THE IMPACT OF TRUST ON HAPPINESS: A CROSS-COUNTRY ANALYSIS[1]

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Abstract

In this paper we examine the relationship between the degree of happiness and the level of trust for China, India, Japan, Turkey, and the US. The data are obtained from large-scale national surveys in these countries. The results from ordered probit regressions demonstrate a positive relationship between trust and happiness after controlling for socio-demographic characteristics, income, risk attitudes, time preferences and religiosity of the respondents.

Introduction

Aristotle defined happiness as the ultimate goal of human beings (Racham, 1928). Since then various disciplines studied the determinants, and elements of happiness. When it comes to the history of economic thought: while Adam Smith focused on the economic activity and material wealth on the society and international level; Jeremy Bentham and John Stuart Mill were also concerned with happiness on the individual level (Oishi and Schimmack, 2010).

Early studies such as Wilson (1967) associated happiness and subjective well-being with demographic characteristics and defined a happy person as "young, healthy, well-educated, well-paid, extroverted, optimistic, worry-free, religious, married person with high self-esteem, job morale, modest aspirations, of either sex, and of a wide range of intelligence." In other words, subjective well-being was correlated with health, income, religiosity, marital status, age, job satisfaction and education.

Initially, happiness researchers focused their attention on economic variables such as income or wealth at the individual level, and GDP per capita or Gini coefficient at the macro level. However, individuals use and accumulate non-material capital as well, named social capital, and this refers to social networks and the associated reciprocity and trustworthiness norms. In recent studies, researchers included various economic and social factors and studied happiness in personal and situational domains.

In order to attempt to shed light on individual happiness and international differences, this study takes data from national surveys from China, Japan, India, Turkey, and the US to measure associations between self-reported rates of happiness with trust, also of income and religiosity.

The Relationship Between Happiness and Trust

Determinants of Happiness

[1] This research utilizes the micro data from the Preference Parameters Study of Osaka University's 21st Century Center of Excellence (COE) Program 'Behavioral Macrodynamics Based on Surveys and Experiments' and its Global COE Project 'Human Behavior and Socioeconomic Dynamics'. We acknowledge the program/project's contributors: Yoshiro Tsutsui, Fumio Ohtake, and Shinsuke Ikeda. The survey in Turkey was funded by Kadir Has University (Scientific Research Project, No. 2016-BAP-02).

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There is a large literature on the determinants of happiness and we do not aim to present a comprehensive review of the literature. In what follows, we present a brief review of selected studies.

Contemporary understanding of happiness includes emotional responses, domain satisfactions, and life satisfaction (Diener et al., 1999). Measurement of happiness or subjective well-being relies heavily on surveys and self-reported scales. Using self-reported scales has its limitations, but the reliability and validity of self-reported scales have been demonstrated through a large number of research papers using large and longitudinal datasets.

Religiosity is also thought to be an important factor affecting happiness. Several studies found positive correlation between happiness and religiosity, linked not only to religion-based worldviews but also to the support provided by the religious community. Yet, there is variation in empirical findings examining different countries and socio-economic groups. Social support through religious community is important in regions with high geographical mobility; there are individual differences among people who receive economic support and those who do not; and, the relation between religiosity and happiness is strong in countries where majority of the population share the same belief (Snoep, 2007). Snoep (2007) found using World Values Survey data that significant correlation between happiness and religiosity for the US, but no such correlation existed for Denmark and the Netherlands.

In another study, Diener et al. (2011) used Gallup World Poll for religiosity and Cantril's Self-Anchoring Striving Scale for subjective well-being, and analyzed 153 countries and the US states. They found that religiosity was associated with slightly higher subjective well-being in all four major religions around the world, but the relation between religiosity and happiness rely on social circumstances. In more developed economies with higher social welfare, religiosity is less prevalent and subjective well-being does not vary between religious and non-religious people whilst people living in less developed countries or states are more likely to be religious and the relation between religiosity and subjective well-being is strong. In the latter countries and states, religion contributes to subjective well-being through social support, respect and by providing a meaning to life. Both Diener et al. (2011) and Snoep (2007) conclude that benefit from religion depends on specific characteristics of societies.

Stravrova et al. (2012) proposed another mediator to which religion affects happiness, and tested the “social norm” aspect of religion through social rewards and sanctions using World Values Survey data for 64 countries. They constructed indicators for country-specific norm of religiosity and religious fractionalization, and tested if conformity to religious norms is associated with higher subjective well-being. They confirmed that the effect of religiosity on subjective well-being was stronger in countries where religiosity is a strong norm. This might explain why religious people are happier in religious countries, and why non-religious people, who lack social recognition and might be facing social sanctions, are less happy. Members of minority religions in a country may not suffer the same fate as non-religious people, because of the social support they would receive in their small but tight communities.

Income inequality is another factor raised as a determinant of happiness. Various studies on income inequality and happiness or subjective well-being reached inconclusive results. Mikucka et al. (2017) examined the relation between economic growth and subjective well-being in 112 countries. After controlling for social trust and income inequality, they found that economic growth does not correlate with subjective well-being in non-transition countries while it does in transition countries. They found positive and significant correlation between social trust and subjective well-being, and the relation was stronger in developed countries. They did not find any significant correlation between inequality and subjective well-being.

In another study, Rözer and Kraaykamp (2012) found that subjective well-being is higher in countries with high inequality, but the positive effect of income inequality on subjective well-being is weakened if the level of trust is higher. Finally, Oishi et al. (2011) showed using General Social Survey data that low-income Americans were happier when income inequality was low, but the reason for the unhappiness was not the decrease in income but the level of trust and perceived fairness. This might explain why, unlike other developed countries, subjective well-being in the US decreased despite economic growth in the past decades.

Determinants of Trust

Trust is recognized as an important value in an economy that promotes favorable economic outcomes. Social scientists examining trust, economists in particular, use various methods including surveys and experiments. “Generalized trust” (trust towards people you do not know) is generally used to mean the same thing as social capital, i.e., “those persistent and shared beliefs and values

that help a group overcome the free rider problem in the pursuit of socially valuable activities" (Alesina and Giuliano, 2015).

According to Coleman (1988), social capital refers to the gains from connections in the society in three forms: trust and obligations; information channels; norms and sanctions. Social trust is a widely used empirical index of social capital (Helliwell and Putnam, 2004), which also makes it a primary interest of this study. Leung et al. (2010) examined the effect of social capital on subjective well-being in Canada, and found significant relationships between all three form of social capital defined by Coleman (1988). He also concluded that sense of belonging is another form that can be used to predict subjective well-being. Unlike many other factors affecting happiness, social capital can be modified by the individual to increase their happiness.

A number of studies have examined the factors that affect the level of trust. At the macro-level, the relation between economic outcomes and trust has been studied widely. Using World Values Survey data, Tabellini (2010) found for regions in eight European countries that historically backward regions with higher illiteracy rates and worse political institutions tend to have less generalized trust, less respect for others, and less confidence in the individual, and hence they suffer from lower per capita GDP and slower economic growth rates.

Similar other studies found that trust depends on social, economic, and institutional environments in which transactions occur (Zak and Knack, 2001), and higher social capital enhances trust (Guiso et al., 2004). The effect of trust on economic performance and development has also been reviewed in detail in Algan and Cahuc (2014).

There are also micro-level studies examining the determinants of trust. Various factors affecting trust are reviewed in Alesina and Giuliano (2015). Education and belonging to the same group affect trust positively while ethnic diversity and belonging to a minority, which is discriminated against, affect trust negatively. In addition, experimental studies generally reveal that in-group cooperation is more widespread rather than cooperation with out-group members mainly due to higher level of trust towards in-group members.

The relation between culture and trust has also been subject to many studies. It is generally believed that religion can enhance trust by promoting bonding among members of religious groups. The association between religiosity and trust has previously been examined. For instance, using data from the World Values Survey, Guiso et al. (2003) found after controlling for country-specific fixed effects (health status, age, sex, education, income, and perceived social status) that religious people trust other people, government and the legal system more, and trust toward others is more related to religious participation and less with religious upbringing.

Benjamin et al. (2016) assumed that individuals belong to multiple social categories based on religion, gender, and occupation, and ran experiments by making religious identity salient to randomly selected subjects and compare these primed subjects' behavior with unprimed subjects. They found that Protestantism does not affect trust. Putnam (1993) and La Porta et al. (1997) argued that Catholicism inhibits trust, which affects GDP growth. Putnam (1993) also found that Protestantism promotes trust.

Trust and Happiness

Trust is an important part of social capital, i.e., the social networks in a society. Helliwell and Putnam (2004) argue that social connections are robust correlates of subjective well-being. They found using cross-country World Values Survey data that trust has a strong impact on subjective well-being. In addition, Growiec and Growiec (2013) found using World Values Survey data for post-communism eight countries a robust positive affect of social capital on subjective well-being. They define a "low trust trap" upon the social changes in post-communist countries where low social capital and social trust stocks cause people to only trust whom they know and stay in a small social circle, which results in low subjective well-being.

Helliwell et al. (2016) argue that narrow-radius or in-group trust leads to higher well-being. While there is bidirectional causal relationship between group identity and in-group trust, various studies have found that high social trust increases happiness. Helliwell and Wang (2011) investigated the linkages between various dimensions of trust and subjective well-being using data from Gallup World Poll 2006[6] covering various countries and from the General Social Survey in Canada. They found that social identities indeed increase well-being through social trust, and belonging to multiple groups increase welfare and life satisfaction even further. Therefore, belonging to a group and

[6] Trust is measured in this survey with a question about whether the respondents think that their lost wallet would be returned.

adopting the group identity creates a measurable premium for social trust, and hence, well-being. They also argue that trust can be culturally transmitted across consecutive generations. Uslaner (2008) has shown that the trust of immigrants on the US is positively related with the level of trust in the country of origin.

Through which channels does trust enhance happiness? Helliwell and Wang (2011) list two channels using data from various surveys. First, general trust towards others (family members, friends, members of social networks, co-workers, and strangers) makes lives better and increase well-being in general. Second, trust increases life satisfaction and lowers suicide rates (Helliwell, 2006). It is generally argued that life satisfaction questions from longitudinal datasets measures permanent and long-run effect of trust on happiness while the subjective well-being questions measure instantaneous or short-term happiness.

Survey Data

For the empirical analysis we use data from surveys conducted in China, India, Japan, Turkey, and the US. The data for Japan, US, China, and India are obtained from 2013 Preference Parameters Study, conducted by Osaka University, Global Center of Excellence Program "Human Behavior and Socioeconomic Dynamics."[7] These surveys were conducted in 2013 using identical questionnaires. The data for Turkey are obtained from a national survey conducted in 2016 as part of a project titled "Happiness and Life Satisfaction in Turkey", funded by Kadir Has University (Scientific Research Project, No. 2016-BAP-02).

The surveys in Japan and the US were conducted using a random sample of men and women by a self-administered placement method. The surveys in China and India were conducted by an interview method at two levels: urban and rural. The surveys in the urban areas were conducted in six cities in both countries[8]. The rural survey in India was conducted in the rural parts of four cities (Bangalore, Calcutta, Delhi, and Mumbai). The survey in Turkey was conducted between June-September 2016 in 12 representative provinces by face-to-face interview method. The surveys in these countries are conducted for men and women aged between 20 and 69, except for Turkey and the US where the lower age limit was 18. Basic characteristics of the surveys (age, gender, marital status, educational attainment) are presented in Table 1.

Table 1 Basic characteristics of the surveys (%)

	Turkey	Japan	US	China: Urban	China: Rural	India: Urban	India: Rural
Age (years)	34.7	53.6	50.5	43.4	42.2	46.3	39.8
Female	52	54.1	52.5	49.6	50.4	58.2	31.4
Married	42	80.8	55.6	79.5	84.2	77.3	79
Education							
Lower secondary or below	28	9.7	3.3	38.5	78.8	44.4	64.5
Upper secondary	35	49.2	43.2	39.1	17	40.6	29
Junior college	-	16	11.4	8.3	3.4	-	-
Four-year college or above	22	25.1	42.1	14.1	0.8	15.1	6.6
No. of observations	2,009	4,181	3,379	818	500	392	563

Source: Calculations based on data from the 2016 survey for Turkey and from the 2013 Preference Parameters Study for Japan, US, China and India.

Below we compare these five countries in our surveys in terms of the differences in the degrees of trust, happiness, and religiosity. Overall, the level of both happiness and trust are the lowest in Turkey. The level of trust is the highest in China and the level of happiness is the highest in urban India.

[7] For details, see http://www.iser.osaka-u.ac.jp/eng/researchresult.html (accessed April 16, 2018).

[8] The cities in China are Beijing, Chengdu, Guangzhou, Shanghai, Shenyang, and Wuhan. The cities in India are Bangalore, Calcutta, Chennai, Delhi, Hyderabad, and Mumbai. The cities in Turkey are Adana, Bursa, Erzurum, Gaziantep, Kayseri, Malatya, Samsun, Tekirdağ, and Trabzon.

Degree of Happiness

Happiness is the dependent variable in our analysis. We measure happiness using the following question in the survey: “Overall, how happy would you say you are currently?” This question is measured on a scale from 0 (very unhappy) to 10 (very happy). Table 2 presents the distribution of the answers to this question in the surveys. The means are highest for urban survey in India (7.69) and the US (7.28), and lowest in Japan (6.50) and Turkey (6.19).[9] The top score for this question was 7 in most surveys while it as 8 in the US and India urban surveys and 6 in India rural survey.

Table 2 Degree of happiness (%) "Overall, how happy would you say you are currently?"

	Turkey	Japan	US	China: Urban	China: Rural	India: Urban	India: Rural
0 (very unhappy)	0.8	0.3	0.7	0.0	0.0	0.3	0.0
1	1.3	0.4	1.2	0.0	1.0	0.0	0.2
2	1.7	1.3	2.0	0.1	0.8	0.0	0.5
3	4.4	3.9	3.0	0.4	2.0	0.8	1.1
4	6.0	5.5	4.4	1.8	4.2	1.0	2.1
5	19.4	16.9	8.2	16.6	12.8	10.0	21.0
6	20.7	16.6	8.8	27.5	21.8	9.4	25.6
7	23.5	25.0	14.7	29.2	26.8	18.4	23.6
8	13.4	21.0	24.5	19.6	23.2	30.6	17.2
9	5.1	5.8	21.8	4.0	4.0	20.9	7.1
10 (very happy)	3.8	3.5	10.7	0.7	3.4	8.7	1.6
Average value	6.19	6.50	7.28	6.61	6.63	7.61	6.54
No. of observations	2,009	4,181	3,379	818	500	392	563

Source: Calculations based on data from the 2016 survey for Turkey and from the 2013 Preference Parameters Study for Japan, US, China and India.

Table 3 presents the degree of happiness by gender in the surveys. In India, urban China, and Turkey, male respondents have higher level of happiness on average while female respondents have higher happiness in Japan, the US and rural China. The difference between male and female happiness levels is relatively large in Japan. On the other hand, the observed differences by gender are statistically significant only in the case of Japan and Turkey but not in the US, China or India.

Table 3 Degree of happiness by gender (%) "Overall, how happy would you say you are currently on a scale from 0 (very happy) to 10 (very happy)"

	Turkey	Japan	US	China: Urban	China: Rural	India: Urban	India: Rural
Male	6.22	6.34	7.26	6.63	6.60	7.68	6.55
Female	6.15	6.63	7.29	6.60	6.67	7.56	6.54
No. of observations	2,009	4,181	3,379	818	500	392	563

Source: Calculations based on data from the 2016 survey for Turkey and from the 2013 Preference Parameters Study for Japan, US, China and India.

Degree of Trust

We measure trust in the surveys using the following question: “To what extent do you agree with each of the following statement: In general, most people are trustworthy.” This question measures “social trust.” A scale from 1 (completely agree) to 5 (completely disagree) is used. Table 4 presents the distribution of the answers to this question in the surveys. The mean is the lowest in China (urban: 2.23, rural: 2.34), and higher in urban India (2.90), the US (2.82), and Japan (2.75), and

[9] The low level of happiness in Turkey is interesting. Since 2003, Turkish Statistical Institute is conducting Life Satisfaction Survey which categorizes the degree of happiness as “happy,” “somewhat happy”, and “not happy.” The percentage of the respondents who report that they are happy has been between 55-60 percent between 2003-2009, and around 60 percent between 2010-2013 (Turkish Statistical Institute, 2013).

the highest in Turkey (3.42). Therefore, the level of trust was found to be highest in China and the lowest in Turkey.

These figures for the degree of trust is comparable to the World Values Survey, Wave 6 (2010-2014) which includes the following question about trust: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” the answers to this question are as follows: (i) Most people can be trusted, (ii) need to be very careful, (iii) no answer, and (iv) don’t know. The percentage of the respondents who selected the answer “most people can be trusted” was only 11.6 percent in Turkey, and 16.6 percent in India, while the relevant figure was higher in Japan (35.9 percent) and the US (34.8 percent), and the highest in China (60.3 percent). Overall, the level of trust appears to be highest in China and lowest in India, with the rest of the countries lying in between.

Table 4 Degree of trust (%) "To what extent do you agree with the statement "in general, most people are trustworthy"?"

	Turkey	Japan	US	China: Urban	China: Rural	India: Urban	India: Rural
1 (completely agree)	8.4	0.9	5.7	8.1	13.8	22.2	19.7
2	17.4	36.8	33.2	63.8	49.8	25.3	38.2
3	23.6	50.4	41.1	25.3	26.2	6.4	13.5
4	24.8	10.5	13.6	2.2	8.6	33.2	18.7
5 (completely disagree)	25.8	1.5	6.5	0.6	1.6	13.0	10.0
Average value	3.42	2.75	2.82	2.23	2.34	2.90	2.61
No. of observations	2,009	4,181	3,379	818	500	392	563

Source: Calculations based on data from the 2016 survey for Turkey and from the 2013 Preference Parameters Study for Japan, US, China and India.

Why is trust so low in Turkey? It was shown above that many studies have found that trust is strongly linked with happiness. Therefore, it is important to examine what affects trust. Unfortunately, the low level of trust in Turkey has not been subject to much of academic scrutiny. Here, we speculate on some possible reasons. Lack of welfare state might be one reason why trust is low in Turkey. Institutional trust might also be important. For instance, Stoyan et al. (2016) showed that the evaluation of government performances in the Dominican Republic and Haiti lead to low institutional trust in these countries. The performance of the government in state capacity in fighting against corruption and crime and rule of law, in particular, was found to be weak. Establishing confidence in the state might improve the overall trust in a society as well. A second possible reason for the low level of trust in Turkey is the heterogeneity of the population with many ethnic and religious factions, and because people tend to have in-group trust towards people belonging to the same religious and ethnic faction. Similarly, Alesina and La Ferrara (2000) found that trust is lower in areas with higher ethnic diversity. In addition, Glaeser et al. (2000) provide experimental evidence trust is higher within the same ethnic, racial, and social groups.

Degree of Religiosity

The countries where the surveys were conducted are very different with respect to religion. The US is predominantly Christian, India is predominantly Hindu, Turkey is predominantly Muslim, and Japan and China are predominantly non-religious although the impact of Confucianism and Buddhism is strong. We measure religiosity using the following question in the surveys: “How true for you is the following statement? ‘I am deeply religious.’” A scale from 1 (doesn’t hold true at all) to 5 (particularly true for me) used. The mean value is the highest, and hence the respondents are the least religious in Japan (4.31), followed by the US (3.18), Turkey (2.68), and India (1.74) (Table 5). This question was not included in the survey in China. Therefore, Turkish and American respondents seem to be more religious on average, while it is the opposite case for Japan.

Table 5 Degree of religiosity (%) "How true for you is the statement "I am deeply religious"?"

	Turkey	Japan	US	China: Urban	China: Rural	India: Urban	India: Rural
1 (Particularly true for me)	17.0	2.8	15.3	-	-	47.7	48.3
2	29.7	4.3	19.7	-	-	39.3	36.1
3	30.9	12.7	22.4	-	-	6.4	9.2
4	12.6	19.1	16.7	-	-	4.6	5.9
5 (Doesn't hold true at all for me)	9.7	61.0	26.0	-	-	2.0	0.5
Average value	2.68	4.31	3.18	-	-	1.74	1.74
No. of observations	2,009	4,181	3,379	818	500	392	563

Source: Calculations based on data from the 2016 survey for Turkey and from the 2013 Preference Parameters Study for Japan, US, China and India.

Failed Coup D'état Attempt in Turkey and Change in Happiness and Trust

Our data from Turkey survey is unique also because 625 respondents were interviewed before July 15, 2016 and the remaining 1384 was interviewed during August and September 2016. When the survey was under way, an important historical event happened in Turkey on the night of July 15, 2016 and a military junta attempted a failed coup d'état. Following the coup, many people took to the streets to protest the attempt and the government responded by restricting civilian rights and announcing a state of emergency, which continues to this day. This event is a major turning point in recent history of Turkey. The survey continued after a three-week break following the coup. 625 of the 2009 respondents participated in the survey analysis before the coup. Thus, we have a unique data set.

The summary statistics for some questions in the survey questionnaire before and after the coup are presented in Table 6. The differences in the mean values before and after the coup are not large in general. The mean values for life satisfaction, feeling depressed, feeling stressed, enjoying competition, and trust are higher after the coup. The scale for these questions range from 1 (particularly true for me) to 5 (doesn't hold true at all). The average figures in the table imply that the respondents felt more stressed and depressed; they were less satisfied from their lives; enjoyed competing with others more; and their degree of trust decreased. Note that the respondents before and after the coup are not the same. The largest decrease was in life satisfaction by about 15 percent, and the decrease for the other questions was around 8-9 percent. In the case of happiness, the mean value decreased but slightly (from 6.245 to 6.159, a decline by 1.4 percent). On the other hand, the pre and post-plot sample mean differences are statistically significant only for trust (at 10 percent), stress (10 percent), and competition (1 percent).

Table 6 Changes in the responses to some questions before and after the plot

	Before coup		After coup	
	Mean	St. dev.	Mean	St. dev.
I have been feeling stressed lately.	1.883	0.758	2.035	0.740
I have been feeling depressed lately.	1.826	0.721	1.990	0.734
I enjoy competing with others.	1.866	0.730	2.040	0.748
In general, most people are trustworthy.	1.784	0.755	1.944	0.747
I am satisfied with my life overall.	1.810	0.749	2.077	0.741
Overall, how happy would you say you are currently?	6.245	2.038	6.159	1.789

Note: The number of observations before the coup is 625 and the number of observations after the coup is 1384. The scale for the last variable is from (very unhappy) to 10 (very happy). For all other variables the scale is from 1 (particularly true for me) to 5 (doesn't hold true at all). The dummy variable for the variable "Compared to 1 year ago, I am happier now" takes the value of 1 if the

answer to the question “Compared to one year ago, do you think that you are happier now?” is “Happier than one year ago” and 0 otherwise.
Statistical significance *** p<0.01, ** p<0.05, * p<010.

The respondents who participated in research after the plot may have adapted to the changing political and social circumstances in Turkey even in a short period of time. Since we have only cross section data from summer 2016, the data may not reflect the long-run effects of the plot on trust and subjective well-being.

Empirical Findings

In the empirical part, we conduct and econometric analysis to examine the association between happiness and trust using pooled data from the surveys. Our dependent variable is the level of happiness, which is measured on a scale from 0 to 10. Accordingly, we run ordered probit regressions.

We are specifically interested in the relationship between happiness and trust. A detailed description of the data is presented in the appendix and descriptive statistics are available in Table 7.

Table 7 Summary statistics

Variable	*Abbreviation*	*Mean*	*Median*	*Min.*	*Max.*	*Obs.*
Happiness (dependent variable)	Happy	6.775	7	0	10	13176
Independent variables						
Urban dummy	Urban	0.916	1	0	1	13702
Trust	Trust	2.823	3	1	5	13621
Age	Age	49.047	50	17	98	13389
Male dummy	Male	0.468	0	0	1	13702
Marital status						
Married	Married	0.688	1	0	1	13581
Never married	Never married	0.185	0	0	1	13581
Divorced and widow		0.126	0	0	1	13581
Having children dummy	Children	0.720	1	0	1	13702
Education						
Less than high school		0.175	0	0	1	13474
High school	Edu. high	0.335	0	0	1	13474
College	Edu. college	0.490	0	0	1	13474
Employment status						
Unemployed	Unemployed	0.040	0	0	1	13198
Employed	Employed	0.718	1	0	1	13198
Not in labor force		0.243	0	0	1	13198
Risk aversion	Risk	58.895	60	0	999	13360
Good health dummy	Good health	0.821	1	0	1	13553
Home ownership dummy	Homeowner	0.811	1	0	1	8599
Religiosity dummy	Religious	0.315	0	0	1	12252
Household income	Income	49.085	39.139	0.613	6132	12622
Feeling lonely dummy	Lonely	3.623	4	1	5	13468
Good relations with friends dummy	Friends	2.454	2	1	5	13534
Time preferences	Time pref.	0.558	0.351	-2.201	5.708	13421

The independent variables are sociodemographic characteristics of the respondents (age, gender, marital status, education, having children, urban-rural residence, and employment status), risk aversion, time preferences, wealth, household income, health conditions, home ownership, and debt. Religiosity is another important factor that may have an impact on happiness. The survey questionnaire in China did not include a question about religiosity. Therefore, we do not include it in

our econometric analysis. However, we ran a separate regression by dropping the China survey data to see the impact of religiosity in a subsample of the remaining countries.

Table 8 presents the results of the ordered probit regressions. The figures in the table are the coefficients of the variables. The standard errors in the regressions are all robust standard errors.

Table 8 Ordered probit regressions results

	(1)			(2)			(3)		
	Coef	SE		Coef	SE		Coef	SE	
Trust	0.203	0.028	***	0.194	0.023	***	0.183	0.021	***
Religious	0.048	0.038		0.030	0.027	***			
Risk	0.061	0.020	***	0.053	0.019	***	0.044	0.019	**
Time pref.	-0.002	0.011		-0.005	0.009		-0.008	0.009	
Country dummies									
India	0.141	0.073	***	-0.075	0.062		-0.165	0.054	***
China	0.139	0.594		-0.045	0.592		-0.437	0.044	***
Japan	-0.441	0.055	***	-0.415	0.029	***	-0.431	0.027	***
Turkey			***	0.199	0.044	***	0.181	0.042	***
Socio-demographic variables									
Urban	0.278	0.065	***	0.265	0.063	***	0.106	0.044	**
Age	-0.020	0.007	***	-0.021	0.004	***	-0.022	0.004	***
Age squared	0.022	0.007	***	0.022	0.004	***	0.022	0.004	***
Male	-0.116	0.029	***	-0.063	0.022	***	-0.062	0.021	***
Homeowner	0.118	0.034	***						
Income	0.003	0.000	***	0.002	0.000	***	0.002	0.000	***
Children	-0.067	0.055		0.100	0.036	***	0.079	0.034	**
Marital status									
Married	0.116	0.049	**	0.128	0.035	***	0.147	0.034	***
Never married	-0.194	0.074	***	0.001	0.050		-0.007	0.048	
Education									
Edu. high	0.179	0.039	***	0.158	0.036	***	0.118	0.032	***
Edu. college	0.279	0.042	***	0.203	0.038	***	0.165	0.034	***
Employment status									
Unemployed	-0.083	0.064		-0.146	0.056	***	-0.154	0.054	***
Employed	-0.058	0.034	*	-0.056	0.027	**	-0.062	0.026	**
Other personal traits									
Health	0.438	0.029	***	0.412	0.023	***	0.398	0.022	***
Lonely	0.261	0.012	***	0.296	0.010	***	0.278	0.009	***
Friends	-0.118	0.016	***	-0.252	0.012	***	-0.261	0.012	**
Observations	6092			9442			10825		
Log likelihood	-11186			-17448			-19902		
Pseudo R2	0.063			0.091			0.085		

Notes: SE: standard error. The figures in the table are marginal effects and the standard errors are robust.

*** p<0.01, ** p<0/05, * p<0.10.

We ran three sets of regressions. In the first model, we included all variables, but due to missing data, the number of observations was only 6,092 (Table 8). In the second mode, we dropped the variable on home ownership since this question was not included in the US survey. Therefore, the number of observations increased to 9,442. In model 3, in addition to the home ownership variable,

the variable on religiosity was also dropped since religiosity question was not included in China survey. Accordingly, the number of observations is the highest (10,825) in this regression.

The results of the ordered probit regressions in Table 8 show that the coefficients for the time preferences variable and the dummy variable for the respondents who have never married are statistically insignificant. The coefficients of the remaining variables are statistically significant in most cases and the level of statistical significance is generally high, often at the order of 1 percent. Therefore, the data fit the model quite well.

The results for the socio-demographic variables show that the respondents residing in the urban areas, those with higher household income levels, homeowners, those who are married, those who have graduated either from high school or college, those who are satisfied with their health conditions are more likely to be happier. These are all expected results. Interestingly, the dummy variables for employed and unemployed respondents are negative, implying that compared to those not in the labor force (housewives, students, and retired people), the employed unemployed people in the labor force are less likely to be happier. Similarly, older people and males are less likely to be happier. The square of the age variable is statistically significant and positive, indicating a nonlinear relationship between age and happiness. When the respondents get older, the negative effect of age on happiness gets smaller.

We are specifically interested in the coefficients of the risk, religiosity and trust variables. The respondents with higher risk aversion and higher level of trust are more likely to be happier. In the regression where home ownership variable is dropped so that the US survey is included (Model 2), the coefficient of religiosity variable is positive. The positive relation between trust and happiness is especially important and confirms the findings by Helliwell et al. (2016) for our survey data.

Conclusion

In this paper we examined the relation between trust and happiness using survey data found positive relationship between trust and happiness after controlling for socio-demographic characteristics, income, risk attitudes, time preferences and religiosity. The positive relation confirms the recent findings in other studies in the same direction.

One important issue in our analysis was the lack of data for some variables of interest, such as religiosity, for some countries. Therefore, in some regressions we lost a large number of data. One possibility is to run regressions separately for each country and compare the results. The findings can be extended in that direction.

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Appendix

Here we briefly describe the data and how they were constructed. All data were obtained from the surveys conducted in China, India, Japan, Turkey, and the US, as explained in the text. The details about the dependent variable, level of happiness, are also explained. Below we explain the remaining explanatory variables.

Trust

We measure trust towards others using the question "To what extent do you agree with each of the following statement: In general, most people are trustworthy." on a scale from 1 (completely agree) to 5 (completely disagree). We create a dummy variable taking the value 1 if the respondent chose answers 1 and 2 ("completely agree" and "somewhat agree") .

Sociodemographic variables

The sociodemographic variables we used in the regressions are as follows:

Age: We use the age of the respondents as given in the survey.
Gender: Gender is measured as a dummy variable taking the value 1 if male and 0 otherwise.
Marital status: We organize the data about marital status into three categories: (i) married (including those who are not married but living together with a partner), (ii) never married, and (iii) divorce or widowed. We create dummy variables for each category.
Education: We reclassify the educational attainment of the respondents into three categories: (i) less than high school, (ii) high school, and (iii) college and above. We create dummy variables for each category.
Children: We measure this variable as a dummy variable taking the value 1 if the respondent has children and 0 otherwise.
Urban-rural residence: We create a dummy variable taking the value 1 if the respondent is living in an urban area and 0 if in a rural area.
Employment: We categorize the answers to the question about occupation as follows: (i) employed, (ii) unemployed, (iii) not in labor force (student, housewife/househusband) and retired and not working. We create dummy variables for each category.

Income

We measure per capita household income by dividing total household income by the square root of the size of the household. Household income data are measured in categories and we take the midpoints for each group. The bottom income group (e.g., less than 10,000 Liras in Turkey) and the top income group (e.g., 200,000 Liras or more in Turkey) are open-ended. Therefore, we take 80 percent of the maximum income level of the bottom group and 125 percent of the minimum of the top income group as the relevant midpoint estimates. In addition, we convert the income data in different currencies to US dollars in purchasing power parity (PPP) in 2011 prices. PPP conversion factors are obtained from the World Bank's World Development Indicators. For convenience we divide the income figures by a factor of 1000.

Risk Aversion

We use the following question in the survey to measure risk aversion:
How high does the chance of rain have to be before you will bring an umbrella with you when you go out? (Write in number from 0 - 100) ____%.

Health

We use a question in the survey about current health conditions of the respondents. We also use an alternative question about health conditions: "I have anxieties about my health" and the answers to this question are on a scale from 1 (particularly true for me) to 5 (doesn't hold true at all for me).

Home ownership

We use a question in the survey questionnaire and create a dummy variable taking the value 1 if the respondent owns a house and 0 otherwise.

Feeling Lonely

We use the question “I have been feeling lonely lately” in the survey questionnaire measured on a scale from 1 (completely agree) to 5 (completely disagree) and create a dummy variable taking the value 1 if the respondent chose the answers 1 and 2 and 0 otherwise.

Relations with Friends

We use a question in the questionnaire about the satisfaction of the respondents with their friends. The question specifically asks how satisfied the respondent is with his or her friends and respond selects one of the answers on a scale from 1 (satisfied) to 5 (unsatisfied). We then create a dummy variable taking the value 1 if the respondent chose the answers 1 and 2 (satisfied) and 0 otherwise.

Time Preferences

We use a hypothetical question in the survey to measure time preferences. Below given table, demonstrates the question used in the surveys in Turkey (Suppose that you are to receive money from someone and you can choose either to receive the money today, or 28 days from today, but the amounts will be different. Compare the amounts and dates below in Option “A” and Option “B” and indicate which option you prefer for each of the nine choices.)

Option A		Option B		Which ONE do you prefer? (X ONE Box For EACH Row)	
Receive today	*or*	Receive 28 days from today	→	Option A	Option B
90.00 TRY		97.20 TRY		1 ☐	2 ☐
90.00 TRY		90.00 TRY		1 ☐	2 ☐
90.20 TRY		90.50 TRY		1 ☐	2 ☐
90.00 TRY		443.00 TRY		1 ☐	2 ☐
90.20 TRY		93.70 TRY		1 ☐	2 ☐
90.20 TRY		104.40 TRY		1 ☐	2 ☐
90.10 TRY		89.30 TRY		1 ☐	2 ☐
90.30 TRY		125.60 TRY		1 ☐	2 ☐
90.20 TRY		91.30 TRY		1 ☐	2 ☐

. We, then, use the procedure introduced in Kimball et al. (2008) to compute a cardinal proxy for risk tolerance using the responses to the hypothetical question.

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Household Consumption Structure and Subjective Well-being : Evidence from China' s Survey Microdata

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Catalogue

- Introduction
- Literature Review
- Statistics and Research Design
- Analysis of Empirical Results
- Conclusions and Suggestions

1、Introduction

- Well-being is one of human`s ultimate goals. According to the report delivered at the 19th national congress of the CPC, what we face now is the contradiction between unbalanced and inadequate development and the people`s ever growing needs for a better life.
- In economics, subjective well-being is regarded as a utilization, while economists tend to regard income as the only variable by simplifying their assumptions.
- Reported in developed countries including the USA, the UK and Japan, Easterlin Paradox is also likely to be observed in China.

1、Introduction

The main contribution of this article falls on our new path that clustered various consumption categories through cluster analysis to form households groups characterized by consumption difference, where further analysis is made to discuss the relationship between consumption structure patterns and well-being. Different from most of existing literatures that focuses on the relationship between aggregated or individual consumption expenditure and well-being, our methodology mainly concerns the structural characteristic that household is the fundamental consumption unit; we also start from current consumption situations in China, and analyze and compare effects of different consumption structure patterns on well-being.

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2、Literature Review

- **The first view** is that the absolute level of consumption has an important impact on the subjective well-being, the more personal consumption, the higher the level of his subjective well-being, the idea is based on the new classical theory, this theory means that there is a positive correlation between consumption and subjective well-being, but it is not necessarily a linear correlation (Guillen-royo, 2007).

2、Literature Review

- **The second point of view** further suggests that subjective well-being is not only dependent on the level of consumption, rather, depending on what kind of goods and services to consume, try to analyze what types of consumer spending has a greater or lesser impact on subjective well-being, and how consumers should choose the content of "baskets" to improve their subjective well-being (Deleire and Kalil, 2010).

2、Literature Review

- **The third view**, based on consumer behavior and endogenous preference theory, argues that relative consumption rather than absolute consumption has an impact on subjective well-being, emphasizing the importance of the social comparison process. Consumers with the same or higher levels of consumption as their peers have a higher sense of subjective well-being (MacDonald and Douthitt, 1992).

2、Literature Review

- China`s household consumption has been taking on a diverse trend in a thorough way, so that its effect on well-being is supposed to be long-term and holistic. Different from the argument of most existing studies that tend to focus on the relationship between aggregated or individual consumption categories and well-being, the latter can be differentiated under the differentiated general characteristics of consumption structure patterns, which serves as the reason for the absence of convincingly agreeable conclusion on the effect of consumption on well-being.

3. Statistics and Research Design

- 3.1 The source of statistics

Our study uses Chinese General Social Survey (CGSS) data. Chinese General Social Survey (CGSS) is the first comprehensive, continuous and nationwide large-scale social investigation project carried out jointly by the Renmin University of China.

3. Statistics and Research Design

- 3.2 Choice of Variables and Descriptive Statistics

Table 3-1 Description Statistics of consumption expenditure in sample data

Expenditure Categories	Cases	Mean	Standard Deviation	Median	75% Percentiles	Variable Coefficient
Food	9825	8309.901	6661.143	6000	12000	0.8015912
Apparel	9825	2061.668	2579.097	1000	3000	1.250976
Housing maintenance, utilities, gas and other	9825	1574.156	1612.077	1000	2000	1.02409
Building housing and housing purchase consumption	9825	1591.549	4771.175	0	0	2.997818
Durables	9825	1147.503	2260.777	0	1000	1.97017
Daily necessities	9825	890.6965	1039.391	500	1000	1.166942
Transportation and Communication	9825	1395.726	1598.964	800	2000	1.145614
Entertainment and leisure	9825	331.4377	772.5036	0	100	2.330766
Education of Children	9825	2395.873	4207.963	0	3000	1.756338
Private Medicine	9825	1899.718	2686.591	800	2000	1.414205
Non-private Medicine	9825	543.8984	1293.768	0	200	2.378694
Networking Gift-giving	9825	1766.665	2093.706	1000	2400	1.185118
Support and Grant	9825	625.5295	1270.593	0	600	2.031227
Household Operation	9825	269.1043	922.6632	0	0	3.428645
Purchase of Production Means	9825	663.4976	1292.153	0	800	1.947487
Total	9825	25466.92	18053.84	21100	34640	0.7089131

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3. Statistics and Research Design

- Table 3-2 Descriptive Statistics on Subjective Well-being

Self-report SWB	Freq.	Percent	Cum.
1 Very unhappy	211	2.15	2.15
2 Less happy	749	7.63	9.78
3 So so	1688	17.19	26.97
4 Happy	5593	56.97	83.94
5 Very happy	1,577	16.06	100
Total	9868	100	

3. Statistics and Research Design

- Table 3-3 Names and Definitions of control variables in this article

Variables	Definition
Social Structure	
Living area	If living in the urban area，yes=1，no=0.
Economic conditions	
Relative income level	Where does your family's financial situation belong? well below average = 1, below average = 2, average level = 3, above average = 4, far above average = 5.
Social Status	
Current Social Class	The current social stratum, from low to high, is divided into 3 levels, the bottom = 1, middle level = 2, high-level = 3.
Class Change Assessment	Compared with ten years ago, the individual social strata change, downward flow =-1, not flow = 0, upward flow =1.
Education Factor	
Education level	Whether has received college education, is = 2, no =1.
Health Factor	
Health level	Your current health condition is, very unhealthy = 1, unhealthier = 2, general = 3, comparatively healthy = 4, very healthy =5.

4、Analysis of Empirical Results

4.1Test of Effectiveness on Data

Table 4-1 Reliability Test

Cronbach Alpha	No.
0.674	15

Table 4-2 KMO and Bartlett Tests

KMO Measure of Sampling Adequacy		0.885
Bartlett Sphericity Test	Approximate Chi-square	31462.377
	Degree of freedom	105
	Significance	0

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4、Analysis of Empirical Results

- 4.2 Factor Analysis

Table4-3 Results of Factorial Analysis

	Factors	Variables Included
Type of Consumption Expenditure in China	Regular Expenditure	food; apparel; housing maintenance, utilities, gas and other consumer expenditure; daily necessities; transportation and communication; entertainment and leisure; networking gift-giving
	Medical Expenditure	Private medicine,and non-private medcine
	Household Intergeneration Expenditure	support and grant, and education of children
	Durables and Housing Expenditure	building, renting and purchasing of houses, and the durables
	Production and Operation Expenditure	the purchase of production means, and family operation

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4、Analysis of Empirical Results

- 4.3 Cluster Analysis

Table 4-4 Results of Clustering Analysis
(According to Average Standard Consumption Scores)

	1	2	3	4	5	6
Scale of Cluster	5134 （52.25）	396 （4.03）	611 （6.22）	1093 （11.12）	1317 （13.40）	1274 （12.97）
Regular Expenditure	-0.549253	2.278833	0.6997275	0.0306433	1.205163	-0.102654
medical Expenditure	-0.366077	0.1927131	0.0232714	2.266835	-0.191698	-0.320127
Household Intergeneration Expenditure	-0.062208	0.8446503	0.1113816	-0.055544	0.0170983	-0.035296
Durables and Housing Expenditure	-0.452806	2.346762	0.3009997	-0.301025	-0.252779	1.470491
Production and Operation Expenditure	-0.297451	0.1605342	3.366248	-0.285077	0.0374194	-0.259754

4、Analysis of Empirical Results

- 4.4 Analysis on Results of Multi-variable Logistics Regression

$$Happiness_j = Ln(\frac{p_j}{1-p_j}) = \alpha_j + \beta_j Comstru_j + \sum \delta_j control_j + u_j, j = 1,2,3,4,5$$

In the equation, $Happiness_j$ represents the explained variable---Subjective well-being vector, $Comstru_j$ represents the six household consumption structures from clustering analysis, and $control_j$ represents control variables.

4、Analysis of Empirical Results

	Multi-variable Logit				OLS
	1	2	4	5	
	Very unhappy	Unhappy	Happy	Very happy	
Low living pressure and high consumption（Pattern 2）	-0.654	-0.475**	0.757***	0.953***	0.325***
	(-1.93)	(-2.61)	-7.88	-8.39	-12.12
High living pressure and higher consumption（Pattern 3）	0.012	-0.479	0.493***	0.945***	0.299***
	-0.03	(-1.93)	-3.73	-6.24	-7.84
High medical expenses and low consumption	0.0279	-0.00432	0.103	0.281*	0.0697*
（Pattern 4）	-0.12	(-0.03)	-1.12	-2.41	-2.35
High maintenance pressure and moderate consumption	0.0707	0.102	0.263**	0.405***	0.0981***
（Pattern 5）	-0.3	-0.72	-2.8	-3.45	-3.35
High housing pressure and moderate consumption	-0.169	-0.245	0.535***	0.768***	0.250***
（Pattern 6）	(-0.47)	(-1.11)	-4.21	-5.09	-6.76
_cons	-2.040***	-0.761***	1.012***	-0.371***	3.676***
	(-22.13)	(-13.73)	-27.7	(-7.58)	-301.97

4、Analysis of Empirical Results

	Basic Results					Model 1					Model 2					Model 3					Model 4					Model 5				
	M Logit				OLS	M Logit				OLS	M Logit				OLS	M Logit				OLS	M Logit				OLS	M Logit				OLS
	1 Very unhappy	2 Unhappy	4 Happy	5 Very happy		1 Very unhappy	2 Unhappy	4 Happy	5 Very happy		1 Very unhappy	2 Unhappy	4 Happy	5 Very happy		1 Very unhappy	2 Unhappy	4 Happy	5 Very happy		1 Very unhappy	2 Unhappy	4 Happy	5 Very happy		1 Very unhappy	2 Unhappy	4 Happy	5 Very happy	
P 2	-0.654	-0.475**	0.757***	0.953***	0.325***	-0.477	-0.382*	0.751***	0.938***	0.298***	-0.00924	-0.153	0.466***	0.525***	0.122***	0.00867	-0.0998	0.427***	0.445***	0.0924***	0.0506	-0.0283	0.375***	0.488***	0.0931***	0.178	-0.017	0.365***	0.444***	0.0773**
P 3	0.012	-0.479	0.493***	0.945***	0.299***	0.0865	-0.439	0.490***	0.939***	0.287***	0.429	-0.255	0.262	0.599***	0.140***	0.463	-0.213	0.23	0.548***	0.120***	0.476	-0.192	0.214	0.550***	0.118***	0.595	-0.162	0.185	0.475*	0.0891*
P 4	0.0279	-0.00432	0.103	0.281*	0.0697*	0.106	0.0374	0.0999	0.274*	0.0573*	0.216	0.0817	0.0439	0.197	0.0189	0.149	0.088	0.0472	0.189	0.0175	0.153	0.0957	0.0347	0.19	0.0169	-0.0795	0.0328	0.11	0.337**	0.0758**
P 5	0.0707	0.102	0.263**	0.405***	0.0981***	-0.0827	0.0152	0.269**	0.421***	0.125***	0.192	0.123	0.177	0.305*	0.0531*	0.216	0.123	0.172	0.299*	0.0504*	0.217	0.124	0.168	0.300*	0.0503*	0.33	0.13	0.14	0.233	0.0295*
P 6	-0.169	-0.245	0.535***	0.768***	0.250***	-0.112	-0.214	0.533***	0.763***	0.240***	0.34	-0.0216	0.323*	0.464**	0.0992**	0.391	0.0104	0.300*	0.433**	0.0819*	0.42	0.0545	0.264*	0.466**	0.0824*	0.454	0.0543	0.248	0.414**	0.066*
Rural-urban_1						-0.456**	-0.249**	0.019	0.0444	0.0752***	-0.414**	-0.241*	0.0335	0.069	0.0695***	-0.522**	-0.240*	0.0511	0.09	0.0781***	-0.499**	-0.206*	0.0215	0.126	0.0786***	-0.336*	-0.161	0.0144	0.13	0.0630***
Relative income level																														
Below average											-1.605***	-0.576***	0.439**	0.319	0.542***	-1.431***	-0.487**	0.322*	0.119	0.455***	-1.426***	-0.482***	0.327**	0.123	0.456***	-1.205***	-0.409**	0.303**	0.0784	0.404***
average											-2.832***	-1.221***	1.121***	1.311***	0.922***	-2.428***	-0.959***	0.854***	0.870***	0.728***	-2.418***	-0.947***	0.848***	0.877***	0.729***	-2.128***	-0.857***	0.785***	0.754***	0.647***
Above average											-1.169**	-0.971**	1.854***	2.404***	1.072***	-0.77	-0.625*	1.520***	1.847***	0.840***	-0.743	-0.595	1.502***	1.867***	0.842***	-0.444	-0.499	1.433***	1.739***	0.753***
Far above the average											-13.33	-1.189	0.77	1.963**	1.111***	-14.27	-1.029	0.303	0.94	0.812***	-14.25	-0.995	0.288	0.963	0.814***	-13.69	-0.972	0.25	0.823	0.730***
Social stratum and stratum mobility																														
Middle																-0.546**	-0.532**	0.400*	0.687***	0.270***	-0.541**	-0.523***	0.396**	0.697***	0.272***	-0.429*	-0.500***	0.378**	0.664***	0.249***
High																1.801***	-0.0746	1.157***	2.288***	0.491***	1.800***	-0.0837	1.164***	2.289***	0.492***	1.829***	-0.0808	1.146***	2.226***	0.462***
No flow																-0.475**	-0.17	0.277*	0.385**	0.170***	-0.481**	-0.176	0.274*	0.373**	0.169***	-0.439*	-0.156	0.263**	0.352**	0.154***
Up forward flow																-1.021***	-0.169	0.375**	0.496***	0.220***	-1.027***	-0.177	0.371**	0.484***	0.219***	-0.958***	-0.166	0.356**	0.471***	0.206***
Education																														
Taken college education																					-0.236	-0.345	0.189*	-0.194	-0.00329	-0.0705	-0.299	0.144	-0.293*	-0.0331
Health																														
Unhealthy																										-0.834***	-0.153	0.0556	-0.191	0.191***
Average																										-1.627***	-0.590**	-0.0872	-0.428*	0.266***
Healthy																										-1.854***	-0.606**	0.284	-0.207	0.347***
Very healthy																										-1.610***	-0.345	0.438**	0.875***	0.527***
_cons	-2.040***	-0.761***	1.012***	-0.371***	3.676***	-1.813***	-0.630***	1.001***	-0.396***	3.634***	-0.480**	0.0188	0.245*	-1.267***	2.953***	0.0826	0.229	-0.102	-1.805***	2.750***	0.0823	0.226	-0.0928	-1.813***	2.749***	1.012***	0.536*	-0.191	-1.729***	2.520***

5. Conclusions and Suggestions

1、Upgrade and direct residents` ideas on consumption.

2、Establish and improve the mechanism of income distribution adjustment to safeguard people`s livelihood.

3、Widen the field of consumption.

4、Achieve the connection of industrial structure with resident`s consumption structure.

Thanks

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Consumer financial market participation, risk attitude and life subjective wellbeing

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Abstract

Using the data of China Household Finance Survey (CHFS) in 2011, this paper investigates the impact of financial market participation and risk attitude on consumer life subjective wellbeing. The results indicate that holding more household assets, as current deposit, fixed deposit and lending out of money which are also considered to be financial assets with comparable lower risk, are positively contributed to consumer life subjective wellbeing. Consumer financial market participation with lower market risk is positively associated with life subjective wellbeing. According to correlation and regression results, lending out of money, having current deposit and having fixed deposit are positive to improve consumer life subjective wellbeing. Consumer financial market participation with higher market risk is negatively associated with life subjective wellbeing. The results show that having fund is significantly negative to consumer subjectively wellbeing and having stock is negative but not significant. However, the regression coefficient positively contributes to consumer subjective wellbeing, which implies that holding bond is with comparable lower market risk. In addition, consumer risk attitude is positively associated with life subjective wellbeing. The results are informative for consumer policy makers and investment institutions to develop effective policies and financial products to help improve consumer life subjective wellbeing.

Keywords: Financial Market Participation, Risk Attitude, Life Subjective Wellbeing, Ordered Probit Model

Introduction

Consumer financial market participation plays an important role in individual financial lives. Meanwhile, individual risk attitude and life subjective wellbeing will influence consumer risk attitude (Grable, 2008). Financial market provides various investment products for consumers to allocate their assets for different length of periods and specific level of risk-taking. As an important investment channel for general consumers, individuals may change their life subjective wellbeing during their financial market participation over time. In long-term financial market participation, such as investing in stock, bond, fund, or having general low risk assets, consumer should consider the financial risk of return on their various financial assets in detail (Fan and Xiao, 2006). Risk attitude is an important concept in the field of investment and its impact on individual subjective wellbeing (Cardenas & Carpenter, 2013). Xia et al. (2014) found that effective financial market participation like stock investments could enhance consumer life subjective wellbeing in the long term. Unlike previous research, this study focused on effects of consumer financial market participation and risk attitude on life subjective wellbeing.

This study contributes to the literature of life subjective wellbeing by exploring the role of consumer financial market participation that is an important variable for consumer to improve their quality of life. This study also contributes to the literature of consumer risk attitude on life subjective wellbeing. Consumers that participate in financial market with various risk attitudes may have different feelings on life subjective wellbeing. This can be informative for consumer policy makers and investment institutions to develop effective policies and financial products to help improve consumer life subjective wellbeing.

Hypothesis

According to prior studies, hypotheses proposed in this paper are given as follows:

H1 Given economic resource and other control variables, holding more household assets, as current deposit, fixed deposit and lending out of money which are also considered to be financial assets with comparable lower risk, are positively contributed to consumer life subjective wellbeing.

H2 Given economic resource and other control variables, consumer financial market participation with lower market risk is positively associated with life subjective wellbeing.

H3 Given economic resource and other control variables, consumer financial market participation with higher market risk is negatively associated with life subjective wellbeing.

H4 Given economic resource and other control variables, consumer risk attitude is positively associated with life subjective wellbeing.

Method and Data

The China Household Finance Survey (CHFS) is conducted in 2011 by the Survey and Research Center for China Household Finance (RCCHF) at Southwestern University of Finance and Economics in China. For more detail about the dataset, please see Gan et al. (2013). The CHFS was consisted of two related surveys: (1) Family survey: A national survey of 8438 representative households; (2) Individual survey: A survey of 29324 individuals that are from above mentioned households. The survey asked many questions about respondents' subjective wellbeing, financial market participation, risk attitude, and demographic and socioeconomic characteristics. All datasets and codebooks are available from the RCCHF. In this study, data from family survey was used. Except for Xinjiang, Xizang, Ningxia, Fujian, Hainan and Neimenggu, the samples were from 25 other provinces. Since the regional economic development and income are significantly different, China has been divided into three regions: the west, the mid and the east. For some questions about household member's demographic characteristics, the responses from family head were considered as household representative. The dataset included a sampling weight variable that was used to produce descriptive statistics representative of the national population. For sample selection, only household heads provided specific answers for several scale questions, such as life subjective wellbeing, financial market participation, and risk attitude were included, and samples with missing information were excluded. To ensure the respondent's answer to be acceptable and robustness, samples for the household heads age under 16 were excluded as well. Final sample size used in this study was 8286.

The weight variable "swgt" was developed by the data set owner to present the national population. Both unweighted and weighted samples were used for producing descriptive statistics (see Table 2 and 3). The unweighted sample was used for bivariate and multivariate analyses in Table 4 and 5 respectively. Since dependent variable of life subjective wellbeing was not only a discrete but also an ordered choice set ranging from 1 to 5, the results of Ordinary Least Square (OLS) estimation may not make full use of ordered response choices about consumer life subjective wellbeing. To obtain robust estimation results, ordered probit regression and ordered logistic regression were employed as well (see model 4 and 5 in Table 5). During the multivariate estimation, the effects from regions (the west, the mid and the east of China) were fixed as well.

Results Analysis

Table 1 presents the distribution of consumer life subjective wellbeing by regions. In terms of differentials in economic development and income, China has traditionally been divided into three regions: the west, the mid and the east. In terms of the CHFS, there included 25 provinces. The east region included Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Shandong and Guangdong, the mid region included Shanxi, Anhui, Jiangxi, Henan, Hubei and Hunan, and 10 other provinces including Jilin, Heilongjiang, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Shaanxi, Gansu and Qinghai were in the west region. Among the sample, 15.00% were very happy, 48.44% were happy, 29.98% were neither happy nor unhappy, and 6.58% were not happy.

Figure 2 and 3 show the distribution of consumer life subjective wellbeing by total samples and samples in terms of regions. Based on the national distribution of consumer life subjective wellbeing, more than 60% were happy (or very happy) and less than 10% were unhappy (or very unhappy) (see Figure 2). In terms of the regional difference on consumer life subjective wellbeing, the east region was higher than other two regions. In addition, consumer life subjective wellbeing in west region was the lowest. In the east region, more than 30% were happy (or very happy), and related ratio of the mid and west were about 15% and 10% respectively.

Table 2 presents descriptive statistics of both unweighted and weighted samples. Based on the weighted sample, statistics were representative of the national population. The average life subjective wellbeing score was 3.71 on the 5-point scale. For the following variables, measured by 5-point and 3-point scale respectively, the average scores of risk attitude and perceived income level were both 2.13. In addition, the average age of household heads was 49.91, and that of household size was 3.49.

Table 3 shows descriptive statistics of categorical variables. Among the weighted sample, 74.38% were male, and 86.30% married. For education, the ration of junior school or lower, high school and some college, and undergraduate and higher were 66.75%, 24.42% and 8.83% respectively. For asset-related variables, 14.00% had private business, 90.11% owned house, and 15.77% had car. For financial market participation, 8.54% had stock, 4.05% had fund, 5.34% had bond. In addition, 12.35% lent out of money, 56.49% and 82.54% had current and fixed deposit respectively.

Table 4 describes correlations among risk attitude, financial market participation related variables and consumer life subjective wellbeing. Most correlations are expected except for the correlation between risk attitude and consumer life subjective wellbeing. The correlation was expected to be positive, but the coefficient was not significant. In addition, the correlation between risk attitude and having fixed deposit was insignificant as well. Consumer life subjective wellbeing was positively correlated with financial market participation related variables, such as with having stock and having bond which were with higher market risk, and with lending out of money, having current deposit and having fixed deposit which were with lower market risk. However, the correlated coefficient between consumer life subjective wellbeing and having fund was not significant. The risk attitude was positively associated with financial market participation related variables except for having fixed deposit. In addition, the correlations among financial market participation related variables were significantly positive.

Table 5 and 6 show the regression results of financial market participation, risk attitude on consumer life subjective wellbeing by OLS and Ordered Probit regression, respectively. For the characteristics of independent variable, Table 6 improves the results of estimation by Ordered Probit regression. According to Table 6, consumer risk attitude positively contributes to life subjective wellbeing. For the traditional financial market participation with lower market risk like lending out of money, having current deposit and fixed deposit, there are positive relationships among them to consumer life subjective wellbeing. For modern financial market participation with higher market risk like having stock, fund and bond with higher market risk, the regression coefficient of having stock is negatively insignificant, and that of having fund and bond are negatively and positively significant to consumer life subjective wellbeing.

Conclusion

Using the data of China Household Finance Survey (CHFS) in 2011, this paper investigates the impact of financial market participation and risk attitude on consumer life subjective wellbeing. The results indicate that holding more household assets, as current deposit, fixed deposit and lending out of money which are also considered to be financial assets with comparable lower risk, are positively contributed to consumer life subjective wellbeing. Consumer financial market participation with lower market risk is positively associated with life subjective wellbeing. According to correlation and regression results, lending out of money, having current deposit and having fixed deposit are positive to improve consumer life subjective wellbeing. Consumer financial market participation with higher market risk is negatively associated with life subjective wellbeing. The results show that having fund is significantly negative to consumer subjectively wellbeing and having stock is negative but not significant. However, the regression coefficient positively contributes to consumer subjective wellbeing, which implies that holding bond is with comparable lower market risk. In addition, consumer risk attitude is positively associated with life subjective wellbeing. The results are informative for consumer policy makers and investment institutions to develop effective policies and financial products to help improve consumer life subjective wellbeing.

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Table 1: Consumer life subjective wellbeing distribution by regions (%)

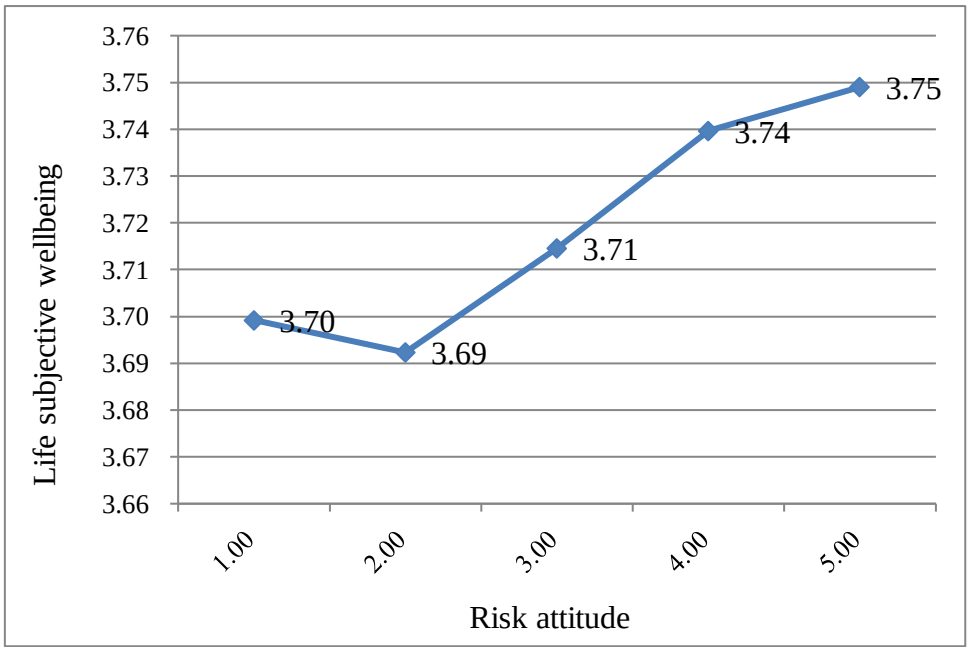

Figure 1 Consumer life subjective wellbeing by risk attitude
Notes: The results were calculated by the authors with data of CFPS 2011.

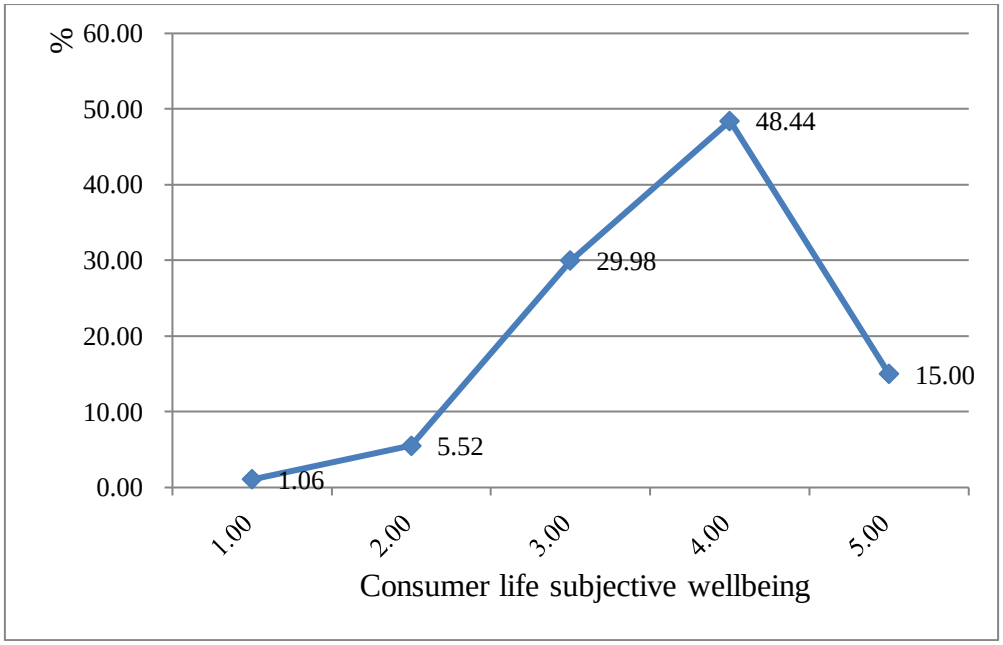

Figure 2 The National distribution of consumer life subjective wellbeing
Notes: The results were calculated by the authors with data of CHFS 2011.

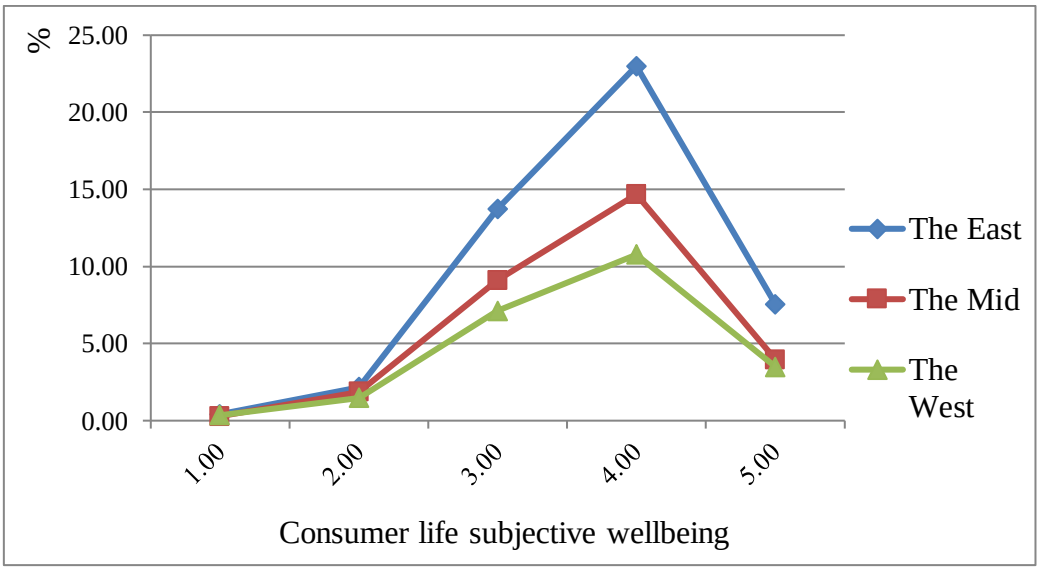

Figure 3 Consumer life subjective wellbeing distribution in the east, the mid and the west of China
Notes: The results were calculated by the authors with data of CHFS 2011.

Table 2: Descriptive statistics of continuous variables

Variable	Unweighted		Weighted	
	Mean	SD	Mean	SD
Life subjective wellbeing (1-5)	3.71	0.83	3.71	0.82
Risk attitude (1-5)	2.15	1.23	2.13	1.22
Perceived income level (1-3)	2.14	0.71	2.13	0.71
Age	49.85	14.03	49.91	14.18
Household size	3.47	1.54	3.49	1.56

Table 3: Descriptive statistics of categorical variables

Categorical variable	Unweighted (%)	Weighted (%)
Gender		
Male	73.29	74.38
Female	26.71	25.62
Education		
Junior school or lower	63.20	66.75
High school and some college	27.87	24.42
Undergraduate and higher	8.93	8.83
Marital status		
Married	86.50	86.30
Not married	13.50	13.70
Having private business		
Yes	13.42	14.00
No	86.58	86.00
Having individual house		
Yes	90.84	90.11
No	9.16	9.89
Having car		
Yes	14.68	15.77
No	85.32	84.23
Having stock		
Yes	8.95	8.54
No	91.05	91.46
Having fund		
Yes	4.09	4.05
No	95.91	95.95
Having bond		
Yes	5.70	5.34
No	94.30	94.66
Lend out of money		
Yes	12.07	12.35
No	87.93	87.65
Having current deposit		
Yes	56.66	56.49
No	43.34	43.51
Having fixed deposit		
Yes	17.86	82.54
No	82.14	17.46

Table 4: The correlations between consumer subjective wellbeing and financial market participation related variables

	LSWB	Risk attitude	Have stock	Have fund	Have bond	Lend out of money	Have current deposit
Risk attitude	0.0175						
Have stock	0.0305**	0.1832**					
Have fund	0.0177	0.0969**	0.2532**				
Have bond	0.0390**	0.1004**	0.2749**	0.8404**			
Lend out of money	0.0565**	0.1382**	0.0875**	0.0394**	0.0560**		
Have current deposit	0.0654**	0.1507**	0.1890**	0.1302**	0.1456**	0.1767**	
Have fixed deposit	0.0760**	-0.0105	0.1208**	0.1216**	0.1328**	0.0961**	0.1611**

Notes: N=8286. The unweighted sample is used. ***, **, * denote statistical significance (2-tailed) at1%, 5% and 10%, respectively.

Table 5: Results of regressions on life subjective wellbeing by Ordinary Least Square

Variable	Independent variable: Life subjective wellbeing (LSWB)				
	(1)	(2)	(3)	(4)	(5)
Risk attitude		0.0162**			0.0144*
		(0.0077)			(0.0078)
Lend out of money			0.0987***		0.0953***
			(0.0282)		(0.0282)
Have current deposit			0.0464**		0.0455**
			(0.0189)		(0.0190)
Have fixed deposit			0.0790***		0.0812***
			(0.0238)		(0.0239)
Have stock				-0.0069	-0.0337
				(0.0337)	(0.0341)
Have fund				-0.1918**	-0.1951**
				(0.0822)	(0.0821)
Have bond				0.1839***	0.1632**
				(0.0712)	(0.0711)
Male	-0.0390*	-0.0421**	-0.0419**	-0.0380*	-0.0443**
	(0.0206)	(0.0206)	(0.0206)	(0.0206)	(0.0206)
Age	-0.0316***	-0.0309***	-0.0302***	-0.0317***	-0.0295***
	(0.0040)	(0.0041)	(0.0040)	(0.0040)	(0.0041)
Age2/10000	3.5794***	3.5517***	3.4725***	3.5781***	3.4295***
	(0.3846)	(0.3848)	(0.3844)	(0.3850)	(0.3851)
Household size	-0.0146**	-0.0152**	-0.0134**	-0.0147**	-0.0144**
	(0.0063)	(0.0063)	(0.0063)	(0.0063)	(0.0063)
High school and some college	0.0561***	0.0517**	0.0402*	0.0550***	0.0392*
	(0.0209)	(0.0210)	(0.0211)	(0.0212)	(0.0214)
High school and some college	0.0928***	0.0851**	0.0670*	0.0861**	0.0623*
	(0.0339)	(0.0341)	(0.0342)	(0.0349)	(0.0351)
Married	0.2966***	0.2978***	0.2918***	0.2968***	0.2938***
	(0.0284)	(0.0284)	(0.0284)	(0.0284)	(0.0284)
Perceived income level	0.1260***	0.1259***	0.1180***	0.1261***	0.1183***
	(0.0125)	(0.0125)	(0.0125)	(0.0125)	(0.0125)
Have private business	0.0752***	0.0716***	0.0658**	0.0752***	0.0622**
	(0.0269)	(0.0270)	(0.0270)	(0.0269)	(0.0270)
Have individual house	0.1715***	0.1708***	0.1664***	0.1714***	0.1670***
	(0.0317)	(0.0317)	(0.0316)	(0.0317)	(0.0316)
Have car	0.2452***	0.2408***	0.2314***	0.2411***	0.2288***
	(0.0270)	(0.0270)	(0.0271)	(0.0274)	(0.0274)
Constant	3.6580***	3.6023***	3.6088***	3.6597***	3.5586***
	(0.1051)	(0.1084)	(0.1058)	(0.1052)	(0.1091)
F	39.8500	37.3300	34.8200	32.8200	29.3700
P	0.0000	0.0000	0.0000	0.0000	0.0000
Observation	8286	8286	8286	8286	8286
Adjusted R^2	0.0575	0.0578	0.0613	0.0579	0.0620

Notes: Reference category is junior school or lower. The unweighted sample is used. ***, ** and * represent 1%, 5% and 10% significance level, respectively, and the data in parentheses is standard error.

Table 6: Results of regressions on life subjective wellbeing by Order Probit regression

Variable	Independent variable: Life subjective wellbeing (LSWB)				
	(1)	(2)	(3)	(4)	(5)
Risk attitude		0.0218**			0.0194*
		(0.0104)			(0.0106)
Lend out of money			0.1384***		0.1337***
			(0.0383)		(0.0384)
Have current deposit			0.0566**		0.0553**
			(0.0255)		(0.0257)
Have fixed deposit			0.1020***		0.1050***
			(0.0323)		(0.0325)
Have stock				-0.0073	-0.0423
				(0.0456)	(0.0462)
Have fund				-0.2810**	-0.2852**
				(0.1121)	(0.1122)
Have bond				0.2626***	0.2360**
				(0.0974)	(0.0975)
Male	-0.0480*	-0.0521*	-0.0522*	-0.0466*	-0.0554**
	(0.0278)	(0.0278)	(0.0278)	(0.0278)	(0.0279)
Age	-0.0433***	-0.0423***	-0.0414***	-0.0433***	-0.0405***
	(0.0055)	(0.0055)	(0.0055)	(0.0055)	(0.0055)
Age2/10000	4.9137***	4.8774***	4.7792***	4.9149***	4.7265***
	(0.5236)	(0.5239)	(0.5243)	(0.5242)	(0.5255)
Household size	-0.0191**	-0.0199**	-0.0177**	-0.0193**	-0.0190**
	(0.0085)	(0.0085)	(0.0085)	(0.0085)	(0.0085)
High school and some college	0.0718**	0.0659**	0.0519*	0.0704**	0.0504*
	(0.0282)	(0.0283)	(0.0286)	(0.0286)	(0.0290)
High school and some college	0.1245***	0.1141**	0.0921**	0.1152**	0.0852*
	(0.0458)	(0.0461)	(0.0464)	(0.0472)	(0.0477)
Married	0.3873***	0.3889***	0.3827***	0.3877***	0.3856***
	(0.0383)	(0.0383)	(0.0384)	(0.0383)	(0.0384)
Perceived income level	0.1617***	0.1616***	0.1518***	0.1620***	0.1523***
	(0.0169)	(0.0169)	(0.0170)	(0.0169)	(0.0170)
Have private business	0.1007***	0.0958***	0.0881**	0.1007***	0.0833**
	(0.0364)	(0.0364)	(0.0365)	(0.0364)	(0.0366)
Have individual house	0.2186***	0.2178***	0.2123***	0.2187***	0.2134***
	(0.0426)	(0.0426)	(0.0426)	(0.0426)	(0.0426)
Have car	0.3381***	0.3323***	0.3207***	0.3328***	0.3171***
	(0.0367)	(0.0368)	(0.0369)	(0.0373)	(0.0374)
LR	490.8600	495.2300	525.8100	498.3800	536.4500
P	0.0000	0.0000	0.0000	0.0000	0.0000
Observation	8286	8286	8286	8286	8286
Pseudo R^2	0.0246	0.0248	0.0263	0.0250	0.0269

Notes: Reference category is junior school or lower. The unweighted sample is used. ***, ** and * represent 1%, 5% and 10% significance level, respectively, and the data in parentheses is standard error.

Effects of Message Framing and Mobile Technology to Improve Millennial College Students' Financial Wellbeing (Work in progress)

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Abstract

This proposed study investigates the effectiveness of a mobile technology intervention and the effects of message framing on Millennial college students' financial wellbeing. Data will be collected from an experiment administered to students attending a public university in the western region of the United States. Participants will be randomly assigned to one of four treatments in a 2 x 2 factorial design. The two main effects are financial advice delivered in five daily text messages sent to the participants' cell phones versus the same advice delivered in a one-time traditional financial education presentation embedded in an email, and contents that are either negatively-framed or positively-framed. Participants' intentions, behaviors, and attitudes towards saving more (or spending less) will be assessed on day 1 at baseline and on day 7 at conclusion of the experiment. The main effects will be assessed using a two-way ANOVA.

Key words:
Finance wellbeing; Mobile technology; Framing effect; Millennials; College students

Introduction

College students in the United States are stressed about managing their everyday finances (American Psychological Association, 2015). It's indicative of how 60% of Millennials feel that they are financially unfit (Bank of America/USA Today, 2015), and the burden of student loans on their financial wellbeing. Indeed, Federal Reserve (2017) shows that the student loan debt per student borrower averages $32,731, with 20.4% of borrowers showing the same or a higher balance than the previous quarter and a 4.7% delinquency rate.

Helping college students reduce their debts can improve not only their financial wellbeing but also their four-year graduation rates and their performance at work (Fosnacht & Dong, 2013; Heckman, Lim & Montalto, 2014; Joo, Durband, & Grable, 2008). Previous efforts to improve college students' financial wellbeing have focused primarily on increasing financial education (Cook, 2015), and have mixed results. While more financial knowledge could have positive associations with financial capability (Xiao & O'Neill, 2016), Bank of America and USA Today (2016) reports only 41% of those who attended college indicated that their education was effective in teaching them helpful money habits. Some employers now offer onsite money management and financial planning seminars, financial education, and other financial wellness programs to improve employees' financial wellbeing (Prawitz & Cohart, 2014). However, the majority of employees rate their companies low in helping with personal financial management (Consumer Financial Protection Bureau, 2014).

The purpose of this study is to explore the effectiveness of text messaging and effects of message framing to help Millennial college students reach their savings goal (or reduce debt). Chan, Huang, and Lassu (2017) find that when developing an effective intervention, it is essential to consider college students' unique characteristics. Since different generations value different things, overemphasis on traditional financial goals such as income or net worth may not necessarily or fully capture Millennials' definition of financial well-being (Consumer Financial Protection Bureau, 2015).

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We aim to provide some evidence to help financial services firms, universities and other institutions achieve a better understanding of Millennial college students' frames of reference, so future interventions may be better tailored to meet this cohort's unique needs.

The Role of Technology

We postulate that previous efforts have not been as successful as expected because they relied on traditional delivery methods. As digital natives, Millennials are used to virtual interaction and instant text messages (Black, 2010; Watson & Pecchioni, 2011). They shun traditional financial tools and prefer using text messaging, video interactions, email, websites and social media to communicate with advisors about their money as opposed to sticking with in-person meetings only (Palmer, 2015). Millennials are used to being able to access information easily and quickly, and they find traditional teaching methods dull (Black, 2010). They have little patience for lectures or step-by-step instruction (Palmer, 2015). Also, Hadar, Sood, and Fox (2013) find that while financial education programs are helpful, aiming to increase only objective financial knowledge may decrease subjective financial knowledge if the information provided is too technical and/or complex. Thus, financial advice delivered in a mode more attuned to how college students learn may be more effective in advancing their financial health—such as feeling less financially stressed, being able to handle their debts or reach savings goals.

One approach is to utilize mobile technology as Millennials have the same expectation when it comes to how financial advice is delivered. Many say their use of modern technology is what distinguishes them from other generations. Indeed, Taylor and Keeter (2010) reports that 83% of Millennials sleep with their technology next to them, regarding it as an extension of themselves and as a badge of generational identity. Employers too, find mobile tools hold great promise to deliver engaging, affordable financial wellness programs at scale (Consumer Financial Protection Bureau, 2014). Indeed, the use of text messages has been proven as a viable and effective learning tool in the medical field (Fortmann et al., 2014; Hoonpongsimanont et al., 2016). As younger adults are believed to be more prolific than other age groups to use mobile technology for health information search (Fox & Duggan, 2013), we can expect the same preference be extended to financial advice as well.

There is also a very interesting "reverse branding" effect for firms that try to reach Millennials using mobile technology. If the recipients of the messages are more pleased with the way the communications are channeled, the positive feelings might reflect positively on the firm that sends them (Ong, 2017). Nonetheless, great care is needed when designing the message as the gains in accessibility and reach may be offset by students' shorter attention spans and lack of depth in learning.

The Role of Message Framing

Framing is a cognitive heuristic that affects decisions by how the problem is framed. Tversky and Kahneman (1981) found that people exhibit different risk tolerance levels when outcomes are framed as gains versus that when outcomes are framed as losses. One explanation for the framing effect is loss aversion, a phenomenon in which the psychological pain associated with loss is more powerful than the pleasure associated with gain (Kahneman & Tversky, 1979)

Since Tversky and Kahneman's (1981) seminal work on framing effect, it has been widely studied and applied in various disciplines besides psychology, to name a few: marketing, finance, politics, and medical treatment (Please see Keren (2011) for an extensive review on the framing effect literature). Positively-framed messages, for example, a glass half full, or a negative-framed one, a glass half empty, have been found to impact financial decisions (Agnew, Anderson, Gerlach, & Szykman, 2008; Payne, Sagara, Shu, Appelt, & Johnson, 2013; Roszkowski & Snelbecker, 1990).

Financial advice, such as saving more or spending less, may be framed positively (e.g., if you spend within your means, you will be debt free) or negatively (e.g., if you overspend, you will be burdened with debt). As reported in Andreoni (1995), even when the outcomes are the same, people are more cooperative when they believe their actions can generate positive results than they are when they expect negative results. Thus, we would expect positively-framed content to be more effective than negatively-framed content in increasing Millennial college students' financial wellbeing. However, negatively-framed contents could also have a significant effect on the desired outcome if the decision involves higher uncertainties (Agnew et al., 2008).

Hypotheses

Based on the preceding discussion, we will test the following two independent hypotheses:

Hypothesis 1: Interventions integrated with content that is delivered in short, easy-to-understand text messages will be more likely than contents delivered in the traditional approach to increase college students' intention, behavior, and attitudes towards living within their means.

Hypothesis 2: Content conveyed in a positive frame will have different impacts than contents that is negatively-framed on college students' intention, behavior, and attitudes towards living within their means.

Method

The proposed exploratory study will be conducted in a public university in the western region of the United States. Participants have to be at least 18 years old and will be required to sign an informed consent form to participate.

Research design

The study is a 2x2 factorial design meant to test two interventions in one sample: one long traditional presentation versus five short text messages containing the same content, and positive versus negative framing of the message content. Participants will be randomly assigned to one of the following two treatment groups: (1) researcher-created financial advice delivered in five daily text messages sent to the participants' cell phones; or (2) same advice delivered in a one-time traditional financial education presentation delivered as an email attached in the middle of the test period. Within each of the treatment groups, participants will be further randomly assigned to receive either negatively-framed or positively-framed messages. Participants' intentions, behaviors, and attitudes towards saving more (or spending less) will be assessed on day 1 at baseline and on day 7 at conclusion of the experiment. The main effect of delivery mode and the main effect of framing on the outcomes of interest will be assessed using a two-way ANOVA.

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