The asymmetric effects of macroeconomic performance on happiness: Evidence for the EU

Beja, Edsel Jr.

Ateneo de Manila University

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EDSEL L. BEJA JR.

Department of Economics, Ateneo de Manila University, Quezon City 1108, The Philippines
Email: edsel.beja@gmail.com; Telefax: +63-2-4265661

Abstract:

The analysis of data from the Eurobarometer obtains evidence of asymmetric effects of macroeconomic performance on happiness. The evidence reveals that, at least for the European countries in the sample, the effect of an economic recession on happiness can be at least twice the effect of economic growth on happiness. In short, economic recession can undo the gains on happiness from years of economic growth. Moreover, the evidence is about a short-run asymmetry; still, it supports the Easterlin paradox—that is, a finding of asymmetric effects of macroeconomic performance on happiness ultimately leads to a nil relationship between macroeconomic performance and happiness. The evidence points to stable rather than rapid economic growth as a more sensible target for policy because macroeconomic stability can lead more to conditions that allow the pursuit of happiness and thus secure the attainment of greater well-being.

Keywords: Happiness; Prospect theory; economic growth; economic recession

JEL Classification: A20; C53; I30; O40

1. INTRODUCTION

Kahneman and Tversky (1979; later Tversky and Kahneman 1992) explain that, in risky settings, the negative events elicit much stronger effects than the positive ones do. Losing money in a bet, for instance, results in a more intense emotional experience than winning the same amount. Their subsequent argument, however, emphasizes that the asymmetry in effects can occur in riskless situations as well (Tversky and Kahneman 1991; see also Thaler 1980, Kahneman et al. 1991, and Baumeister et al. 2001). Losing or letting go of a thing that is valuable to a person is a more emotional experience than finding or receiving an identical replacement of the same thing. This asymmetric property of the effects is a significant conclusion because it challenges the conventional view in economics that, given the assumption of rationality and well-defined preferences, the valuations of things, events, or states must be the same in absolute terms regardless of the direction of evaluations.[1] Such view applies at the macro level as well (Otrok 2001 and Lucas 2003).

Most of the studies in the Kahneman-Tversky tradition look at the asymmetric property of valuations at the individual level (see, e.g., Barberis 2013 for a survey). Related to the topic of this paper, for instance, Boyce et al. (2013) confirm the asymmetric effects of changes in money on happiness. Studies that look into how individuals respond to the variations in aggregate indicators are Barberis et al. (2001) on asset prices, Dräger et al. (2014) on inflation, De Neve et al. (2015) on economic growth, and Binder and Coad (2015) on unemployment. The few studies that look into how society in general responds

[1] A parallel literature in environmental valuation states as follows: the willingness-to-pay (WTP) and the willingness-to-accept (WTA) are equal provided the object of valuation is the same. However, the evidence indicates otherwise because the estimates of WTA can reach 6 to 7 times more than the estimates of WTP (Horowitz and McConnell 2002; Tunçel and Hammitt 2014).

to the variations in aggregate indicators are Rosenblatt-Wisch (2008) on economic growth as well as Bowman et al. (1999) and Foellmi et al. (2011) on consumption, but they do not look into the effect in terms of happiness at the country-level.

This paper seeks to contribute to the literature with its determination of the asymmetric effects of macroeconomic performance on happiness at the country-level. It reverts to the country-level analysis in order to be consistent with the analysis of Easterlin (1974, 1991, 2001, and 2016). And the evidence I find indicates that a unit of economic recession produces a larger impact on happiness than does the same unit of economic growth. The evidence in my view implies that an economic recession can undo the gains from years of economic growth, at least with regard to happiness.

The paper in turn argues that stable rather than rapid economic growth is a more sensible goal for policy, because it can lead to secure living conditions that form the foundation on which everyone can pursue happiness and, in the end, experience greater social well-being. The paper further argues that the asymmetric effect of macroeconomic performance on happiness can also be another explanation for the Easterlin paradox, or the nil long-run relationship between macroeconomic performance and happiness (Easterlin 1974, 1995, 2001, and 2016). The same evidence, in short, coheres with the argument that a key goal of policy is to secure the conditions that lead to better welfare for everyone. Indeed, in a setting of economic insecurity and volatility, the pursuit of economic stability is back in the center of policy debates.

The rest of the paper is in four parts. I discuss the method in Part 2; then I proceed with

the results and some implications of the findings in Part 3. The last part of the paper concludes.

2. METHOD

2.1. Framework

Consider a happiness function like $H_t = F[y_t]$, where H_t is the country-level average of happiness, y_t is the income stimulus, and t is time. Here, I assume $F_{y_t} \geq 0$. The expression includes only the income stimulus to streamline the presentation.

Happiness is not what an external observer makes or thinks of the internal state of being of another person. Rather, as Kahneman et al. (1997) and Holländer (2001) point out, a report on "happiness" is a personal and direct expression of one's own situation.[2] The appraisal reflects the experiences in the past and the anticipation of the future. It is a truthful expression of a person's state of being because there is arguably no incentive to do otherwise.

Studies find a high correlation between happiness and, say, success in careers (Diener et al. 2002) and other life domains like family life (Lyubomirsky et al. 2005), engagement in society (Guven 2011), good health (Weinman et al. 2008), longevity (Danner et al. 2001). People who are happy display "genuine" smiling (Ekman et al. 1990). People who

[2] Textbook discussion of happiness and related concepts are available in Frey (2008) and Oishi (2012). I point out that there are three types of happiness: emotional happiness, evaluation happiness, and eudaimonia happiness. Most research that deal with economic concepts use evaluation happiness.

are happy are also rated happy by their spouses, relatives, and friends (Costa and McCrae 1988; Sandvik et al. 1993). The robustness is incontrovertible, as studies find that the loss of a job (Clark et al. 2008) or the dissolution of marriage always reduces happiness (Marks and Lambert 1998). There are in fact studies that find the appraisal of one's life is distinct from one's appraisal of the political (Andrews and Withey 1976) and social (Hooghe 2012) conditions. Indeed, there are also studies that find no correlation between the level of happiness and the level of economic welfare (Easterlin 1974, 1995, 2001, 2016). The studies imply that the internal and external states of well-being are separable and independently measurable (Lucas et al. 1996; Diener and Emmons 1985). There is nonetheless a suggestion that happiness exhibits good validity properties because it reflects the internal state of being of a person (Lucas et al. 1996; Diener et al. 2013).

Studies also find that the reports on happiness are relatively stable and consistent across time (Andrews and Withey 1976; Ehrhardt et al. 2000) for as long as no extraordinary or serious life events occurred after an initial interview (Diener and Larsen 1984; Costa and McCrae 1988; Schimmack and Oishi 2005). Thus, all things the same, a person who is happy at time t is also happy at time t+1.[3]

For brevity, there are now well-developed procedures for obtaining happiness data (see, for example, Andrews and Robinson 1991, Kahneman et al. 1999, and Eid and Larsen 2008). There is nonetheless a debate on whether reported happiness is a cardinal number or not. Few in economics like Ng (1997) and van Praag and Ferrer-i-Carbonell (2004)

[3] But there is the possibility of adaptation to extraordinary or serious life events (Easterlin 2001; Clark et al. 2008).

accept the cardinality of reported happiness. Elsewhere in the social sciences, though, the cardinality of reported happiness is a standard assumption. Yet, as Ferrer-i-Carbonell and Frijters (2004) for instance argue, the inference is qualitatively the same regardless of the assumption used on the measure of happiness.

Given the foregoing premise, I thus assert the following: happiness, h_t, exhibits a positive monotonic transformation of the internal state of being, h_t^*. The assessment is reflective of the actual but unobserved situation of a person. There can be discrepancies between the internal state and its external articulation because of human error. Now, if I allow for the law of large numbers and for the normality in the human error, then I can assert $h_t \equiv h_t^*$. If I assume that h_t is a cardinal number, then it is possible to get a country-level average of happiness, H_t. Moreover, if I also assume that people share the same concerns (e.g., live a good life, enjoy pleasant health, and benefit from a satisfying job) notwithstanding the tendency to compare states of being, among others, then putting together h_t to obtain an aggregate measure like H_t is not meaningless at all.

Therefore, it is possible to consider a structural model for an analysis of the effect of y_t on H_t like

$$H_{kt} = \alpha + \sum_{j=0}^{t} \beta_{1j} y_{k,t-j}^{+} + \sum_{j=0}^{t} \beta_{2j} \left| y_{k,t-j}^{-} \right| + \pi \ \ln GDP_{kt} + e_{kt} \qquad (1)$$

where y^+ is the actual value of a positive income stimulus for a country k and zero otherwise; y^- is the actual value of a negative income stimulus for a country k and zero otherwise; then GDP is the gross domestic product per capita of the country, t is time, and

j is the time lag from 0 to t. Alternatively, the positive and negative stimuli can be read as economic growth and economic recession, respectively.

Equation (1) follows Deaton (2008), Di Tella and MacCulloch (2008), Inglehart et al. (2008), among others, in including the GDP per capita as a control for the effect of the trends in the living standards on happiness. The model excludes other factors, and so the evidence I present needs to be interpreted with some caution. I interpret the parameter π as a numeraire for the valuation of the income stimuli (c.f., Welsch and Kühling 2009; Frey et al. 2010). As such, $\sum_{j=0}^{t}\beta_{1j}/\pi$ shows how much society is "willing to pay" for a positive income stimulus; and $\sum_{j=0}^{t}\beta_{2j}/\pi$ shows the compensation that society is "willing to accept" for a negative income stimulus. The ratio, $\Omega = \left|\sum_{j=0}^{t}\beta_{2j}/\sum_{j=0}^{t}\beta_{1j}\right|$ is the degree of asymmetric effects of macroeconomic performance on happiness.

The model in Equation (1) uses a segmented regression procedure in the same fashion as Shea (1995) and Bowman et al. (1999). But I also resort to a stepwise regression approach because there is no prior information on the appropriate number of lags for the right-hand side variables, albeit the extant studies find evidence for short time lags on the income stimuli. More specifically, I stop lagging an income stimulus when the coefficient on the next lag turns out to be statistically not significant.

There is one more item to mention before proceeding to the next step of the study, and it concerns the size of Ω. Both Kahneman and Tversky (1984) and Tversky and Kahneman (1992) point out that the effect of a loss is in general twice the effect of a gain (see Rabin

and Thaler 2001). I therefore argue that one way to validate the asymmetric effects of macroeconomic performance on happiness is to obtain $\Omega \geq 2$.

2.2. Description of the Data and Sources

The key variables used in the regression analysis are country-level average happiness and macroeconomic performance. I use the annual mean of life satisfaction of a country as a proxy measure for happiness. Its raw data are the responses to the query *"On the whole, are you very satisfied, fairly satisfied, not very satisfied, not at all satisfied with the life you lead?"* with 4 (maximum), 3, 2, and 1 (minimum), respectively, as their numerical representations. With the assumption of cardinality, I am able to obtain a country-level average that is also between 4 and 1.

The proxy measure I use for macroeconomic performance is the annual rate of economic growth or economic recession of a country. I segment the data as defined in Part 2.2. For the analysis, however, I use the absolute value of the economic recession in order to make the results of the negative income stimulus easier to interpret. The GDP per capita is the measure for the standard of living in a country.

I make use of the longest publicly available annual data. The database I end up using for the regression analysis covers the period 1995 to 2014 and includes 15 European countries (tables below). The data for happiness are from the Eurobarometer. The data for economic growth rates and GDP per capita are from the World Development Indicators.

3. RESULTS

3.1 Descriptive Statistics

Table 1 presents the country-level averages of happiness. It shows Denmark and Portugal to have the highest and the lowest figures, respectively, for the period. The difference in their figures suggests a large amount of variation in happiness among the countries in the sample. The table also shows that three countries had lower happiness by 2014 relative to their 1995 figure (Portugal, Italy, and Greece) and also that five countries had essentially the same happiness for the 20-year period (Denmark, Ireland, Luxembourg, Netherlands, and Spain). I point out, though, that the annual figures for happiness by country (not in the table) show declining trends for some countries after 2007 (Spain, Italy, Portugal, and Greece) and relatively "steady" trends for the rest in the group. Of course, the global financial crisis in 2008-2009 and the economic crisis in Europe thereafter are part of the reason for the more recent declines in happiness in Europe (Greve 2012; Blanchflower et al. 2014; Welsch and Kühling 2016). For the group, Table 1 shows a trivial increase in the overall happiness in Europe between 1995 and 2014.

Table 2 presents the country-level averages of macroeconomic performance. Ireland, which registered an economic growth spurt in the 1990s then an economic slowdown in the 2000s, and Greece, which fell into economic doldrums especially in the late 2000s, standout when I review the annual data (not in the table). But, in Table 2, almost all the countries registered a drop in their macroeconomic performance between 1995 and 2014. This trend, once again, relates to the global financial crisis in 2008-2009 and economic

crisis in Europe since the late-2000s. Moreover, the trend is also consistent with the view that macroeconomic performance of the advanced capitalist economies declined after the 1960s (Maddison 1987; Marglin and Schor 1990; Dumenil and Levy 2004). Notice, too, that the figures in the mid-2010s in Table 2 are already about half their mid-1990s levels.

[Insert Table 1 Here]

[Insert Table 2 Here]

From Tables 1 and 2, I obtain a statistically not significant partial correlation between the country-level average of happiness and macroeconomic performance (pr = -0.018, p = 0.951). The result is the same for the end-start figures of the two variables (pr = -0.117, p = 0.691). In a way, these findings present the initial evidence in support of the Easterlin Paradox.

3.2 Empirical Findings

Table 3 presents various regression outputs. Again, I read the evidence with some caution because the findings may be unique to the database used in the analysis. Nonetheless, I find that the estimates are in line with the literature. Recall that I include the GDP per capita in order to control for the trends in standard of living and as a numeraire for the valuation of macroeconomic performance. I include in Table 3 the segmented values the GDP per capita in order to check the robustness of the results.

The baseline result in Model 1 already indicates an asymmetry in the effects of the income

stimuli on happiness. The subsequent analyses suggest that two lags each on the positive and the negative income stimuli may be necessary. Put another way, the results in Models 2 to 5 reveal that income adaptation is in operation (c.f., Easterlin 2001; Di Tella et al. 2003, 2010; Paul and Guilbert 2013; Clark 2016). They present qualitatively the same results in terms of the asymmetric effects of macroeconomic performance on happiness. However, I argue that the results for Models 2 and 4 represent a parsimonious model than those for Models 3 and 5.

In any case, the sum of the coefficients of economic recession is larger than the sum of the coefficients of economic growth. The valuation of the income stimuli in turn indicates that economic recession "costs" from 6 to 9 percent of GDP per capita whereas economic growth "costs" from 3 to 4 percent of GDP per capita, a finding that is consistent with De Neve et al. (2015). The ratio of the negative to positive income stimuli is at least 2 to 1, which coheres with Kahneman and Tversky (1984) and Tversky and Kahneman (1992).

Notice that the coefficient of GDP per capita is in fact a small number. That is, a unit change in the standard of living in Europe each year could raise happiness by only 0.007 of a point. Alternatively, using the information in Table 2, a doubling of the standard of living in Europe after 35 years of sustained macroeconomic performance could raise happiness by about 0.7 of a point. Such finding is remarkable when put in the present context of Europe where the political and economic configuration makes economic growth for even a few years a big challenge in itself. The difficulty becomes an even more important finding in the context of an overall declining trend in the macroeconomic performance of the advanced capitalist economies since the 1960s. Overall, I argue that

this finding on the small effect of GDP per capita on happiness coheres with the Easterlin Paradox.

What do the findings imply for public policy? One implication relates to the nature of economic cycles and the consequence in the context of happiness. Consider, for instance, an economic cycle with the following attributes: 2 percent economic growth over a period of four years and then 2 percent economic recession in the fifth year. Consider further several episodes with the same feature. This scenario is of course a simple depiction of economic cycles, because economic growth and recession can be much stronger and can extend for longer periods. Still, given the setup, the findings in Table 3 suggest that the level of happiness in the fifth year could turn out to be less than its level in the first year for each cycle. Certainly, if economic crises are more frequent (Bordo et al. 2001; Kindleberger 2005) and more severe today because of neoliberalism (Marglin and Schor 1990; Dumenil and Levy 2004; see also Blyth 2013), then it should be not unusual that macroeconomic performance cannot affect happiness in the long term. Moreover, if the volatility of economic cycles affects the quality of macroeconomic performance (Ramey and Ramey 1995; Martin and Rogers 2000), then it should not also be unusual to find that raising happiness and then sustaining it at an elevated level is not feasible in the long term. In a way, then, a singular focus on macroeconomic performance might be a losing strategy in the context of happiness given the nature of capitalism.

A related implication of the findings relates to economic recession itself. An economic recession can be very disruptive and damaging to society. It can enhance insecurity and put greater strain on the people. Policies must thus seek to lessen the impact of economic

recession on society. In this regard, the critical elements of policy are the timeliness of assistance to those affected by economic recessions and the coordination of responses across the affected sectors in order to help moderate the harm and jumpstart the economy to a recovery. These undertakings can be difficult to pursue when an economic recession in one place begins to spill over to other locations and thereby create a contagion. The key in such an event is to for all sectors to cooperate toward a coordinated response across the afflicted areas.

Moreover, given that both support and spending must continue for several years in order to avert an economic relapse, the required endeavor for a recovery can be expensive to pursue. And so, countries with public finance constraints may end up with partial or weak responses if they do not receive external help. Once again, cooperation is vital. The need for political courage to forge a collective response becomes critical.

As pointed out earlier, if economic cycles are intrinsic in capitalism and that economic recessions are costly to society, then a further implication of the findings relates to a Keynesian-type approach to the management of macroeconomic performance. While it is clearly not realistic to get rid of economic cycles in a capitalist system, it is however possible to curb their frequency and moderate their intensity with the application of anti-cyclical policies—that is, taking on policies that use a long-run timeframe, precautionary in approach, and still innovative in outlook. The assertion then is that the pro-cyclicality nature that characterize policies today (e.g., economic austerity in times of economic recessions) not only aggravates but also prolongs the economic malaise. Controlling the irrationalities of capitalism is then a sensible direction to pursue for government.

I admit that the Easterlin Paradox is about a finding that macroeconomic performance and happiness do not relate in the long-term. It highlights why macroeconomic performance is not the main element of and for happiness. In other words, macroeconomic performance and happiness are dissimilar concepts: the former is more about the well-being of an economy whereas the latter is more about the well-being of the people. Such disconnect exists because capitalism values achievement, competition, and profitability much more than relationship, community, and citizenship. I add that such disconnect can get worse in an unstable macroeconomy because, in such a setting, the pursuit of survival and security occupy the attention of the people in the short-term. Therefore, in securing the economy with policies that are long-term in character, I argue that the pursuit of things that are relevant to happiness become much more possible.

A final implication of the findings is that policies to build the social conditions that enable the people to advance their lives as far as possible and on their own terms must also accompany the policies that aim to secure the macroeconomic performance of a country. Jobs, education, health care, and safety matter in this regard, because they relate to how people can live and make living go well enough for them to be happy. In this regard, the regulation of the education system and the mass media is appropriate because they play a role in turning society to one that builds relationship, community, and citizenship rather than to one that encourages a blind pursuit of achievement, competition, and profitability. More importantly, a complementarity between the social policies and the aforementioned economic policies is indispensable if the purpose is to build a society that is not only robust and vibrant but also happy. These agenda are obviously competing with each other, and so it is important for the government to manage the situation very well. In this

regard, the government must be flexible enough to allow and facilitate social participation in policymaking not only to address the frustrations that can bring about indifference in some groups and resentment in others but also to forestall actions that can block its mission, which is to transform society into one that people value and have reason to value. I argue that, in such a configuration, greater happiness can still be possible despite of economic cycles.

[Insert Table 3 Here]

4. CONCLUSION

This paper analyzed the impact of macroeconomic performance on happiness using data from the Eurobarometer. It found evidence that the effect of economic recession on happiness is at least twice the effect of economic growth on happiness. The results imply that economic recessions can reverse the happiness achieved after years of economic growth. In addition, the asymmetric effect of macroeconomic performance on happiness supports the Easterlin Paradox, or the nil long-run relationship between macroeconomic performance and happiness.

The implications of the findings in this paper are straightforward. First, I pointed out that policy should focus more on how to check economic cycles. Second, I also pointed out that social policies that seek to build a society that allows people to flourish on their own terms must complement the policies that seek economic stability, because the pursuit happiness can be difficult in an environment that is upsetting and strenuous on the people.

Third, I further pointed out that the government needs to balance its pursuit of its economic and social objectives. This view implies an approach that puts more emphasis on how to achieve stable macroeconomic performance rather than an approach that leads to volatile macroeconomic performance. Thus, in so doing, economic stability can bring about conditions that allow the pursuit of happiness and secure the attainment of greater well-being. Perhaps, I argue, such approach to policy makes greater happiness possible despite the reality of economic cycles.

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Table 1: Happiness, 1995-2014

Country	Average	Maximum	Minimum	Range	Start 1995	End 2014	End-Start
Austria	3.02	3.23	2.92	0.31	3.03	3.23	0.20
Belgium	3.10	3.23	2.91	0.32	3.09	3.19	0.10
Denmark	3.61	3.68	3.51	0.17	3.60	3.68	0.08
Finland	3.21	3.32	3.07	0.25	3.15	3.31	0.16
France	2.89	3.03	2.72	0.31	2.76	3.03	0.27
Germany	2.97	3.19	2.73	0.46	2.93	3.19	0.26
Greece	2.51	2.74	2.04	0.70	2.52	2.20	-0.32
Ireland	3.17	3.31	3.02	0.29	3.18	3.27	0.09
Italy	2.76	2.89	2.52	0.37	2.86	2.66	-0.20
Luxembourg	3.31	3.45	3.19	0.26	3.33	3.33	0.00
Netherlands	3.39	3.49	3.22	0.27	3.39	3.48	0.09
Portugal	2.48	2.67	2.13	0.54	2.60	2.42	-0.18
Spain	2.93	3.13	2.77	0.36	2.81	2.86	0.05
Sweden	3.37	3.46	3.26	0.20	3.32	3.46	0.14
United Kingdom	3.18	3.34	3.01	0.33	3.12	3.34	0.22
Group Average	3.06	3.21	2.87	0.34	3.05	3.11	0.06

Source of raw data: Eurobarometer

Table 2: Economic Growth Rates, 1995-2014

Country	Average	Maximum	Minimum	Range	Start 1995	End 2014	End-Start
Austria	1.86	3.62	-3.80	7.42	2.67	0.35	-2.31
Belgium	1.82	3.71	-2.28	6.00	2.38	1.35	-1.04
Denmark	1.32	3.80	-5.09	8.88	3.07	1.09	-1.98
Finland	2.34	6.25	-8.27	14.52	4.21	-0.40	-4.61
France	1.60	3.88	-2.94	6.82	2.09	0.18	-1.91
Germany	1.33	4.08	-5.62	9.70	1.74	1.60	-0.14
Greece	0.98	5.79	-9.13	14.93	2.10	0.65	-1.45
Ireland	5.01	11.18	-5.64	16.82	9.63	5.20	-4.44
Italy	0.59	3.71	-5.48	9.19	2.89	-0.44	-3.33
Luxembourg	3.51	8.44	-5.38	13.82	1.43	4.07	2.64
Netherlands	1.96	5.05	-3.77	8.82	3.12	1.01	-2.10
Portugal	1.31	4.79	-4.03	8.82	4.28	0.91	-3.38
Spain	2.09	5.29	-3.57	8.86	2.76	1.36	-1.40
Sweden	2.47	5.99	-5.18	11.17	4.02	2.33	-1.69
United Kingdom	2.27	4.92	-4.19	9.11	4.92	2.94	-1.98
Group Average	2.03	5.37	-4.96	10.33	3.42	1.48	-1.94

Source of raw data: World Development Indicators

Table 3: Regression Output

Dependent var.: Happiness, H_t	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-4.253	-4.063	-4.382	-3.951	-4.169
	< 0.000	< 0.000	< 0.000	< 0.000	< 0.000
Economic growth, t	0.020	0.014	0.010	0.013	0.008
	< 0.000	0.003	0.032	0.007	0.079
Economic growth, t-1		0.011	0.007	0.011	0.007
		0.020	0.194	0.018	0.189
Economic growth, t-2			0.011		0.012
			0.017		0.010
Economic recession, t	-0.043	-0.024	-0.032	-0.021	-0.028
	< 0.000	0.001	< 0.000	0.010	0.001
Economic recession, t-1		-0.030	-0.010	-0.030	-0.010
		< 0.000	0.268	< 0.000	0.269
Economic recession, t-2			-0.020		-0.021
			0.008		0.006
GDP per capita (ln), t	0.704	0.681	0.713		
	< 0.000	< 0.000	< 0.000		
GDP per capita (ln) in expansion years				0.671	0.694
				< 0.000	< 0.000
GDP per capita (ln) in contraction years				0.668	0.690
				< 0.000	< 0.000
Time fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.656	0.657	0.669	0.657	0.669
Value of pos. stimulus, % GDP per cap.	0.028	0.037	0.039	0.036	0.039
Value of neg. stimulus, % GDP per cap.	-0.061	-0.079	-0.087	-0.076	-0.086
Ratio of the income stimuli, **Ω**	2.2	2.2	2.3	2.1	2.2

Notes:

1. The results are from panel regression with random effects (Hausman test p-value = n.s). The numbers below the parameters are p-values. The results of Wald test for joint significance of time dummies as zero are $p < 0.000$, for all specifications. The dependent variable H_t is the country-level average of happiness. The table does not show the results for the subsequent lags on the income stimuli because they are statistically not significant.
2. Recall, the valuation procedures are $\left|\sum_{j=0}^{t}\beta_{1j}/\pi\right|$ and $\left|\sum_{j=0}^{t}\beta_{1j}/\pi\right|$ for the respective income stimuli; and the ratio $\boldsymbol{\Omega} = \left|\sum_{j=0}^{t}\beta_{2j}/\sum_{j=0}^{t}\beta_{1j}\right|$ is for the degree of asymmetric effects of macroeconomic performance.
3. List of countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and United Kingdom.