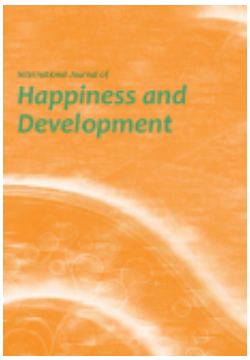

International Journal of Happiness and Development

ISSN online: 2049-2804 - ISSN print: 2049-2790
https://www.inderscience.com/ijhd

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DOI: 10.1504/IJHD.2024.10062250

Article History:

Received:	13 August 2023
Last revised:	25 December 2023
Accepted:	29 December 2023
Published online:	14 March 2025

Income and happiness: a study of a panel of US residents

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Abstract: Can money buy happiness? Does the marginal effect of income on happiness of an average change over time? Does the change in income of an average individual increase their happiness over time? These are the main research questions that this paper attempts to answer using a longitudinal dataset for US residents, viz., panel study of income dynamic (PSID), for the years 2019, 2011, 2013, 2015 and 2017. The main methodology we use is Ordered-Logit regressions. We find reasonably strong evidence of an yes answer to all three questions. Our results pass a number of robustness checks.

Keywords: Easterlin Paradox; happiness; income; ordered-logit regression; PSID data; longitudinal study.

Reference to this paper should be made as follows: Zhang, L. and Lahiri, S. (2025) 'Income and happiness: a study of a panel of US residents', *Int. J. Happiness and Development*, Vol. 9, No. 1, pp.1–14.

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1 Introduction

Can money buy happiness? This question remains one of the most fundamental, but contentious, issues in economics and in social sciences in general.

Before answering the above question, one has to define what happiness is. Economists have concentrated on approximate measures of happiness and its association with observable socioeconomic and demographic factors. Although neoclassical economic theory portrays utility or well-being as synonymous with consumption, the concept of relative utility can be traced back to Adam Smith's classic *Wealth of Nations*, and it is receiving significant attention in the recent economic literature. There are now many surveys where people are asked questions about their subjective happiness. Some of these surveys are for specific countries (for example, General Social Survey (GSS) and panel study of income dynamic (PSID) for US, British Household Panel Study (BHPS) for the UK) and some have data across countries (for example, World Value Survey (WVS), European Value Survey (EVS), and European Social Survey (ESS)). People are typically asked to rank Subjective Well-being (SWB) or life satisfaction (LS) on a scale of 1–10.

There have been many attempts in the literature to answer the research question posed at the outset of this paper, using SWB and LS datasets mentioned above. There are two broad strands in this literature.

First, researchers ask if people living in the richer countries necessarily happier? Easterlin (1974) finds that the answer is not necessarily an affirmative one. Furthermore, Easterlin (2013) gathered evidence from 17 developed nations, 9 developing countries, 11 transition countries, 17 Latin American countries, and China and did not find evidence of any significant positive relationship between happiness and income (GDP per-capita). There can be many reasons for this. For example, Frey and Stutzer (2000) explained that institutional factors such democracy and federal structure (local autonomy) can explain differences across countries. Unemployment can also play a part. Oswald (1997) using BHPS and Eurobarometer data, found that unemployment has a strongly depressing effect on happiness, and that unemployed people are unhappy for reasons of non-pecuniary stress and not income. Frey and Stutzer (2000) also found that in Switzerland, controlling for income, unemployed people are unhappier than employed people. Gender composition in countries can play a role as well. Stevenson and Wolfers (2009), using data from the Eurobarometer, show that women's happiness has declined both absolutely and relative to men in twelve European countries. They also found similar results for US, using GSS data over 35 years.[1]

Second, and more to the point of this paper, there are two research question:

i Does a richer person in a country, at a point in time, happier than a poorer one in the same country?

ii Does a person get happier as they get richer over time? Easterlin (2001) using data from the GSS, found that at a point in time, those with more income are, on average, happier than those with less.

Over the life cycle, however, the average happiness of a cohort remains constant despite substantial income growth. He ran a pooled regression with cohort dummy variables to prove the insignificant relationship between happiness and income over life cycle. On average, income, and economic circumstances more generally, improve substantially up to the retirement ages; yet, there is no corresponding advance in subjective well-being. The lack of a life cycle trend in happiness is also supported by regressions of happiness on income for each of the cohorts. These finding are known in the literature as the *Easterlin Paradox*. Why is it that, at a point in time, happiness and income are positively associated, but over the life cycle there is no relation? Easterlin's explanation involves taking account of both income and aspirations, and how they vary at a point in time as well as over time. Easterlin conjectured that, in reality, material aspirations change over the life cycle roughly in proportion to income (Easterlin, 2001). Easterlin (1995) and Easterlin (2001) implicitly assume that individuals compare themselves to all other residents of the same nation.

Caporale et al. (2009) examined the relationship between income and SWB using data from the ESS. They found that whereas income is positively connected with both happiness and life satisfaction over the entire sample of nineteen European nations, reference income has a negative influence on individual well-being, which is consistent with the relative utility hypothesis. According to Ferrer-i Carbonell (2005), the income of the reference group is just as important as one's own income in determining one's happiness. While McBride (2001) considers all those within 5 years younger or older than the individual in question as the reference group, Van de Stadt et al. (1985)'s reference group is based on education level, age, and work situation.[2]

Tsui (2014) conducted a study on what factors influence happiness, analysing data from the Taiwan Social Change Survey from 1999 to 2002 with an Ordered-Probit model. The author finds that an increase in absolute wealth makes Taiwanese people happier, with diminishing marginal effects. Furthermore, the study suggests that people's happiness is closely tied not just to absolute income, but also to the average income found in a society and expected income.

In this paper, we attempt to address three main research questions using a longitudinal dataset for US residents, viz., PSID for the years 2019, 2011, 2013, 2015 and 2017. The questions are:

i Can money buy happiness?

ii Does the marginal effect of income on happiness of an average change over time?

iii Does the change in income of an average individual increase their happiness over time?

The last of the three questions is closely related to Easterlin Paradox discussed above. A panel data can help us trace the same individual over time. It also allows researchers to

control for all observed and unobserved time-invariant individual characteristics via the use of individual fixed effects. Furthermore, this data allow us to consider observations for relatively more recent years. We also note that most studies for the US have use the GSS dataset. In PSID, happiness is measured by self-reported life satisfaction, which has five options: 'not at all satisfied', 'not very satisfied', 'somewhat satisfied', 'very satisfied', and 'totally satisfied'. Given this ordered categorical nature of our dependent variable, we use Ordered-Logit regressions to analyse the problem at hand.

Apart from income, there are other determinants of happiness, and we shall briefly mention some of those here. The environment in which people live could be a factor (Medvedev and Landhuis, 2018). A corrupt society can also take away some of the happiness from people (Li and An, 2020). Good healthcare and thus good health can be an important determinant of happiness (Maharlouei et al., 2020). Finally, a more open country can also make its citizens happier (Khun et al., 2015; Di Tella and MacCulloch, 2008).

The rest of the paper organised as following: Section 2 describes the data, Section 3 explains the empirical framework, and Section 4 discuss the results. Some concluding remarks are made in Section 5.

2 Data

In this paper, we use data from the PSID household survey. The PSID is housed at and directed by the University of Michigan. It is an interdisciplinary set up. PSID began in 1968 with a nationally representative sample of over 18,000 individuals living in 5000 families in US. Information on these individuals and their descendants have been collected in every other year. That is, it is a longitudinal dataset, covering 18,000 individuals over 50 years. The respondents are asked questions on employment, income, wealth, expenditures, health, marriage, childbearing, child development, philanthropy, education, and numerous other topics. For our purpose, we shall consider only a subset of the variables, and these are explained below.

2.1 Dependent variable

Our dependent variable is *Happiness*, represents by life satisfaction data which are available for the years 2009, 2011, 2013, 2015, 2017. The life satisfaction question is the following: "Before we start the interview for this year, we have a new question to ask about life in general. Please think about your life as a whole. How satisfied are you with it? Are you completely satisfied, very satisfied, somewhat satisfied, not very satisfied, or not at all satisfied?"

The answers are in the categorical form: 1: 'completely satisfied', 2: 'very satisfied', 3: 'somewhat satisfied', 4: 'not very satisfied', and 5: 'not at all satisfied'. To avoid confusion, we turn the categories around so that a higher number corresponds to a higher level of life satisfaction. That is, in our re-ordered form, 5: 'completely satisfied', 4: 'very satisfied', 3: 'somewhat satisfied', 2: 'not very satisfied', and 1: 'not at all satisfied'.

Five-way classification can introduce a lot of noise in the data as many may not be able to differentiate between, for example, 'completely satisfied' and 'very satisfied.' We thus, as an alternative, aggregate these into three-way options and two-way or binary options. For three-way options, we combine 1 (not at all satisfied) and 2 (not very satisfied) into 1 which represents 'not satisfied'. The category 3 remains 'somewhat satisfied', and categories 4

(very satisfied) and 5 (completely satisfied) are merged into 5 which represents 'satisfied'. As for the binary options, category 3 is merged with 1 (not satisfied) is given the number 0, and 5 (satisfied) is renumbered as 1.

2.2 Independent variables at individual level

The individual-level independent variables include household income, health condition, and other characteristics of the respondents, like marital status, that may affect life satisfaction. Another important information at the individual level is state of residency data, which will allow us to merge state level macro data later on.

The most important of these variables for us is income. Income data in PSID have many components or sources: salary or labour income, farm income, net profits from business, house-rental income, stock-market income, dividend income, interest income, pension income, unemployment benefits, and other social welfare income. We add over all sources of income to derive the individual-level income variable.

Marital status has five categories, viz., 1: Married, 2: Never married, 3: Widowed, 4: Divorced, and 5: Separated. We use the 'i.X' Stata command to get coefficients for the last four, with category 1 as the benchmark. Similarly, the variable health status has five categories, viz., 1: Excellent, 2: Very good, 3: Good, 4: Fair, and 5: Poor. Since the categories are clearly ordered we use it as a single variable with five possible values. However, we reverse the order (like we did for the case of the variable Happiness) so that a higher value of it corresponds to a better health condition. Employment status is defined as a binary variable and it takes the value 1 if the individual is employed, and 0 if unemployed.

2.3 Independent variables at state level

An individual's life satisfaction is not only affected by personal characteristics, but also by the conditions of neighbourhood and region. To control for this, we merge the micro level PSID dataset with the corresponding macro-level data using the living addresses of the respondents. We use State-level GDP per-capita (perGDP) to measure the level of economic development in the respondents' region of residence. State-level GDP data are found from the Bureau of Economic Analysis. States' population data are obtained from US Census Bureau.

Summary statistics for all the variables used in the study are provided in Table 1.

As we can see from Table 1, people are , on an average, more happy than unhappy. The average values of happiness are 3.5 (for 1–5 classification), 2.21 (for 1–3 classification), and 0.95 (for 0–1 classification). As for employment, 89% of individuals in our sample are employed. Average health status is 3.46 in scale 1–5. That is, an average person is reasonably healthy. The youngest person in the sample is 16 years of age, and the oldest one is 106, with average age being 47.71. For education, on an average, people in our sample have attended 13.35 years of education. The minimum income is a negative number and that is because it includes net profits from business: some businesses incur losses. The average income is $42,275.

Table 1 Data summary

	N	*Mean*	*SD*	*Min*	*Max*
age	42,540	45.71	16.63	16	104
gender	42,548	1.31	0.46	1	2
marital status	42,542	2.01	1.22	1	5
income	45,055	42,274.93	85,906.24	-137,361	6,300,000
happy (5-way)	41,664	3.80	0.85	1	5
happy_b (Binary)	41,664	0.95	0.22	0	1
happy_3 (3-way)	41,664	2.21	1.16	1	3
health status	45,187	3.46	1.06	1	5
employment or not	45,315	0.89	0.32	0	1
education	41,936	13.35	2.62	0	17
state per GDP	27,571	51,627.44	14,327.26	31,602	191,182

3 Methodology

To start with, we shall estimate the effects of income of happiness on an average, without distinguishing between effects across individuals and across time. Later in Section 4.1, we shall bring in those two elements.

Since our dependent variable Happiness is a categorical variable which is ordered in a natural way, our main methodology consists of estimating a Ordered-Logit regression model. We shall do so when we have five-way and three-way classifications of happiness. The equations that we estimate for the five-way classifications are:

$$\begin{aligned}
&P(\text{Happiness}_{i,t} = 1) = 1/(1 + [exp(Y_{i,t} - \kappa_1)]),\\
&P(\text{Happiness}_{i,t} = 2) = 1/(1 + [exp(Y_{i,t} - \kappa_2)]) - 1/(1 + [exp(Y_{i,t} - \kappa_1)])\\
&P(\text{Happiness}_{i,t} = 3) = 1/(1 + [exp(Y_{i,t} - \kappa_3)]) - 1/(1 + [exp(Y_{i,t} - \kappa_2)])\\
&P(\text{Happiness}_{i,t} = 4) = 1/(1 + [exp(Y_{i,t} - \kappa_4)]) - 1/(1 + [exp(Y_{i,t} - \kappa_3)])\\
&P(\text{Happiness}_{i,t} = 5) = 1 - 1/(1 + [exp(Y_{i,t} - \kappa_4)]),
\end{aligned} \tag{1}$$

where

$$\begin{aligned}
Y_{i,t} = \alpha + \beta_1 \text{ ln(Income)}_{i,t} + \beta_2 \text{ ln(per GDP)}_{i,t} + \beta_3 \text{ Health}_{i,t} + \beta_4 \text{ Education}_{i,t}\\
+\beta_5 \text{ Employment-status}_{i,t} + \eta_i + \epsilon_{i,t},
\end{aligned}$$

and η_i is individual fixed effect and $\epsilon_{i,t}$ is the error term. The other variables were defined before. per GDP$_{i,t}$ is the per-capita GDP of the ith individual's state of residence at time t. To weaken a possible skewness in the data, we take the natural logarithm of non-discrete or non-proportional variables (income, per GDP).

The case of three-way classification is similar. For the binary case, we estimate a standard Logit regression given by:

$$ln\left(\frac{P(\text{Happiness}_{i,t} = 1)}{1 - P(\text{Happiness}_{i,t} = 1)}\right) = Y_{it},$$

where Y_{it} is defined above.

When we run a linear probability model (LPM), the estimated equations are:

$$\begin{aligned}\text{Happiness}_{i,t} = \alpha &+ \beta_1 \text{ ln(Income)}_{i,t} + \beta_2 \text{ ln(per GDP)}_{i,t} + \beta_3 \text{ Health}_{i,t} \\ &+\beta_4 \text{ Education}_{i,t} + \beta_5 \text{ Marital-status}_{i,t} + \beta_6 \text{ Employment-status}_{i,t} \\ &+\eta_i + \epsilon_{i,j,t}\end{aligned}$$

4 Results

Table 2 presents regression results for Ordered Logit method (with five-way classification of happiness) and LPM methods. All the regressions use individual fixed effects. Uniformly significant and positive coefficient of happiness indicate that people with a higher income, on an average, does have a better life satisfaction. In addition, in both models, also uniformly, we find significantly positive coefficients for state income (state GDP per capital) and employment status. These indicate that people are happier if the state they are living in has a higher per-capita income, and that employed people are happier than unemployed people. Life satisfaction also differs cross marital status. Married people are the benchmark here. The results show that married people are the most happy and separated people are the least unhappy, never married people are happier than widows, and widows are happier than divorced people.

Table 3 presents results for Ordered Logit regressions when happiness is defined with three-way classifications. The results qualitatively exactly the same as in Table 1.

In Table 4, happiness is defined as a binary variable. The results are once again qualitatively similar to those in Tables 2 and 3; the only difference is that here widows are found to be unhappier than divorced people. Column 6 of Table 4 presents results for the LPM with time fixed effects with 2009 as the benchmark year. The purpose here is to see if there is any time-structure in the fixed effects. Interestingly we find that all the fixed effects are statistically significant implying that the average happiness level is higher in the years 2011, 2013, 2015, and 2017 than in the years 2009. Also, except between the years 2011 and 2013, the magnitude of the fixed effects has gone up with time. This to us provide some *prima facie* evidence that perhaps happiness has gone up with the overall prosperity of the country.

4.1 The effects through time

In the preceding sections, we have examine if income, on an average, raises happiness. There we did not distinguish between happiness across individuals at a point in time and happiness of an average individual over time. In this section, we bring in the time dimension more explicitly and ask the research questions:

i Does the marginal effect of income on happiness of an average change over time?

ii Does the change in income of an average individual increase their happiness over time?

The second question is related to the Easterlin Paradox discussed in the introduction.

Table 2 Happiness and income with five-way classification of happiness

	Dependent variable: Happiness							
	(1) *OLS*	*(2)* *Ordered Logit*	*(3)* *OLS*	*(4)* *Ordered Logit*	*(5)* *OLS*	*(6)* *Ordered Logit*	*(7)* *OLS*	*(8)* *Ordered Logit*
ln(income)	0.0128***	0.0501***	0.0105***	0.0408***	0.0139***	0.0449**	0.0134***	0.0441**
	(0.001)	(0.001)	(0.006)	(0.007)	(0.006)	(0.022)	(0.008)	(0.025)
Employment status			0.0789***	0.288***	0.0609***	0.225***	0.0604***	0.219***
			(0.000)	(0.000)	(0.003)	(0.003)	(0.003)	(0.004)
ln(perGDP)					0.428***	1.615***	0.402***	1.574***
					(0.000)	(0.000)	(0.000)	(0.000)
2. never married							–0.132***	–0.441***
							(0.000)	(0.003)
3. widow							–0.0573	–0.436
							(0.600)	(0.318)
4. divorced, annulled							–0.210***	–0.747***
							(0.000)	(0.000)
5. separated							–0.376***	–1.163***
							(0.000)	(0.000)
_cons	3.696***		3.648***		–1.022*		–0.653	
	(0.000)		(0.000)		(0.078)		(0.268)	
/								
cut2		1.743***		1.743***		1.579***		1.585***
		(0.000)		(0.000)		(0.000)		(0.000)
cut3		5.149***		5.153***		4.968***		5.011***
		(0.000)		(0.000)		(0.000)		(0.000)
cut4		8.039***		8.046***		7.899***		7.943***
		(0.000)		(0.000)		(0.000)		(0.000)
N	34761	33300	34761	33300	22244	21253	22244	21253
R^2	0.607	0.6632	0.608	0.6638	0.617	0.6672	0.618	0.6697
$IndividualFE$	YES	YES	YES	YES	YES	YES	YES	YES

p-values in parentheses.

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.010$.

Table 3 Happiness with three-way classification: ordered Logit results

	Dependent variable: Happy-3				
	(1)	*(2)*	*(3)*	*(4)*	*(5)*
lnincome	0.0836***	0.0691***	0.0817***	0.0759***	0.0762***
	(0.000)	(0.000)	(0.001)	(0.002)	(0.002)
empl		0.366***	0.269***	0.265***	0.267***
		(0.000)	(0.001)	(0.001)	(0.001)
ln (Per GDP)			2.177***	2.766***	2.777***
			(0.000)	(0.000)	(0.000)
health				0.467***	0.475***
				(0.000)	(0.000)
2.never married					–0.408**
					(0.015)
3.widow					–0.782
					(0.131)
4.divorced					–0.838***
					(0.000)
5.separated					–1.550***
					(0.000)
/					
cut2	3.506***	3.517***	3.625***	3.679***	3.713***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	19383	19383	12649	12628	12628
R^2					
$FE(id)$	yes	yes	yes	yes	yes

p-values in parentheses.
$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.010$.

Table 4 Happiness as a binary dependent variable and Income (Logit)

	Dependent Variable: Happy-b					
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)(LPM)*
lnincome	0.103***	0.0768**	0.110***	0.0943**	0.101**	0.00476***
	(0.001)	(0.014)	(0.005)	(0.020)	(0.014)	(0.000)
empl		0.550***	0.388***	0.376***	0.357***	0.0365***
		(0.000)	(0.003)	(0.004)	(0.007)	(0.000)
lngpc			2.869***	3.357***	3.358***	–0.000334
			(0.000)	(0.000)	(0.000)	(0.960)
health				0.524***	0.529***	0.0338***
				(0.000)	(0.000)	(0.000)
2.never married					–0.753*	–0.0396***
					(0.063)	(0.000)
3.widow					–1.092*	–0.0137*
					(0.092)	(0.054)
4.divorced					–0.942***	–0.0339***
					(0.009)	(0.000)

Table 4 Happiness as a binary dependent variable and Income (Logit) (continued)

	Dependent Variable: Happy-b					
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)(LPM)*
5.separated					–1.852***	–0.0771***
					(0.000)	(0.000)
2011						0.0110**
						(0.016)
2013						0.0108***
						(0.008)
2015.						0.0218***
						(0.000)
2017						0.0227***
						(0.000)
_cons						0.766***
						(0.000)
N	3693	3693	2342	2335	2335	24445
R^2						0.052
$FE(id)$	yes	yes	yes	yes	yes	no
$FE(time)$	no	no	no	no	no	yes

p-values in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.010$.

To examine the first of the two questions, we estimate an Ordered-Logit model given in equation (2) with individual fixed effects by extending the definition of the variable Y_{it} as follows

$$\begin{aligned} Y_{i,t} = \alpha &+ \beta_1 \text{ ln(Income)}_{i,t} + \beta_2 \text{ ln(per GDP)}_{i,t} + \beta_3 \text{ Health}_{i,t} + \beta_4 \text{ Education}_{i,t} \\ &+ \beta_5 \text{ Employment-status}_{i,t} + \beta_6 \, ln(\text{Income}) * D_{2011} \\ &+ \beta_7 \, ln(\text{Income}) * D_{2013} + \beta_8 \, ln(\text{Income}) * D_{2015} \\ &+ \beta_9 \, ln(\text{Income}) * D_{2017} + \eta_i + \epsilon_{\,i,t}, \end{aligned}$$

that is, by including interaction terms between ln(Income) and time dummies, D_t's.

The results are in Table 5. We find that the coefficient of lnincome is either weakly significant (column 1) or insignificant (column 2), but all the interaction coefficients are significantly positive. This means that for the benchmark year 2009, there is no evidence of significant effect of income on happiness, but there is for the subsequent years. Moreover, we note that the magnitude of the interaction term increases over time, implying that the marginal effect of income on happiness has increased over time.

For the second question, we consider yearly differences in each individual's income and happiness, and regress difference in happiness against difference in income, with and without time fixed effects. The results are in Table 6. We find that a change in income over time does have a positive and significant effect on the change in happiness.

Table 5 Happiness with income interacted with time (FE Order Logit)

	Dependent variable: Happiness	
	(1)	*(2)*
happy		
lnincome	0.0275*	0.00752
	(0.070)	(0.636)
Income2011	0.0311***	0.0333***
	(0.000)	(0.000)
Income2013	0.0360***	0.0397***
	(0.000)	(0.000)
Income2015	0.0424***	0.0477***
	(0.000)	(0.000)
Income2017	0.0427***	0.0511***
	(0.000)	(0.000)
empl		0.243***
		(0.000)
health		0.408***
		(0.000)
2.never married		–0.531***
		(0.000)
3.widow		–0.757**
		(0.034)
4.divorced		–0.768***
		(0.000)
5.separated		–1.270***
		(0.000)
/		
cut2	1.742***	1.825***
	(0.000)	(0.000)
cut3	5.162***	5.264***
	(0.000)	(0.000)
cut4	8.071***	8.301***
	(0.000)	(0.000)
N	259780	259171
R^2		

p-values in parentheses.
$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.010$.

Table 6 Difference in happiness with difference in income

	Dependent variable: Diff in happiness	
	(1) *diff_Happy*	*(2)* *diff_Happy*
diff_lnM	0.0124***	0.0115**
	(0.005)	(0.050)
2013.year		–0.0764***
		(0.000)

Table 6 Difference in happiness with difference in income (continued)

	Dependent variable: Diff in happiness	
	(1)	*(2)*
	diff_Happy	*diff_Happy*
2015.year		–0.0829***
		(0.000)
2017.year		–0.112***
		(0.000)
_cons	0.0238***	0.0965***
	(0.000)	(0.000)
N	22511	22511
R^2	0.000	0.003
$timeFE$	No	Yes

p-values in parentheses.
$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.010$.

5 Conclusion

In this paper, we have revisited the contentious relationship between income and happiness, with longitudinal data for US residents from the PSID. Longitudinal data can help us trace the same individual over a long time period, and it also allows us to control for all observable and unobservable time-invariant individual characteristics via the use of individual fixed effects. PSID provides data on life satisfaction on individual as on ordered categorical variable. It also provides data on individual income, employment status, health status, marital status, etc. For the main part of the study we employ the methodology of Ordered-Logit regressions. We find that, on an average (over individual and time), income has a positive effect on life satisfaction. We also find that the marginal effect of income on life satisfaction has increased over time. Our results pass a number of robustness checks. Finally, we establish that increased income of individuals over time seemed to have led to a higher level of life satisfaction for them. In other words, money seems to buy happiness for US residents.

We shall conclude with a few remarks on policy implications of our study. Since many groups of people have experienced a fall in the their real income due to technological progress and globalisation, the results of our study imply that those groups of people have also experiences a loss in their life satisfaction. It is therefore important that these people are provided with opportunities, such as retraining, to increase their real income. Second, any policies that would reduce the inequality of income is also likely to increase the overall life satisfaction in the country.

Acknowledgements

We are very grateful to two anonymous reviewers for very helpful suggestions.

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Notes

[1] Using the reported number of call attempts made to participants in the University of Michigan's Surveys of Consumers, Heffetz and Rabin (2013) found that comparisons among easy-to-reach respondents differ from that among hard-to-reach ones. To be specific, easy-to-reach women are happier than easy-to-reach men, but hard-to-reach men are happier than hard-to-reach women.

[2] Recent research demonstrating the role of reference points as factors of actual behaviour include Rizzo and Zeckhauser (2003) and Mas (2006).