Revisiting the Income-Happiness Paradox: The Case of Taiwan and Malaysia

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Abstract: *This paper examines Easterlin paradox and estimates the determinants of happiness in Taiwan and Malaysia using the World Values Survey (WVS) data. Descriptive statistics and ordered logit model were used to analyse data. Results revealed that income, either at individual or national level, is positively and significantly associated with happiness. Thus, there is no sufficient evidence of the existence of Easterlin paradox in Taiwan and Malaysia. Results also revealed that Taiwan and Malaysia share both similar and separate set of determinants of happiness. The determinants of happiness in Malaysia are: income, health status, marital status, employment status, religious (these determinants are similar to Taiwan), income equality and materialist (these determinants are different from Taiwan). The effect of income on happiness is found to be greater in Taiwan than Malaysia. In Taiwan, an increase of one-unit income (i.e., moving up by one decile income group) increases the odds of being happier by around 30%; in Malaysia, it is around 20%. These findings suggest that both governments' policies which focus on income improvement are relevant in terms of happiness. In addition, government policies that aim to improve individual happiness should also target the other relevant determinants of happiness.*

1.   Introduction

Since 1990s, there have been many studies measuring happiness. This included those that examined the relationship between income and happiness. Studies using classical economics theory mostly focused on variables such as income and consumption (at individual, household and aggregate level) and found that the former were not significantly associated

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with happiness (Ng, 1997). The assumption that one's utilities are significantly and positively related to income, such as the indifferent curve analysis, might not be true empirically.

This implies that if the income-happiness relationship is found to be insignificant, theoretically, the classical economics analysis of utility (which links utility to consumption of goods and income) is irrelevant. More income does not necessary translate into more utility (i.e., happiness) as suggested by the theory of cardinal utility. Empirically, it also indicates the need to focus on government's policy related to income factors (such as GDP growth) and non-income factors (such as quality of life). As happiness is the goal of each human being, the government's policies are aimed at promoting happiness. Thus, if income has limited effects on happiness, the government needs to re-examine income and non-income factors as a basis for its policies which are aimed at increasing GDP per capita.

The income-happiness relationship has been examined in various countries but those focusing on Malaysia and Taiwan are limited. This could be due to unavailability of data (Landiyanto, Ling, Puspitasari & Irianti, 2011). Thus, the present paper attempts to bridge this gap by focusing on income-happiness relationship in the Malaysian and Taiwanese context using the most recent data from World Values Survey. This paper contributes to the debate on income-happiness relationship, and provides further insights on the need to re-valuate government policies by identifying the determinants of individual happiness.

The rest of this paper is organised as follows. Section 2 contain literature review on the Easterlin Paradox and the determinants of individual happiness. Section 3 describes data and methodology used while Section 4 discusses the findings of the individual-level analysis, aggregate (country) analysis, and the determinants of happiness. The concluding section summarises the findings.

2.   Literature Review

The Easterlin paradox has drawn the attention of numerous researchers since its first publication in the mid-1970s. It refers to a significantly contradictory finding on the relationship between income and happiness using time series and cross-sectional data. At one level (cross-sectional data, i.e., at individual level), there is a significant and positive relationship between income and happiness. However, over a long-time (time series data, i.e., at aggregate level and over a time), this income-happiness relationship was found to be insignificant. The increase of income has no effect on happiness over time (Easterlin, 1974).

Easterlin (1974) has shown that the time trend of happiness is a "flat curve" despite the significant increase GNP per capita in the US. This time series "flat curve" of happiness is also found in other developed and developing countries such as Japan, UK, France, Germany, Italy and Netherlands (Clark, Frijters & Shields, 2007). For example, Easterlin, Angelescu, and Jacqueline (2011) examined the existence of Easterlin paradox among more than 30 countries across different continents and found the evidences for the Easterlin paradox. However, Taiwan and Malaysia were not investigated in the paper.

In other words, there are two conditions that qualify for the existence of Easterlin paradox mathematically. First, the necessary condition. This condition refers to the existence of positive and significant cross-sectional relationship between income and happiness. Second, the sufficient condition. This condition refers to the existence of insignificant relationship between income increase and happiness over a long period of time. Empirically, the necessary condition is always observed (see Angeles, 2011; Easterlin, 2001). It is the sufficient condition that sparked debates among researchers.

There are numerous studies that attempt to solve the Easterlin paradox. In general, three explanation were suggested, namely "aspiration", "relative income" and "omitted variables" (Di Tella & MacCulloch, 2008; Easterlin, 2001; Pugno, 2011; Clark et al., 2007; Tian & Yang, 2010). First, the paradox is explained using the theory of increasing aspiration. According to Easterlin (2001), the human aspiration that increases over time may offset the positive effect of income increase on happiness. Based on human nature, the increase of income leads to increase in aspiration. For example, the "sufficient" level of real income during the 1960s is much lower than the 2000s due to increased aspiration as our income grows substantially from 1960s to 2000s. Moreover, human instinct for competition urges us to increase our income just for relative standing (Ng, 2002). Humans adapt to the increase of income over time and subsequently the effect of the increase in income on happiness vanishes. In short, the increasing "aspiration" leads to the hedonic treadmill, also known as hedonic adaptation, which is the observed tendency of humans to quickly return to a relatively stable level of happiness despite major positive or negative events or life changes.

Second, the relative income explanation. It is believed that income can influence happiness in terms of absolute and relative measurements. The increase of one's absolute income increases happiness, thus having a positive and direct effect on happiness. Nevertheless, the increase of relative (or reference) income decreases the happiness due to social comparison of income. Since economic growth increases absolute income and the income of a nation (i.e., relative income), the positive effect of absolute income could be offset by the negative effect of relative income. Thus, we observed the Easterlin paradox.

Haushofer, Reisinger and Shapiro (2015) is one of the most important empirical studies on the effects of income on happiness, adaptation and aspiration. Using an experimental design with cash transfer as a treatment, Haushofer et al., (2015) established the causality link from income to happiness. Happiness of non-recipients of cash transfer is found to be negatively influenced by income increase of their neighbours who receive the cash transfer. On the other hand, the cash transfer influences positively the happiness of the recipients. The direct and spill over effect of cash transfer diminishes over time and vanishes within 15 months.

Finally, the omitting variable explanation. Based on estimated coefficients, Di Tella and MacCulloch (2008) calculate the "happiness accounting" to show how income and other variables account for change of happiness over time. They have shown that the positive effect of income increase (GDP per capita) has been offset by the other non-income variables such as hours worked, crime rate, divorce rate, inflation rate and unemployment rate, over the time period. Di Tella and MacCulloch (2008) concluded that income is not the only factor in people's utility function. There are other non-income factors such as hours of work which could lead to the observed Easterlin Paradox. Thus, omitting these non-income factors could lead to the Easterlin paradox.

Angeles (2011) has re-examined the Easterlin paradox and suggested that the omitted variables (that have significant influence on happiness) especially marital status are the cause of existence of Easterlin paradox. Income is found to have positive effect on happiness. However, this positive effect is small, merely 0.07 units on happiness (on an 11-point rating scale). The small income effect is easily offset by the change in the other non-income factors, i.e., the increase of divorced rate and decrease of married rate in US over the time period. Tian and Yang (2010) developed a formal economic theory and confirmed that the existence of Easterlin paradox is due to non-income factors.

Thus, aspiration, relative income and omitting variables have been put forward as the cause of the Easterlin paradox. Indirectly, the Easterlin paradox highlights that income is the significant determinant of individual happiness which co-exists with various non-income determinants. Frey and Strutzer (2002), authors of the first book in the economics of happiness, have categorized the determinants of happiness into five: personality, socio-demographic, economic, contextual/situational, and institutional factors based on the previous studies. Specifically, previous studies have found that age, health, marital status, employment status and education level are the significant determinants of happiness (Clark & Oswald, 1994; Winkelmann & Winkelmann, 1998; Easterlin, 2001; Blanchflower and Oswald, 2004; Lim and Duan, 2015; Boo, Yen & Lim, 2016). In addition, the religious and cultural values are suggested to be determinants of individual happiness. For

example, Ye, Ng and Lian (2015) found that religious values and culture are significantly related to individual happiness. Ng (2002) pointed out that the "abstinence" value of Confucianism precludes individual happiness and contributes to the East-Asian happiness gap.

In short, previous studies have suggested the various determinants of individual happiness and among them, is income which is significant and the focus of economic studies in happiness. However, the questions that follow are: Does the income-happiness paradox exist in Taiwan and Malaysia? What are the effects of income and non-income factors on happiness in Taiwan and Malaysia? And, more generally, what are the determinants of individual happiness? This paper aims at investigating the effects of income on happiness, identify the determinants of happiness and examine the income-happiness paradox in the context of Taiwan and Malaysia.

3.   Data and Methodology

This section describes data and methodology of the present paper.

3.1   Data

The present paper uses the World Values Survey (WVS) data. The WVS is conducted by the World Values Survey Association, a global network of social scientists, established in Stockholm, Sweden, as a non-profit organization. The WVS comprises almost one hundred countries. The samples are nationally representative which are collected using a common questionnaire (see http://www.worldvaluessurvey.org/wvs.jsp). The first wave of WVS started in 1981. Up to 1 April 2016, a total of six waves of WVS are available for analysis. Taiwan and Malaysia are included only in the wave 5 (2006) and wave 6 (2012). There is a total of 4,886 respondents: 2,420 (wave 5) and 2,466 (wave 6). The sample size of Taiwan and Malaysia are almost equal: 2,389 (wave 5, 1222; wave 6, 1167) and 2,497 (wave 5, 1198; wave 6, 1299) for Taiwan and Malaysia respectively. Table 1 presents the sample size information for Taiwan and Malaysia in WVS.

Table 1: Sample size for Taiwan and Malaysia (WVS)

	Wave 5 (2006)		Wave 6 (2012)		Total	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**
Taiwan	1,222	50.5	1,167	47.3	2,389	48.9
Malaysia	1,198	49.5	1,299	52.7	2,497	51.1
Total	**2,420**	**100**	**2,466**	**100**	**4,886**	**100**

The WVS measures the life satisfaction of respondents using a one global item subjective measurement of happiness. One may have serious concern on the reliability and comparability of this subjective measurement. In literature, the subjective measurement of happiness has been consistently found to have high correlation with the objective and multiple items measurement of happiness (see Ng, 2002). The subjective measurement also found to be comparable across different people due to the high similarity on one's sources of happiness (Easterlin, 2001). Based on the evolutionary biology arguments, happiness is also cardinally measurable and interpersonally comparable (Ng, 2015). Thus, the happiness measurement of WVS should have at least, acceptable level of reliability and comparability.

To measure the respondent's life satisfaction, WVS asked the following question: "All things considered, how satisfied are you with your life as a whole these days?". Then, the respondents are required to rate their responses in a 10-point rating scale that ranges from 1 (being completely dissatisfied) to 10 (being completely satisfied). The life satisfaction has been used as happiness measurement by previous studies such as Easterlin and Angelescu (2009).

In terms of model specification, the independent variables are based on literature review: income related variables, health status, age, gender, marital status, education level, employment status, religious and values. In terms of measurement unit, income is measured in decile groups. The WVS asked the respondents to self-rate their income in terms of decile. Respondents are given a 10-ordered income groups from 1 being the lowest decile group to 10 being the highest decile group. The income includes wages, salaries and other incomes. Employment status is measured in five categories of unemployed, full-time employed, part-time employed, self-employed, economically inactive. The category of full-time employed is the comparison group and thus, four dummy variables are constructed for the remaining categories. For example, Demp_UNE is constructed for the category of unemployed. The other variables are social-demographic characteristics, materialist, environmental perceptions, family, religion and values. Please refer to Appendix 1 for the definition and measurements of the variables and Appendix 2 for the sample characteristics.

3.2   *Methodology*

Since the dependent variable, self-reported happiness (or life satisfaction), is measured in an ordinal scale, the ordered logit model is used. The ordered logit model has been used extensively in the studies related to economics of happiness (see Winkelmann & Winkelmann, 1998; Lim & Duan, 2015; Boo, Yen & Lim, 2016). Assume that there is a latent variable that represents an individual's underlying happiness. This latent variable is associated with

income, and other individual characteristics (x). Let y^* represent this latent variable and assume that y^* is a linear function of x_i, then, we have the following equation:

$$y_i^* = \sum_{i=1}^{n} \beta x_i + u_i \tag{1}$$

where
y^* = the unobserved individual's happiness
x = the other characteristics
u = the error term

The model assumes that the observed ranking of the self-reported happiness (y) is related to the y^* (which is unobservable) and the ten boundary parameters, μ_j, where j=1,2,3,4,5,6,7,8,9,10 and $\mu_1 < \mu_2 < \mu_3 < \mu_4 < \mu_5 < \mu_6 < \mu_7 < \mu_8 < \mu_9 < \mu_{10} <$. The observed ranking of the self-reported happiness (y) take the ordered category (J) of 1 (completely dissatisfied), 2,3,4,5,6,7,8,9 and 10 (completely satisfied). If the error term in the equation (1) is logistically distributed, the probability of the respondents reporting their happiness categories is expressed as below:

$$P_{ij} = \Pr(y = j \mid x) = \Lambda(\mu_j - x\beta) - \Lambda(\mu_{j-1} - x\beta) \tag{2}$$
$$\text{where } j = 1 \text{ to } 10 \quad \& \quad \mu_0 = -\infty \quad \& \quad \mu_{10} = \infty$$

The Λ is the cumulative logistic distribution function. The maximum likelihood parameter estimates (MLE) are obtained by maximising the log likelihood function with respect to β and μ,

$$LF(\beta, \mu) = \sum_{i=1}^{n} \sum_{j=1}^{J} z_{ij} \ln(P_{ij}) \tag{3}$$

The z_{ij} is an indicator variable equal to unity if respondent i rank the happiness category of j and zero otherwise. The model is estimated with the robust variance estimates (Huber/White/sandwich estimator of variance).

4. Findings

An analysis is first performed at individual and aggregate level to ascertain the existence of Easterlin paradox in Taiwan and Malaysia. Later, the individual happiness model reveals the determinants of happiness in Taiwan and Malaysia.

4.1   Individual-level analysis

Table 2 presents the mean happiness across 10 level of income (decile) and the *p*-values of the one-way ANOVA tests (on the mean happiness differences). From Table 2, it is found that in general, the mean happiness increases across the income groups significantly (with *p*-value of almost zero) either wave 5 or 6. This finding is not surprising since previous studies have established that in cross-sectional analysis, happiness is positively and significantly associated with income.

In the low-income groups (1st, 2nd, 3rd and 4th decile), Malaysians are found to be happier than the Taiwanese. On the other hand, Malaysians are less happy than the Taiwanese in the high-income groups (5th, 6th, 7th and 8th decile). In the top income groups (9th and 10th decile), the happiness among Taiwanese is higher than the Malaysian in wave 5, and it becomes lower in wave 6.

In summary, cross-sectional analysis found that happiness is positively and significantly related to income. This is consistent with the income-happiness paradox and the findings of previous studies. The necessary condition of Easterlin paradox is established. It is also found that Malaysians in the low-income groups are happier than the Taiwanese.

4.2   Aggregate level analysis

One of the implications of income-happiness paradox is: a nation's aggregate happiness is not influenced by increasing income (such as GDP per capita) over time. Table 3 presents the mean life satisfaction (LS), economic growth (Eco Growth), and the real GDP per capita in PPP international dollar (GDP), at country level.

From Table 3, the mean values of LS of Taiwan and Malaysia are found to be far above the mid-point value of 5 in the 10-point rating scale. Thus, on average, the Taiwanese and Malaysians are happy with their lives. Relatively, the LS of Malaysia is higher than Taiwan. Over the period of the two waves of WVS, the LS and GDP per capita (GDP) of Taiwan and Malaysia increased. This suggests a positive relationship between happiness and income. In terms of economic growth, it decreases over time. This suggests a negative relationship between happiness and income.

In short, over time, it appears that there is a positive relationship between LS and GDP per capita in Taiwan and Malaysia. The increase in GDP per capita appears to translate into high LS. The sufficient condition of Easterlin paradox, i.e., no correlation between happiness and income over time at aggregate level, is not supported. Thus, the Taiwanese and Malaysia government's policies that target income improvement are relevant in terms of individual happiness.

Table 2: Mean happiness by level of income

	Income decile										ANOVA
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	*p*-**value**
Wave 5:											
Taiwan	5.059	6.429	6.286	6.192	7.011	7.259	7.233	7.848	9.500	8.500	0.000
Malaysia	5.720	7.000	6.635	6.725	6.608	6.658	7.100	7.095	7.656	8.158	0.000
Wave 6:											
Taiwan	5.359	5.672	6.206	6.640	7.088	7.575	7.718	7.625	6.250	6.750	0.000
Malaysia	6.000	6.957	6.547	6.637	6.724	7.113	7.292	7.646	7.727	9.300	0.000

Table 3: Life satisfaction, economic growth and GDP per capita

	Wave 5			Wave 6		
	LS	**Eco Growth**	**GDP**	**LS**	**Eco Growth**	**GDP**
Taiwan	6.663	5.62	31333	6.886	2.06	42220
Malaysia	6.838	5.58	17198	7.134	5.47	22736

Note: GDP = per capita GDP, international dollar; LS = life satisfaction
Source: Economic growth: from World Bank http://data.worldbank.org/ and National Statistics, R.O.C. (Taiwan) http://www.stat.gov.tw/mp.asp?mp=4; GDP: from IMF, World Economic Outlook 2016, https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/download.aspx

4.3   Determinants of happiness: a parsimony model

We estimated an ordered logit model for Taiwan and Malaysia separately. Since the main objective of the estimated model is to identify the determinants of individual happiness, we use the most recent available WVS data, i.e., the wave 6 (2012). Religion is represented by the importance of God. The dimensions of important life are represented by family. The environmental dimension is represented by protection of the environment. The other variables are income equality and materialism as well as health status (see Appendix 1 for definition and measurement of variables and Appendix 2 for sample characteristic of these variables).

The goodness of fit tests is also performed to ensure that the estimated model is fit. The second part of Table 4 presents the results of these tests. In the overall fit test, the estimated models are found to be significant. The pseudo R^2 of McKelvey & Zavoina is more than 0.12. The overall percentage correctly predicted is 26.2% (Malaysia) and 36.3% (Taiwan). The values of VIF are below 2.4. This rules out the issue of multicollinearity. The general specification test is found to be insignificant. Thus, the estimated models should have at least an acceptable level of goodness of fit.

Table 4: The estimated ordered logit models and its goodness of fit tests

Estimated ordered logit models	TWN	MYS
	Estimated odd ratios	
Income	1.310***	1.213***
Control variables:		
Saving1	1.378***	1.083
Health status (health1)	2.156***	1.689***
Male (Dmale)	0.756***	1.056
Age (age)	0.984	1.032
Squared on age (agesq)	1.000	1.000
Married (Dmarried)	1.346*	1.342*
Other marital status (Dmarr_oth)	0.634*	1.897**
Education1	1.036	1.045
Unemployed (Demp_UNE)	0.649	0.326***
Part-time (Demp_PT)	1.062	1.144
Self-employed (Demp_SE)	0.993	1.085
Other emp status (Demp_OTH)	1.468*	1.451***
Importance of God (imp_God)	1.073***	1.099***
Importance of family (imp_family)	1.717***	0.861
Environ. vs. eco growth (env_ecogrowth)	1.142	0.958

Table 4: (Continued)

Income_equality (income_equality)	0.983	0.945**
Post-materialist index (materialist12)	0.949	1.186***
Goodness of fit tests	**TWN**	**MYS**
a. Overall fit test (LR test, p-value)	0.000***	0.000***
b. % correctly predicted (Hit-Miss table)	27.70%	26.20%
c. VIF (the highest value)	2.37	2.04
d. General specification test (*p*-value)	0.142	0.230

Note: ***, **, and ** represent 1%, 5% and 10% significant level respectively. Please refer to Appendix 1 for definition and measurement of variables (including the comparison group of the dummy variables.

Table 4 shows that income is a significant determinant of individual happiness in Taiwan and Malaysia. This finding is consistent with previous studies on the necessary condition of Easterlin paradox. In Taiwan, an increase of one unit income (i.e., moving up by one decile income group) increases the odds of being happier by around 30% while in Malaysia, the income effect is around 20%. Thus, higher income still translates into greater happiness. This is not surprising at all for Malaysia. As a developing country, the income of its people is still low and which needs to be improved substantially to meet a higher level of living standard. It is important to note that the Taiwan's economic growth is slowing down with an average 18.2 hours of working time per day ("Nearly 50% of Taiwanese employees", 2016). The extended working hours indicate substantial utilities associated with income increase which leads to the choice of extraordinary high average hours of work. Thus, Taiwanese and Malaysian government policies that focus on improving the income of their citizens are still relevant in terms of promoting individual happiness.

In Taiwan, the other determinants of individual happiness are: saving, health status, gender, marital status, employment status, religious, and family. Relatively, in terms of the estimated odd ratios, health status has the highest impact on happiness. Improving health status increases the odds of being happier by more than 100%, ceteris paribus. In Taiwan, married respondents have higher odds of being happier, 34.6% higher than the single respondents. If the marriage fails, the odds of being happier drops by 36.6% (compared with singles). Being male is found to have lower odds of being happier, 24.4% compared to the female. These findings are consistent with previous studies which showed socio-demographic factors are significant determinants of individual happiness. Specifically, the unhappy Taiwanese are those who have low income, no savings, poor health, male, not married, not economically inactive (student, housewife and retired), perceived God and family as not very important. The Taiwanese government's pro-happiness policies should target these group.

In Malaysia, the other determinants of individual happiness are: health status, marital status, employment status, religious, family, income equality and materialist. This finding is consistent with previous studies such as Clark and Oswald (1994), Winkelmann and Winkelmann (1998). Malaysia shares a similar set of determinants of individual happiness with Taiwan: health, marital status, employment status, and religions. These determinants of happiness are universal, evidenced by previous studies using data of various countries. On the other hand, Malaysia has different set of determinants of happiness from Taiwan: unemployment, need of income equality and materialist. Thus, Taiwan and Malaysia have a shared and a different set of happiness drivers. For example, females are happier in Taiwan, but not in Malaysia. This could be due to differences in culture and religious values. Specifically, the unhappy Malaysians are those who have low income, poor health, not married, unemployed, not economically inactive (student, housewife and retired), perceived God as less important, perceived income distribution is not equal in their country, and are more materialistic. The pro-happiness policies of the Malaysian government could target on the groups with these characteristics.

5.   Conclusion

Using WVS data, this paper aims to examine the existence of income-happiness paradox and estimate the determinants of individual happiness in Taiwan and Malaysia. At individual level, income increase is found to be significantly and positively associated with happiness in Taiwan and Malaysia. Likewise, at aggregate level, the GDP per capita appears to be positively associated with happiness in Taiwan and Malaysia, over the time period 2006-2012. Thus, there is no sufficient evidence of existence of income-happiness paradox in Taiwan and Malaysia over the time period between 2006 and 2012. The increase of income in terms of GDP per capita is associated with happiness in Taiwan and Malaysia. Results of the estimated ordered logit models suggest that in Taiwan, the determinants of individual happiness are: income, saving, health status, gender, marital status, employment status, religious, and family. In Malaysia, the determinants of happiness are: income, health status, marital status, employment status, religious (which are similar to Taiwan), income equality and materialism (which are different from Taiwan). Thus, Taiwan and Malaysia share similar and also a different set of individual happiness determinants. Thus, government policies to improve happiness should target appropriate drivers of happiness.

Acknowledgement

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Appendices

Appendix 1: The Definition and the measurement of variables

Variable	Definition	Measurement
Dependent:		
LS	Satisfaction with your life	10-point rating scale: 1 being "dissatisfied" and 10 being "satisfied"
Income	Scale of incomes	In decile group: lower step, second step, third step, fourth step, fifth step, sixth step, seventh step, eighth step, ninth step, tenth step and highest step.
saving1	Family savings during past year	1=yes; 0=no
health1	State of health	1=poor, 2=fair, 3=good, 4=very good
Dmale	Gender	1=male, 0=female
Age	age	Years
Agesq	squared on age	
Dmarried	Dummy for marital status (comparison group: single)	1=married, 0=otherwise
Dmarr_oth	Dummy for marital status (comparison group: single)	1=others (divorced, separated, widow), 0=otherwise
education1	Level of education	0=no formal, 1=primary 2=secondary, 3=pre-university, 4=university
Demp_UNE	Dummy for emp status (comparison grp: FT emp)	1=unemployed 0=otherwise
Demp_PT	Dummy for emp status (comparison grp: FT emp)	1=part-time employed, 0=otherwise
Demp_SE	Dummy for emp status (comparison grp: FT emp)	1=self-employed, 0=otherwise

Demp_OTH	Dummy for emp status (comparison grp: FT emp)	1=others (eco inactive), 0=otherwise
env_ecogrowth	Protecting environment vs economic growth	1=protect environment, 0=not
imp_God	How important is God in your life	10-point rating scale: 1 being "not at all important" to 10 being "very important"
imp_family	Important in life: family	1=not at all important, 2=not very important, 3=rather important, 4=very important
income_equality	Income equality	10-point rating scale: 1 being "we need larger income differences " to 10 being "income should be made more equal"
materialist12	Post-Materialist index 12-item	6-point rating scale: 0 being "materialist" to 5 being "post-materialist"

Appendix 2: Sample Characteristics (Wave 6, 2012)

Table A2.1: Mean values for continuous/discrete/two categories nominal (0,1) variables

Wave 6	Twn	MYS
saving1 (1=yes; 0=no)	0.046	0.346
health1	3.132	3.236
Male (1=male; 0=female)	0.485	0.514
Age	44	40
education1	2.983	2.155
materialist12	1.634	1.911
env_ecogrowth	0.630	0.737
imp_God	6.236	9.029
income_equality	5.106	4.343
competition	7.693	7.464
imp_family	3.909	3.972

Table A2.2: Nominal variables (more than two categories)

Wave 6	Twn Freq	%	MYS Freq	%
Marital status				
Married	687	59.0	890	68.5
Others	115	9.9	55	4.2
Single	362	31.1	354	27.3
Employment				
Unemployed	34	2.9	23	1.8
Part-time employed	59	5.1	64	4.9
Full-time employed	589	50.5	627	48.3
Self-employed	85	7.3	294	22.6
Others (eco inactive)	399	34.2	291	22.4