model (Q10–Q90), elucidating the determinants of happiness within developed countries. The findings reveal a positive and statistically significant relationship between happiness and per capita GDP across all quantiles at the 1 % significance level. This indicates that a 1 % alteration in income corresponds to an increase in happiness. The coefficient exhibits variation, ranging from 0.286 to 0.537 units across quantiles, with a diminishing trend observed as quantiles ascend. Notably, per capita GDP emerges as a pivotal determinant influencing life satisfaction and

[12] In this study, we have not regressed PCGDP and PCGDP2 in the same equation to check the non-linearity impact of happiness and income due to collinearity. Rather we estimated different models as shown in Tables 3 & 4. Further, U-shaped or inverted U-shaped relationships between happiness and income have shown across distribution (please see Figs. 1 & 2).

Table 5
Quantile regression result I (developed countries).

	Quantile distribution								
Variables	Q_{10}	Q_{20}	Q_{30}	Q_{40}	Q_{50}	Q_{60}	Q_{70}	Q_{80}	Q_{90}
ln (per capita GDP)	0.311***	0.289***	0.286**	0.445***	0.537***	0.509***	0.430***	0.422***	0.242
	0.096	0.100	0.114	0.085	0.089	0.106	0.133	0.139	0.154
Social support	2.818***	2.632***	2.809***	2.973***	2.081***	2.050***	2.324***	3.134***	4.529***
	0.953	0.602	0.489	0.488	0.639	0.478	0.543	0.546	1.012
Freedom to make life choices	0.925*	0.769***	0.835***	0.564**	0.816***	0.887***	0.865**	0.547	−0.133
	0.552	0.292	0.230	0.255	0.310	0.322	0.359	0.340	0.571
Perceptions of corruption	−0.600***	−0.963***	−0.892***	−0.765***	−0.641***	−0.562***	−0.552***	−0.671***	−0.711***
	0.216	0.136	0.157	0.138	0.122	0.125	0.145	0.136	0.137
Country's positive affect	4.189***	3.011***	2.657***	2.687***	2.726***	2.594***	2.723***	2.963***	1.780***
	0.671	0.405	0.387	0.316	0.301	0.305	0.396	0.334	0.599
Country's negative affect	1.210**	0.699	0.086	−0.234	−0.428	−0.504	−0.690	−1.036*	−0.975
	0.556	0.497	0.443	0.451	0.466	0.450	0.535	0.535	0.627
ln (air pollution exposure)	−0.288***	−0.133	−0.083	−0.093*	−0.081	−0.064	0.008	0.185**	0.201**
	0.090	0.084	0.057	0.055	0.052	0.054	0.075	0.084	0.092
Gender inequality index	−0.904*	−0.856**	−1.038***	−0.692***	−0.494*	−0.411	−0.377	−0.209	−0.536*
	0.507	0.370	0.310	0.240	0.266	0.308	0.379	0.288	0.290
Constant	−2.752*	−1.152	−0.947	−2.514**	−2.924***	−2.560**	−2.114*	−2.892*	−0.588
	1.546	1.236	1.227	0.970	1.055	1.048	1.276	1.524	1.622
Pseudo R-squared	0.471	0.494	0.521	0.538	0.536	0.521	0.489	0.433	0.353
Quantile slope equality test					Symmetric quantiles test				
Wald test for Chi-sq. statistics	185.946***				Wald test for Chi-sq. statistics		41.555**		

Notes: *** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$. The dependent variable is the quantile distribution of happiness, which is measured through a life ladder score (0–10).
Source: Author's estimation.

happiness consistently across all quantiles in developed countries.

The findings reveal that social support plays a crucial role in enhancing happiness across different quantiles. Interestingly, the elasticity is greater than one, indicating that the positive impact of social support on an individual's life satisfaction is more than proportional. In developed countries, this underscores the significance of social support in elevating happiness, with varying coefficients ranging from 2.05 to 4.52 across quantiles. Similarly, freedom to make life choices contributes to increased happiness in most quantiles, except in the highest quantiles (Q_9 and Q_{10}). A country's positive emotional well-being consistently enhances happiness across all quantile groups (Q_{10}–Q_{90}), albeit with diminishing coefficients in higher quantiles. Conversely, the perception of corruption within a country consistently diminishes happiness across all quantiles, with coefficients ranging from 0.552 to 0.963. The impact of air pollution exposure is nuanced, reducing happiness in lower quantiles (Q_{10} and Q_{40}) but exhibiting positive relationships in higher quantiles (Q_{80} and Q_{90}). Furthermore, gender inequality predominantly diminishes happiness in the lower quantiles (Q_{10}–Q_{50}) within developed countries, with coefficients varying from 0.494 to 1.038. These findings provide a comprehensible overview of the nuanced relationships between key factors and happiness across different quantiles in developed countries.

The observed relationships between key factors and happiness in developed countries align with existing literature, contributing to our understanding of well-established concepts in the field. The positive and statistically significant relationship between per capita GDP and happiness is consistent with the Easterlin Paradox literature, which suggests that while income is positively associated with happiness, the relationship tends to diminish at higher income levels (Easterlin, 1974). The pronounced positive impact of social support on happiness, with an elasticity greater than one, corresponds with numerous studies highlighting the importance of social connections and networks for individual well-being (Helliwell, Layard & Sachs, 2020). This is in line with the social capital literature, emphasizing the positive role of supportive social environments in fostering happiness and life satisfaction (Putnam, 2000). The positive association between freedom to make life choices and happiness resonates with research on the importance of autonomy and personal agency for subjective well-being (Diener & Biswas-Diener, 2002). The diminishing impact of this factor in the highest quantiles aligns with the idea that the pursuit of additional choices may yield diminishing returns in terms of happiness (Schwartz et al., 2002). The consistent positive relationship between a country's positive emotional well-being and happiness is in line with the broader positive psychology literature, emphasizing the impact of positive emotions on overall life satisfaction (Lyubomirsky, King & Diener, 2005).

Conversely, the negative impact of corruption on happiness aligns with the extensive literature highlighting the detrimental effects of corruption on various social and economic outcomes, including subjective well-being (Bjørnskov, 2003). The nuanced relationship between air pollution exposure and happiness, with adverse effects in lower quantiles and positive effects in higher quantiles, adds complexity to existing environmental psychology literature. Previous studies have demonstrated the negative impact of pollution on well-being (Cui & Yang, 2022), and these findings suggest potential adaptation or resilience in the face of higher pollution levels among individuals in the upper quantiles. Lastly, the negative association between gender inequality and happiness in lower quantiles is consistent with research emphasizing the importance of gender equity for overall societal well-being (Subramanian et al., 2005). This underscores the multifaceted nature of factors influencing happiness, linking with broader social and economic literature.

Fig. 1 provides insightful quantile distribution graphs illustrating the relationship between various determinants and happiness in developed countries. Each graph represents different factors at different quantiles, shedding light on nuanced patterns across income groups. The PCGDP quantile graph depicts an increasing rate in the lower quantiles (Q_{10}–Q_{50}), suggesting that the positive impact of income on happiness is more pronounced in less affluent countries. However, it increases at a decreasing rate in higher quantiles (Q_{60}–Q_{90}), indicating diminishing returns to happiness as income rises in wealthier countries. The social support quantile graph reveals a U-shaped relationship, indicating that happiness declines as we move toward higher quantiles, reaching a low point around Q_{60}, and then start to increase from Q_{70} onwards. This implies that the influence of social support on happiness is more

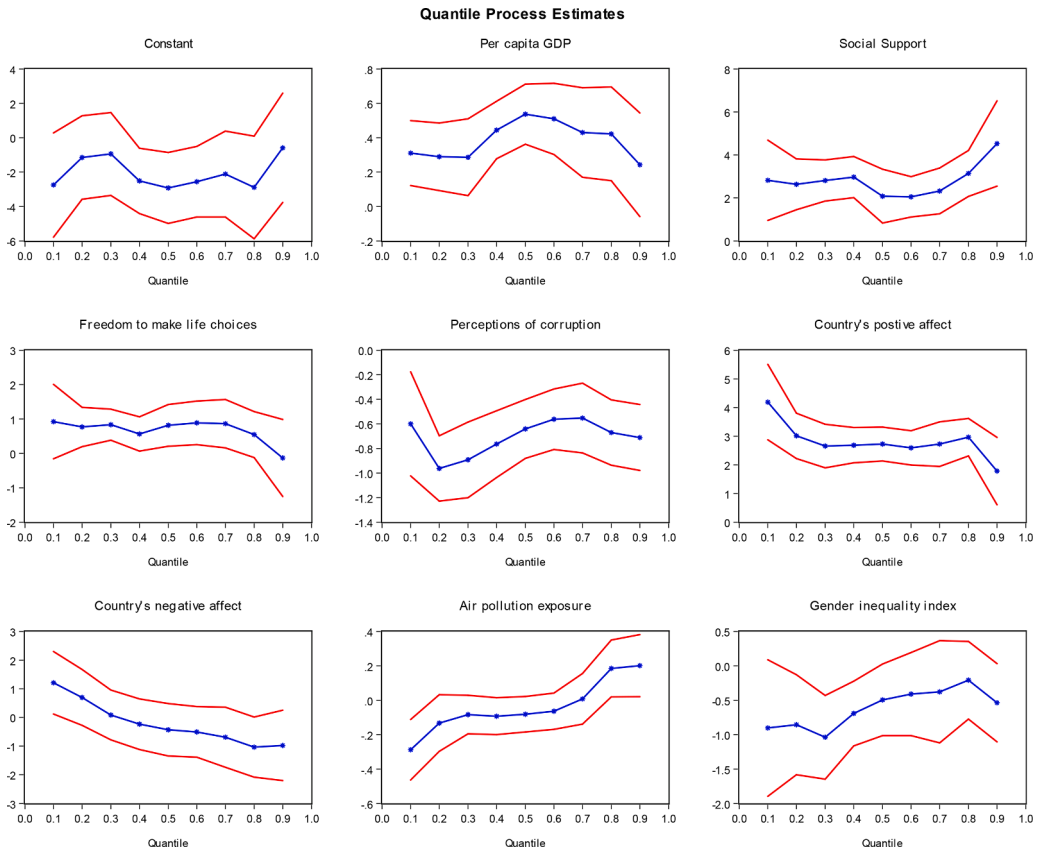

Fig. 1. Quantile Regression Graph 1 (Developed Countries)
Notes: Fig. 1 is the graphical representation of the coefficient of the variables from Table 5. The middle blue line shows the estimated coefficient values across quantiles, and the red line indicates a 95 % confidence interval as a lower and upper limit.
Source: Author's estimation.

significant in mid-range income countries. The quantile graph for freedom of life choice shows a rising trend in the lower quantiles (Q_{10}–Q_{30}), followed by a sharp decline in the higher quantiles (Q_{70}–Q_{90}). This suggests that the positive impact of freedom on happiness is more pronounced in lower to mid-range income countries.

The perception of corruption quantile graph indicates that corruption reduces happiness in the lower quantiles (Q_{10}–Q_{30}), starts increasing in the middle quantiles (Q_{50}–Q_{70}), and further declines in the higher quantiles (Q80–Q90). This suggests that the adverse effect of corruption on happiness is more pronounced in lower-income countries but diminishes in wealthier nations. The positive emotional well-being quantile graph exhibits a J-shaped relationship, declining after reaching a peak around Q_{70}. In contrast, the negative emotional well-being consistently reduces across quantiles. This suggests that while positive emotional well-being is sensitive to income up to a certain point, negative emotions diminish consistently with increasing income. The air pollution exposure quantile graph shows a negative and low coefficient in lower quantiles (Q_{10}–Q_{20}), which increases in higher quantiles. This implies that the detrimental impact of air pollution on happiness is more pronounced in less affluent countries and becomes more substantial as income rises. The gender inequality index quantile graph indicates a declining trend until Q_{30}, followed by an upward trend up to Q_{80}, and then a subsequent decline. This suggests that the relationship between gender inequality and happiness is complex, with varying sensitivities across income groups.

4.4. Measuring determinants of happiness across quantiles in developing countries

Table 6 provides a comprehensive overview of the quantile regression results (Q_{10}–Q_{90}) on the determinants of happiness in developing countries. The analysis explores various factors and their impact on happiness across different income quantiles. A positive and statistically significant relationship exists between happiness and per capita GDP across all quantiles. As per capita GDP increases, happiness levels also rise. The coefficient varies from 0.357 to 0.537, with a slightly decreasing trend in higher quantiles. Social support consistently positively and significantly impacts happiness across all quantiles. The coefficient ranges from 1.198 to 2.100, indicating that an increase in social support more than proportionately increases an individual's life satisfaction.

Freedom to make life choices shows a positive relationship with happiness, except in Q_9 and Q_{10}. The impact is more pronounced in lower quantiles (Q_{10}–Q_{30}), suggesting that the positive effect of freedom on happiness diminishes as income increases. The association between perceptions of corruption and happiness is statistically insignificant in developing countries. This implies that, unlike in developed countries, corruption perception does not significantly influence happiness levels in developing nations. A country's positive affect has a consistently positive and significant relationship with happiness across all quantiles. The coefficient ranges from 1.841 to 3.263, indicating that higher levels of positive emotional well-being contribute to increased happiness. The coefficient for a country's negative affect shows mixed results. While there is a positive relationship in higher quantiles (Q_{80} and Q_{90}), indicating increased negative emotions with higher income, lower quantiles exhibit inconsistent associations. Air pollution exposure has a varied impact on happiness. It has a positive relationship in lower quantiles (Q10–Q40) and a negative relationship in higher quantiles (Q_{80} and Q_{90}). This suggests that the effect of air pollution on happiness changes as income increases. Gender inequality consistently reduces happiness

Table 6
Quantile regression result II (developing countries).

	Quantile distribution								
Variables	Q_{10}	Q_{20}	Q_{30}	Q_{40}	Q_{50}	Q_{60}	Q_{70}	Q_{80}	Q_{90}
ln (per capita GDP)	0.449***	0.473***	0.409***	0.384***	0.383***	0.357***	0.390***	0.374***	0.431***
	0.060	0.060	0.053	0.042	0.043	0.043	0.047	0.050	0.071
Social support	1.705***	1.447***	1.689***	1.904***	2.100***	1.932***	1.472***	1.198***	0.998**
	0.485	0.319	0.302	0.271	0.261	0.277	0.268	0.260	0.421
Freedom to make life choices	0.481	0.562**	0.466**	0.551***	0.557***	0.638***	0.668***	0.560**	0.348
	0.343	0.267	0.213	0.201	0.207	0.202	0.209	0.240	0.267
Perceptions of corruption	0.210	0.100	0.080	−0.209	−0.302	−0.168	−0.275	−0.443	−0.492
	0.159	0.284	0.279	0.227	0.221	0.218	0.281	0.311	0.435
Country's positive affect	1.841***	1.494***	1.836***	2.103***	2.320***	2.559***	2.675***	3.001***	3.263***
	0.510	0.381	0.330	0.312	0.288	0.264	0.267	0.272	0.382
Country's negative affect	0.430	0.083	0.339	0.355	0.799***	1.141***	0.923***	0.937***	0.714
	0.403	0.310	0.294	0.281	0.281	0.254	0.267	0.314	0.437
ln (air pollution exposure)	0.248***	0.192***	0.125**	0.159***	0.100*	0.038	0.036	−0.047	−0.097
	0.094	0.063	0.057	0.053	0.055	0.059	0.067	0.073	0.081
Gender inequality index	−0.669**	−0.585**	−0.825***	−0.760***	−0.596**	−0.586**	−0.531**	−0.340	−0.208
	0.312	0.271	0.228	0.226	0.244	0.259	0.256	0.265	0.366
Constant	−3.501***	−2.718***	−2.048***	−1.985***	−2.072***	−1.779***	−1.543**	−0.853	−0.775
	0.702	0.754	0.657	0.514	0.529	0.526	0.610	0.716	0.955
Pseudo R-squared	0.291	0.311	0.326	0.340	0.350	0.360	0.375	0.389	0.393
Quantile slope equality test				Symmetric quantiles test					
Wald test for Chi-sq. statistics		165.776***		Wald test for Chi-sq. statistics			35.574**		

Notes: *** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$. The dependent variable is the quantile distribution of happiness, measured through a life ladder score (0–10).
Source: Author's estimation.

across all quantiles. The coefficient varies from 0.531 to 0.825, indicating that higher gender inequality is associated with lower happiness levels in developing countries.

Table 6 findings align with existing literature on happiness determinants in developing countries. Positive GDP-happiness link is consistent, but diminishing at higher quantiles, echoing Easterlin's insights. Social support's high impact in lower quantiles follows the socioeconomic gradient seen in literature (Diener & Seligman, 2002). Freedom's positive influence, particularly in lower quantiles, resonates with autonomy's well-being role (Oishi et al., 2022). Corruption's insignificance challenges the typical negative association, suggesting cultural nuances. Positive affect's strong positive link supports emotional contagion theories (Fowler & Christakis, 2008; La et al., 2021). Mixed results for negative affect align with wealthier societies' heightened negative emotional sensitivity (Kesebir & Diener, 2008; Rodríguez-Pose and Maslauskaite, 2012). The varied impact of air pollution corresponds to environmental well-being studies (Brick & Lai, 2018). Consistent negative association of gender inequality with happiness reinforces gender disparity's adverse effects (Sen, 2001). Diminishing effect in higher quantiles suggests economic development reduces gender inequality's impact on happiness. These insights contribute to the nuanced understanding of happiness dynamics in developing countries.

The graphs in Fig. 2 visually represent the quantile distribution of key determinants of happiness across income groups in developing countries. The analysis of these graphs yields valuable insights into the nuanced relationships between various factors and happiness levels. The quantile graph of per capita GDP shows a U-shaped relationship with happiness. In the lower quantiles (Q_{10}–Q_{40}), the increase in happiness with income is at a decreasing rate, while from Q_{60} onward, it exhibits an increasing rate. This suggests that higher-income groups experience a more substantial increase in happiness, reflecting a positive U-shape relationship. The quantile graph for social support depicts an inverted U-shaped relationship. Happiness increases at an increasing rate in the lower quantiles (Q_{10}–Q_{50}) and then at a decreasing rate in higher quantiles (Q_{50}–Q_{90}). This implies that while social support positively influences happiness, there is an optimal level beyond which the impact diminishes.

The quantile graph for freedom of life choice demonstrates a positive trend. It increases at an increasing rate in the lower quantiles (Q_{10}–Q_{20}), then at a decreasing rate (Q_{20}–Q_{30}), and again at an increasing rate from Q30–Q80, followed by a decrease in the higher quantiles (Q_{80}–Q_{90}). This suggests a complex relationship where the positive impact of freedom on happiness is not uniform across all income groups. The perception of corruption exhibits a linear and polynomial relationship. It increases happiness at a decreasing rate in the lower quantiles (Q_{10}–Q_{60}), then increases in the middle quantiles (Q_{70}–Q_{80}), and decreases again in the higher quantiles (Q_{80}–Q_{90}). This indicates that the effect of corruption perception on happiness varies across income groups, showing a nuanced relationship. The quantile graph for a country's positivism shows an increasing trend from Q_{30} to higher quantiles, indicating that higher positive emotional well-being contributes to happiness. Conversely, negativism decreases happiness in the higher quantiles, suggesting its significance mainly in more affluent segments of developing countries. Continuous exposure to air pollution is associated with a reduction in happiness. The coefficient value falls from lower to higher quantiles, indicating that the adverse impact of air pollution on happiness is more pronounced in the lower quantile group of countries. Gender inequality is negatively associated with happiness, but the negative effect diminishes from lower to higher quantiles. This implies that the adverse impact of gender inequality on happiness is offset by income, particularly in higher quantile groups of developing countries.

The overall results find the following insights. First, per capita income increases the level of happiness in both developed and developing countries, but per capita income square reduces the level of happiness only in the case of developing countries. Our results support the findings of Easterlin (1974, 2022), Kahneman and Deaton (2010), and Mureşan, Ciumaş and Achim (2020), who found that income increases the level of happiness, but beyond a certain level, it does not affect happiness in the case of developed countries. In this study, we extended our analysis to developing countries and found a negative influence of income square on happiness. Second, our study adopted unique parameters (i.e., air pollution exposure and gender inequality) to measure the influence of environment and culture on the level of happiness. Our findings confirm

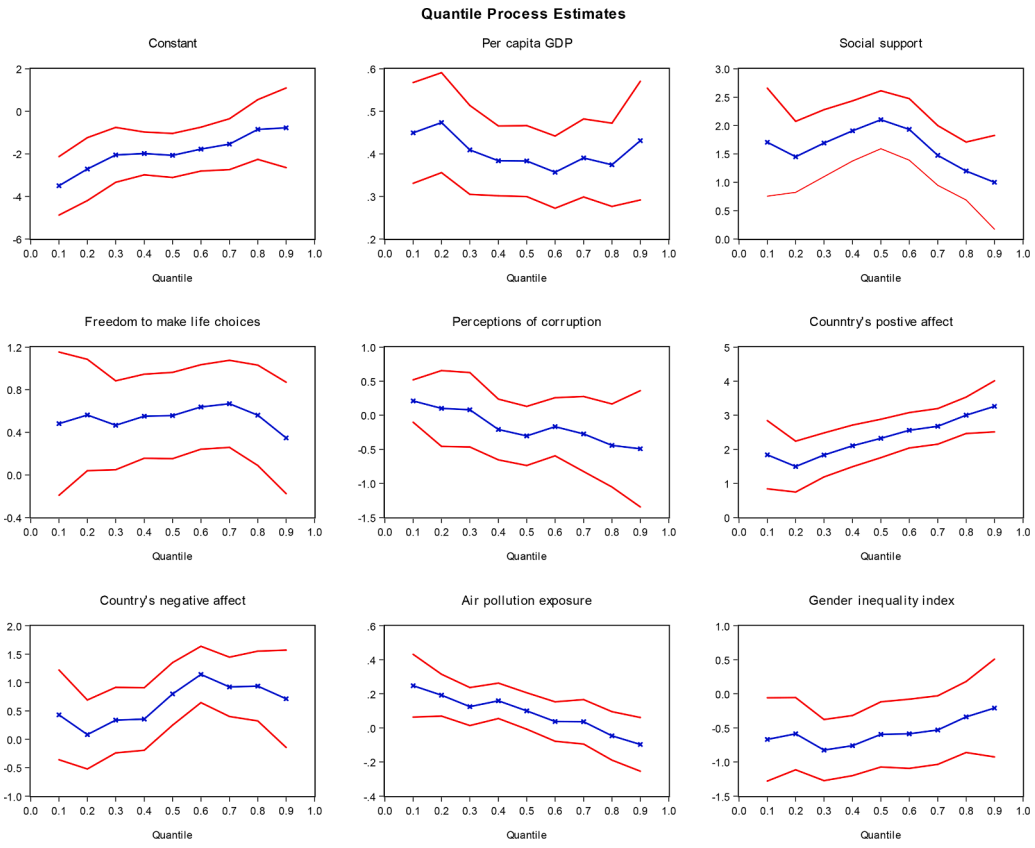

Fig. 2. Quantile regression graphs (developing countries)
Notes: Fig. 2 is the graphical representation of the coefficient of the variables from Table 6. The middle blue line shows the estimated coefficient values across quantiles, and the red line indicates a 95 % confidence interval as a lower and upper limit.
Source: Author's estimation.

the argument by the previous studies that environmental and culture influence an individual's well-being (Audette et al. 2019; Cuñado & De Gracia 2013). Along similar lines, Muresan et al. (2023) argue that rising air pollution increases mental health issues, i.e., depression and anxiety, thereby it reduces happiness in the sample of European countries. Third, this study attempted to measure the heterogenous impact of income as well as other factors on happiness and found that the level of happiness is not uniform across quantiles, and elasticity varies. Our studies are in line with past literature, which has also observed distributional heterogeneity in the level of happiness (Borghesi & Vercelli, 2012; Ram, 2009; Lee, Chen & Peng 2021).

Finally, our study finds that social support and freedom to make life choices positively impact happiness in both developed and developing countries. Using the intersection model, we found that rising per capita income plays a significant role in enhancing social support and freedom to make life choices which is similar to other studies (Putnam, 2015; Inglehart et al., 2008). Inglehart et al. (2008) argue that economic development, democratization, and social tolerance have increased happiness around the world. On the contrary, Putnam (2015) argues that citizens' freedom to decision-making at the local government level and great fiscal equality could motivate for greater happiness.

4.5. *Critical discussion of the results*

The comprehensive analysis of our study yields several noteworthy insights. Firstly, we observe that an increase in per capita income contributes to elevated happiness levels in both developed and developing countries. However, a nuanced finding emerges as per capita income squared demonstrates a diminishing impact on happiness, specifically in developing countries. This aligns with the seminal works of Easterlin (1974, 2022), Kahneman and Deaton (2010), and Mureşan, Ciumaş and Achim (2020), indicating that while income generally enhances happiness, a saturation point exists, especially in developed countries. Our extension of this analysis to developing countries reveals a novel negative influence of income square on happiness.

Secondly, our study introduces distinctive parameters, namely air pollution exposure and gender inequality, to gauge the influence of environmental and cultural factors on happiness. Our findings substantiate the existing argument in prior studies that both the environment and culture significantly impact an individual's well-being (Audette et al., 2019; Cuñado & De Gracia, 2013). Notably, our results align with Muresan et al. (2023), who contend that increasing air pollution is associated with heightened mental health issues, such as depression and anxiety, ultimately diminishing happiness, as evidenced in a sample of European countries.

Thirdly, our study endeavors to measure the heterogeneous impact of income and other factors on happiness, revealing that happiness levels are not uniform across quantiles, with varying elasticity. This observation resonates with prior literature highlighting distributional heterogeneity in happiness levels (Borghesi & Vercelli, 2012; Ram, 2009; Lee, Chen & Peng, 2021).

Lastly, our study underscores the positive impact of social support and freedom to make life choices on happiness in both developed and developing countries. Employing the intersection model, we ascertain that the rise in per capita income plays a motivational role in enhancing social support and freedom to make life choices. This finding aligns with existing studies by Putnam (2015) and Inglehart et al. (2008). Inglehart et al. (2008) argue that economic development, democratization, and social tolerance globally contribute to increased happiness. Conversely, Putnam (2015) suggests that citizens' freedom in decision-making at the

local government level and greater fiscal equality are motivational factors for increased happiness.

5. Conclusions and policy suggestions

This study critically examines the role of income in shaping individual happiness across 166 developed and developing countries from 2005 to 2020. Employing fixed effects quantile regression and integrating key confounders, including income square, social support, freedom to make life choices, perception of corruption, air pollution exposure, gender inequality, and emotional well-being, we unearth significant insights. Our research introduces original contributions by investigating the impact of air pollution exposure and gender inequality on happiness, revealing their adverse effects. Through the interaction model, we establish that the positive impact of rising income on happiness is contingent upon factors such as social support, freedom, and a country's positive influence on emotional well-being. However, the study underscores the offsetting effect of corruption and a country's negative influence on emotional well-being, especially in developed countries. Quantile regression results unveil variations in coefficients, depicting a U-shaped relationship between income and happiness in developing countries and an inverted U-shaped relationship in developed countries. Notably, socioeconomic, cultural, and environmental factors play pivotal roles in influencing the income elasticity of happiness and life satisfaction levels. This study contributes valuable insights to the academic discourse on the complex interplay between income and happiness, urging a nuanced understanding of contextual determinants.

Our study offers nuanced policy suggestions based on the critical examination of income and happiness across developed and developing countries. First: Our study advocates for economic policies that prioritize sustainable growth, recognizing the nuanced impact of economic development on happiness. This includes addressing social challenges associated with rapid growth, such as gender inequality and environmental degradation. Second: Establish and strengthen social safety nets, particularly in developing countries where social support is crucial for happiness. Third: Emphasize governance reforms to enhance freedom and transparency that would foster opportunities for personal growth and choice. Fourth: Develop policies addressing both positive and negative emotional influences on happiness. Invest in programs promoting work–life balance, mental well-being, and positive emotional experiences. Fifth: Prioritize policies to reduce air pollution, especially in developed countries where it significantly impacts happiness. Sixth: Implement gender-sensitive policies to address gender inequality, recognizing its crucial role in family well-being. Acknowledging and integrating non-monetary aspects into policy frameworks is essential. Policymakers are encouraged to design multi-dimensional policies that consider cultural, social, and environmental factors.

Our study has notable limitations with potential for future exploration. Firstly, the absence of extended time-series data hinders an in-depth analysis of happiness cyclicality. Obtaining longer-term data would allow us to investigate how economic shifts influence happiness and the efficacy of policy interventions. Secondly, our study overlooks regional variations in the income-happiness relationship, neglecting factors like social culture and living standards. Future research could explore these nuances for a more comprehensive understanding. Lastly, we did not conduct causality tests in our study, leaving room for future exploration into the nature of causal effects. Addressing these limitations would enhance the depth and scope of our research.

CRediT authorship contribution statement

Deepak Kumar Behera: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Dil B Rahut:** Conceptualization, Writing – review & editing, Validation, Supervision. **M Padmaja:** Writing – review & editing, Validation, Methodology, Data curation. **Ajit Kumar Dash:** Writing – review & editing, Validation.

Data availability

Data will be made available on request.

Appendix

Table A1
Diagnostic test.

Test	Developed countries	Developing
Hausman fixed random	Chi^2 test = 42.79***	Chi^2 test = 14.08*
Time effect in the FE model	F test = 2.18***	F test = 2.54***
VIF test for multicollinearity	Mean VIF = 2.19	Mean VIF = 1.87
Wooldridge test for autocorrelation	F test = 37.858***	F test = 52.543***
Breusch-Pagan LM test for heteroscedasticity	Chi^2 test = 79.193***	Chi^2 test = 72.108***
Modified Wald test for groupwise heteroscedasticity in FE	Chi^2 test = 1759.31***	Chi^2 test = 3220.24***

FE = fixed effects, LM = Lagrange multiplier, VIF = variance inflation factor.
Note: *** $p < 0.01$, ** $p < 0.05$.
* $p < 0.1$.
Source: Author's estimation.

Table A2
Result of panel unit-root test at level with intercept.

Variables	LLC	IPS	ADF-fisher	PP-fisher
Developed countries				
Happiness	−13.885***	−5.375***	183.739***	197.301***
ln (per capita GDP)	−7.487***	−2.006***	130.954**	147.732***
Social support	−9.938***	−6.897***	230.262***	276.936***
Freedom to make life choices	−12.528***	−6.701***	238.717***	243.419***
Perception of corruption	−13.813***	−5.727***	161.438***	172.784***
Country's positive affect	−4.380***	−3.023***	164.532***	198.758***
Country's negative affect	−9.693***	−6.209***	205.405***	228.613***

(*continued on next page*)

Table A2 (*continued*)

Variables	LLC	IPS	ADF-fisher	PP-fisher
ln (air pollution exposure)	−7.617***	−2.651***	157.792***	202.079***
Gender inequality index	−42.938***	−7.629***	137.193***	171.242***
Developing countries				
Happiness	−628.944***	−39.730***	356.906***	394.501***
ln (per capita GDP)	−10.032***	−3.762***	308.620***	410.831***
Social support	−68.762***	−16.970***	486.877***	581.510***
Freedom to make life choices	−13.385***	−6.409***	373.158***	406.673***
Perception of corruption	−10.319***	−6.537***	355.320***	385.303***
Country's positive affect	−51.896***	−16.207***	446.880***	515.501***
Country's negative affect	−9.782***	−3.388***	284.125***	319.420***
ln (air pollution exposure)	−16.8305***	−6.35219***	309.973***	311.874***
Gender inequality index	0.04082	−30.509***	329.895***	425.336***

LLC = Levin, Lin & Chu, IPS = Im, Pesaran and Shin W-stat, ADF–Fisher = Augmented Dicky–Fuller Fisher Chi-square, PP–Fisher = Phillips-Perron Fisher Chi-square.
Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Source: Author's estimation.

References

Angeles, L. (2011). A closer look at the Easterlin paradox. *The Journal of Socio-Economics, 40*(1), 67–73.

Arvin, M., & Lew, B. (2014). Does income matter in the happiness-corruption relationship? *Journal of Economic Studies, 41*(3), 469–490.

Asadullah, M. N., Xiao, S., & Yeoh, E. (2018). Subjective well-being in China, 2005–2010: The role of relative income, gender, and location. *China Economic Review, 48*, 83–101.

Audette, A. P., Lam, S., O'Connor, H., & Radcliff, B. (2019). (E)quality of life: A cross-national analysis of the effect of gender equality on life satisfaction. *Journal of Happiness Studies, 20*, 2173–2188.

Bartolini, S., & Sarracino, F. (2014). Happy for how long? How social capital and economic growth relate to happiness over time. *Ecological Economics, 108*, 242–256.

Belasen, A. R., & Hafer, R. W. (2012). Well-being and economic freedom: Evidence from the states. *Intelligence, 40*(3), 306–316.

Belasen, A. R., & Hafer, R. W. (2013). Do changes in economic freedom affect well-being. *Journal of Regional Analysis & Policy, 43*(1), 56–64.

Blanchflower, D. G. (2021). Is happiness U-shaped everywhere? Age and subjective well-being in 145 countries. *Journal of Population Economics, 34*(2), 575–624.

Borghesi, S., & Vercelli, A. (2012). Happiness and health: Two paradoxes. *Journal of Economic Surveys, 26*(2), 203–233.

Borrero, S., Escobar, A. B., Cortés, A. M., & Maya, L. C (2013). Poor and distressed, but happy: Situational and cultural moderators of the relationship between wealth and happiness. *Estudios Gerenciales, 29*(126), 2–11.

Brick, C., & Lai, C. K. (2018). Explicit (but not implicit) environmentalist identity predicts pro-environmental behavior and policy preferences. *Journal of Environmental Psychology, 58*, 8–17.

Ciziceno, M., & Travaglino, G. A. (2019). Perceived corruption and individuals' life satisfaction: The mediating role of institutional trust. *Social Indicators Research, 141*(2), 685–701.

Cui, W., & Yang, Z. (2022). Association between connection to nature and children's happiness in China: children's negative affectivity and gender as moderators. *Journal of Happiness Studies, 23*(1), 47–63.

Cuñado, J., & De Gracia, F. P (2013). Environment and happiness: New evidence for Spain. *Social Indicators Research, 112*, 549–567.

Diener, E., Napa-Scollon, C. K., Oishi, S., Dzokoto, V., & Suh, E. M. (2000). Positivity and the construction of life satisfaction judgments: Global happiness is not the sum of its parts. *Journal of happiness studies, 1*, 159-176.

Easterlin, R. A., Does economic growth improve the human lot? Some empirical evidence, Paul, S., & Guilbert, D. (1974). Nations and households in economic growth, 2013. In *Income–happiness paradox in Australia: Testing the theories of adaptation and social comparison, 30* pp. 89–125). Academic press. *Economic Modelling*900-910.

Easterlin, R. A., & O'Connor, K. J (2022). The easterlin paradox. *Handbook of labor, human resources and population economics* (pp. 1–25). Cham: Springer International Publishing.

Haller, M., & Hadler, M. (2004). Happiness as an expression of freedom and self-determination. *Challenges for quality of life in the contemporary world* (pp. 207–231). Dordrecht, the Netherlands: Springer.

Helliwell, J. F. (2006). Well-being, social capital and public policy: What's new? *The Economic Journal, 116*(510), C34–C45.

Helliwell, J. F., Layard, R., Sachs, J. D., & Neve, J. E. D. (2021). *World Happiness Report 2021*.

Inglehart, R., Haerpfer, C., Moreno, A., Welzel, C., Kizilova, K., Diez-Medrano, J., et al. (2022). *World values survey: All rounds - Country-pooled datafile*. Madrid, Spain & Vienna, Austria: JD Systems Institute & WVSA Secretariat.

Inglehart, R., Foa, R., Peterson, C., & Welzel, C. (2008). Development, freedom, and rising happiness: A global perspective (1981–2007). *Perspectives on Psychological Science, 3*(4), 264–285.

Jovanović, V., & Joshanloo, M. (2022). The contribution of positive and negative affect to life satisfaction across age. *Applied Research in Quality of Life, 17*(2), 511–524.

Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences, 107*(38), 16489–16493.

Karademas, E. C. (2006). Self-efficacy, social support and well-being: The mediating role of optimism. *Personality and Individual Differences, 40*(6), 1281–1290.

Kesebir, P., & Diener, E. (2008). In pursuit of happiness: Empirical answers to philosophical questions. *Perspectives on psychological science, 3*(2), 117–125.

Kim, S., & Kim, D. (2012). Does government make people happy?: Exploring new research directions for government's roles in happiness. *Journal of Happiness Studies, 13*, 875–899.

Kingdon, G. G., & Knight, J. (2007). Community, comparisons and subjective well-being in a divided society. *Journal of Economic Behavior and Organization, 64*(1), 69–90.

Koenker, R. (2005). Quantile regression. *Econometric Society Monographs*. Cambridge University Press.

Koenker, R., & Bassett Jr, G. (1978). Regression quantiles. *Econometrica: Journal of the Econometric Society*, 33–50.

Koohborfardhaghighi, S., Summers, C., Heshmati, A., & Altmann, J. (2022). Influence of freedom of choice on happiness. *IZA Discussion Paper No*, 15315.

La, B. T., Lim, S., Cameron, M. P., Tran, T. Q., & Nguyen, M. T. (2021). Absolute income, comparison income and subjective well-being in a transitional country: Panel evidence from Vietnamese household surveys. *Economic Analysis and Policy, 72*, 368–385.

Lee, C. C., Chen, M. P., & Peng, Y. T. (2021). Tourism development and happiness: International evidence. *Tourism Economics, 27*(5), 1101–1136.

Luechinger, S., & Raschky, P. A. (2009). Valuing floods disasters using the life satisfaction approach. *Journal of Public Economics, 93*(3–4), 620–633.

Lun, V. M. C., & Bond, M. H. (2013). Examining the relation of religion and spirituality to subjective well-being across national cultures. *Psychology of Religion and Spirituality, 5*(4), 304.

MacKerron, G., & Mourato, S. (2009). Life satisfaction and air quality in London. *Ecological Economics, 68*, 1441–1453.

Mei, S. T. L., Ni, A. O. Z., Sivaguru, S. A., & Cong, C. W. (2021). Social support, resilience, and happiness in response to COVID-19. *Journal of Cognitive Sciences and Human Development, 7*(1), 134–144.

Meisenberg, G., & Woodley, M. A. (2015). Gender differences in subjective well-being and their relationships with gender equality. *Journal of Happiness Studies, 16*, 1539–1555.

Mentzakis, E., & Moro, M. (2009). The poor, the rich and the happy: Exploring the link between income and subjective well-being. *The Journal of Socio-Economics, 38*(1), 147–158.

Mitchell, M. E., Lebow, J. R., Uribe, R., Grathouse, H., & Shoger, W. (2011). Internet use, happiness, social support and introversion: A more fine grained analysis of person variables and internet activity. *Computers in Human Behavior, 27*(5), 1857–1861.

Mookerjee, R., & Beron, K. (2005). Gender, religion and happiness. *The Journal of Socio-Economics, 34*(5), 674–685.

Mureşan, G. M., & Ciumaş, C. (2020). Money and happiness: A conceptual integration. *Annales Universitatis Apulensis-Series Oeconomica, 22*(1).

Mureşan, G. M., Ciumaş, C., & Achim, M. V. (2020). *Can money buy happiness? Evidence for European countries, 15* pp. 953–970). Applied Research in Quality of Life.

Muresan, G. M., Ciumas, C., Dragos, S. L., & Mare, C. (2023). Can private health insurance improve happiness? Evidence from European countries. *Finance Research Letters, 58*, Article 104608.

Ng, J. W. J., Vaithilingam, S., & Chua, J. M. (2019). Determinants of well-being for developing and developed countries and their role in policy-making: A panel data analysis. *Malaysian Journal of Economic Studies, 56*(1), 85–105.

Oishi, S., Cha, Y., Komiya, A., & Ono, H. (2022). Money and happiness: the income–happiness correlation is higher when income inequality is higher. *PNAS nexus, 1*(5), gac224.

Putnam, R. D. (2015). Bowling alone: America's declining social capital. *The city reader* (pp. 188–196). Routledge.

Ram, R. (2009). Government spending and happiness of the population: Additional evidence from large cross-country samples. *Public Choice, 138*(3), 483–490.
Rodríguez-Pose, A., & Maslauskaite, K. (2012). Can policy make us happier? Individual characteristics, socioeconomic factors and life satisfaction in Central and Eastern Europe. *Cambridge Journal of Regions, Economy and Society, 5*(1), 77–96.
Rothstein, B. (2010). Happiness and the welfare state. *Social Research, 77*(2), 441–468.
Schwartz, B., Ward, A., Monterosso, J., Lyubomirsky, S., White, K., & Lehman, D. R. (2002). Maximizing versus satisficing: happiness is a matter of choice. *Journal of personality and social psychology, 83*(5), 1178.
Schyns, P. (1998). Crossnational differences in happiness: Economic and cultural factors explored. *Social Indicators Research, 43*, 3–26.
Seidlitz, L., & Diener, E. (1993). Memory for positive versus negative life events: Theories for the differences between happy and unhappy persons. *Journal of Personality and Social Psychology, 64*(4), 654.
Selim, S. (2008). Life satisfaction and happiness in Turkey. *Social Indicators Research, 88*(3), 531–562.
Sen, A. (2001). The many faces of gender inequality (pp. 35–39). New republic.
Siedlecki, K. L., Salthouse, T. A., Oishi, S., & Jeswani, S. (2014). The relationship between social support and subjective well-being across age. *Social Indicators Research, 117*, 561–576.
Spruk, R., & Kešeljević, A. (2016). Institutional origins of subjective well-being: Estimating the effects of economic freedom on national happiness. *Journal of Happiness Studies, 17*(2), 659–712.
Stevenson, B., & Wolfers, J. (2008). Happiness inequality in the United States. *The Journal of Legal Studies, 37*(S2), S33–S79.
Štreimikienė, D. (2015). Environmental indicators for the assessment of quality of life. *Intelektinė ekonomika, 9*(1), 67–79.
Subramanian, S. V., Kim, D., & Kawachi, I. (2005). Covariation in the socioeconomic determinants of self rated health and happiness: a multivariate multilevel analysis of individuals and communities in the USA. *Journal of Epidemiology & Community Health, 59*(8), 664–669.
Sujarwoto, S., Tampubolon, G., & Pierewan, A. C. (2018). Individual and contextual factors of happiness and life satisfaction in a low middle income country. *Applied Research in Quality of Life, 13*(4), 927–945.
Tauseef, S. (2022). Can Money Buy Happiness? Subjective Well-being and Its Relationship with Income, Relative Income, Monetary and Non-monetary Poverty in Bangladesh. *Journal of Happiness Studies, 23*(3), 1073–1098.
Ugur, Z. B. (2021a). Does money buy happiness in Turkey? *Applied Research in Quality of Life, 16*(3), 1073–1096.
Ugur, Z. B. (2021b). How does inequality hamper subjective well-being? The role of fairness. *Social Indicators Research, 158*(2), 377–407.
Van Praag, B. M., Frijters, P., & Ferrer-i-Carbonell, A. (2003). The anatomy of subjective well-being. *Journal of Economic Behavior & Organization, 51*(1), 29–49.
Veenhoven, R. (1991). Is happiness relative? *Social Indicators Research, 24*, 1–34.
Veenhoven, R., & Veenhoven, R. (1984). The concept of happiness. *Conditions of Happiness*, 12–38.
Verme, P. (2009). Happiness, freedom and control. *Journal of Economic Behavior and Organization, 71*(2), 146–161.
Verme, P. (2011). Life satisfaction and income inequality. *Review of Income and Wealth, 57*(1), 111–127.
Welsch, H. (2006). Environment and happiness: Valuation of air pollution in ten European countries. *Ecological Economics, 58*(4), 801–813.
Welsch, H. (2007). Environmental welfare analysis: A life satisfaction approach. *Ecological Economics, 62*(3), 544–551.
World Bank. (2022). *World development indicators*. Washington, DC: World Bank.
Wu, Y., & Zhu, J. (2016). When are people unhappy? Corruption experience, environment, and life satisfaction in Mainland China. *Journal of Happiness Studies, 17*(3), 1125–1147.
Youssef, J., & Diab, S. (2021). Does quality of governance contribute to the heterogeneity in happiness levels across MENA countries? *Journal of Business and Socioeconomic Development, 1*(1), 87–101.