# How economic globalization affects the happiness of residents in China

## ——Empirical evidence from CGSS 2008

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This paper is a quantitative examination of the effect of economic globalization on Chinese citizens' happiness and its transmission mechanism based on China General Social Survey (CGSS) 2008. The results show that economic globalization has enormously and indirectly promoted Chinese citizens' happiness by reducing inflation and unemployment, increasing income, improving health condition and narrowing the wealth gap. This conclusion is not affected by sample selection or self-selection bias, nor endogenous variables. It is suggested that as it promotes economic globalization, the Chinese government should try to mitigage its adverse impact by increasing expenditures on social security, health care, education, and vocational training, while making sure the benefits of economic globalization are shared by every social stratum.

**Keywords:** economic globalization, inflation, unemployment, happiness

### 1. Introduction

Chinese citizens' happiness has not been promotted markedly along with the rapid economic growth. From 1991 to 2007, the degree of foreign trade dependence rose from 0.3 to 0.6, whereas GDP per capita in 2007 was five times that of 1991(National Bureau of Statistics, 2009). Several surveys on citizens' happiness and life satisfaction indicate that the degree of life satisfaction of Chinese citizens did not experience remarkable growth during the same period (Easterlin et al., 2012). Economic globalization is an important feature of the facts in the Chinese economic transition. There have been studies which examined the effect of economic globalization on the Chinese economy from a variety of dimensions (Lin, Cai & Li, 1999). However, few studies reviewed the gains and losses of the implementation of the opening-up policy from the perspective of ground-level livelihood. The goal of improving the citizens' happiness is a crucial starting point of implementing the reform and opening-up

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policy. The 18th CPC National Congress set the overall improvement of the individual happiness as the goal of the ruling party. Happiness is more than a subjective feeling of individuals; it is aslo individual overall assessment of the quality of life. Happiness is the core index in examining the improvement of livelihood. This paper studies the relationship quantitatetively between economic globalization and Chinese citizens' happiness based on CGSS 2008, and attempts to shed light on its functional mechanism mechanism and transmission channels.

Economic globalization can promote the happiness through improving the livelihood of the people. Economic globalization has improved productivity tremendously through international trade, cross-border investment, and international technology spillover, which has brought about economic prosperity (Dixit & Stigliz,1977). Economic globalization usually means more jobs in export departments and lower prices of imported goods, which strengthens real purchasing power. Grenness (2003) believes that unemployment due to economic globalization could soon become re-employment after re-training if the labor market could respond effectively. The study of Firebaugh (2004) shows that economic globalization plays a significant role in the industrialization of developing countries and has helped to reduce the gap between rich and poor countries. Rodrik (2004) finds the evidence that economic globalization is helpful for the improvement of political institution. It is obvious that economic prosperity and improvement in political institution can help to enhance the happiness of citizens (Frey & Stuzer, 2002). The benefits of economic globalization are not confined to material dimension. Economic globalization can promote the happiness by broadening individual horizons and strengthening cross-cultural communications (Sirgy et al., 2004). The large scale of outbound travel gives people a chance to enjoy a variety of cultures; multinational working provides opportunities for people to experience civilization outside the border. All these factors help to enrich individual lifestyle and strengthen their happiness (Tsai, 2006).

However, some scholars have noticed that globalization may make people unhappy by deteriorating their livelihood. There are serious problems such as smuggling and aggravated economic fluctuation in countries with a high degree of globalization (Pestras &Veltmeyer, 2001); workers in disadvantaged sectors are facing a higher risk of unemployment (Dixit & Norman, 1980). More importantly, economic globalization may intensify economic fluctuation, causing social instability (Rodrik, 1999), and change individual relative income (Dreher & Gaston, 2008). Some developing countries hurry market-oriented reform in order to meet the requirements of openness of international organizations such as WTO, which would result in economic risks like intensified inflation, increased unemployment and even drastic social instability. Such social and economic risks would undoubtedly limit the general happiness among citizens (Di Tella, MacCulloch & Oswald, 2003).

The theory literature has not reached an agreement on the relationship between

globalization and personal happiness, thus it should be examined by empirical data. There have been many empirical studies which have tried to identify the decisive factors of happiness after the comparablility problem about indexes of intertemporal and interpersonal happiness were solved (Frey & Stuzer, 2002). However, there are few empirical studies targeting the relationship between globalization and individual happiness, and the study objectives are mostly macro-analysis and aggregate data. Tsai (2007) carries out a relatively thorough study on the influence of globalization on individual quality of life and conducts a detailed analysis of its founctional mechanisms. However, Tsai's study did not discuss the relationship between globalization and individual happiness directly. With cross-country macro data, Tsai (2009) finds the evidence that economic globalization is enhancing individual happiness. With partial solutions to the access of data, there have been studies which examine the relationship between economic globalization and happiness with micro-data. The relationship between economic globalization and the happiness is sentitive to sample selection to a great degree. With the data of a survey conducted among OECD countries between 1975 and 1997, Di Tella and MacCulloch (2008) find evidence that globalization has a negative effect on personal happiness. Empirical research based on micro-data of a sample consisting of 70 countries done by Bjornskov, Dreher and Fischer (2008) shows that economic globalization has a positive effect on the improvement of individual happiness.

The study most similar to this paper is done by Xin & Smyth(2010), who have analyzed the data of 30 provinces of China in 2003 and find that there is a relatively low happiness in regions with high degree of globalization. They explains that this is due to intensified economic fluctuation and comparatively insufficient social security in such areas. Regrettably, their explanation is descriptive and lacks convincing empirical evidence. Meanwhile, their study adopts a province-level index for the core explanatory variable—economic globalization. The degree of globalization vary greatly in Chinese provinces, therefore, a province-level index can hardly capture the real status of globalization precisely. This paper employs the data from CGSS 2008, which covers the index showing the degree of globalization in prefecture-level cities. Thus, this study can more precisely reflect the influence of globalization on individual happiness as well as its transmission mechanisms.

This study finds that economic globalization has enhanced individual happiness mainly through improving livelihood in China. In our sample, economic globalization plays a positive role in reducing inflation and unemployment, increasing household income, improving physical condition, and narrowing the gap between the rich and the poor, which would obviously promote individual happiness. This conclusion is not affected by the bias of sample seletion, self-selection or endogeneity. This paper may contribute in two aspects. Firstly, we combine literatures of international economics and happiness economics to study the influence of economic globalization

on individual subjective well-being and its transmission mechanisms. The literature in international economics summarizes the influences of economic globalization on macroeconomic variables such as unemployment, inflation, the wealth gap, as well as individual features like income and health; whereas studies of happiness economics reflect varied effects of the above macro-variables and micro-variables on happiness. However, few studies combine these two in seeking the influence of economic globalization on happiness, nor supported it with empirical evidences. This paper is an early attempt. Secondly, this study adopts the micro-data of China—the largest economy in transition to explore the influence of economic globalization on happiness and examines its transmission mechanisms in an empirical ways. At present, the focus of happiness study has started to move from developed countries to economies in transition. This paper will shed light on the understanding of existing literature in happiness economics. Besides, this paper has important application value. The report of the 18th CPC National Congress set the well-being of its citizens as the goal of the ruling Party. Exploring the influence of economic globalization on Chinese individual happiness and its operation mechanism is of practical significance for raising the quality of economic growth, improving the construction of a harmonious society and realizing the Chinese dream.

## 2. Model, variable and data

### *2.1. Model setting*

Following the studies of Di Tella (2003), this paper employs an ordered probit model to examine the relationship between economic globalization and individual happiness. The model is detailed as follows:

$$Happy_{ij}=\alpha+\beta open_i+\theta macro_i+\lambda micro_{ij}+u_{ij} \quad (1)$$

In this model, $open_i$ represents the degree of economic globalization of city number $i$; $macro_i$ and $micro_{ij}$ are vectors, the former representing macro-economic variables such as inflation and unemployment rates in city number $_i$ and the latter denoting individual features such as family income per capita, health condition and marital status of interviewee number $j$; explained variable $Happy_{ij}$ is the subjective happiness of interviewee number $j$ in city number $i$. The survey question is "Generally speaking, are you happy?" Interviewees are supposed to choose between 1 and 5, 1 meaning very happy and 5 very unhappy. The conception of happiness in CGSS 2008 is the same as that of CGSS 2003, CGSS 2005, and CGSS 2006. For better expression, the result of six minus the answer of the interviewee is the value $Happy_{ij}$. Therefore, 5 means very happy and 1 very unhappy. When $Happy_{ij}^{*}$ is lower than marginal value

($C_1$), the interviewee is very unhappy; when $Happy_{ij}^*$ is between $C_1$ and marginal value $C_2$, the interviewee is unhappy; in like manner, when $Happy_{ij}^*$ is higher than marginal value $C_4$, the interviewee is very happy. As $Happy_{ij}$ is a latent variable, the marginal values can not be observed directly. But $Happy_{ij}^*$ can be obtained from the answers of interviewees. When the interviewee's answer is "very unhappy", $Happy_{ij}$ is 1, and when the answer is "very happy", $Happy_{ij}$ is 5. It can be shown as follows:

$Happy_{ij}=1$, if $Happy_{ij}^*<C_1$
$Happy_{ij}=2$, if $C_1<Happy_{ij}^*\leq C_2$
…
$Happy_{ij}=5$, if $C_5\leq Happy_{ij}^*$

In Model(1), suppose $u_{ij}$ is standard normal distribution. If $\Phi(\cdot)$ represents the cumulative distribution function, it can be shown as follows:

$\Pr(Happy_{it}=1)=\Phi(C_1-X\beta)$
$\Pr(Happy_{it}=2)=\Phi(C_2-X\beta)-\Phi(C_1-X\beta)$
…
$\Pr(Happy_{it}=5)=1-\Phi(C_5-X\beta)$

By constructing the likelihood function of each answer (from 1=very unhappy to 5=very happy) and the method of maximum likelihood, parameters $\alpha$、$\beta$、$\theta$ and $\gamma$ are obtained. As long as error and explained variable are mutually independent, the above parameters are consistent estimators (Wooldridge, 2010).

### *2.2. Source of data and variable description*

The data for this study are from the CGSS (China General Social Survey), a project jointly operated by the Department of Social Sciences of Renmin University of China and the Institute of Social Science Surveys at the Hong Kong University of Science and Technology. The project started in 2003 and had been carried out four surveys. This paper adopts the latest data issued in 2008. All the information involved in survey sampling comes from the 5th population census. The sample was obtained by stratified sampling according to the respective proportions in the entire population. The strata of the sample consists of district (county), block (town), community (village), household, and individual. The sampling covers 82 prefecture-level-and-above cities, excluding Tibet, Qinghai, Ningxia, Hong Kong, Macau, and Taiwan. 6000 observations are obtained, among which 45 interviewees answer "not applicable" to the survey question "How much was your total family income in 2008," 174 answer "not known," and 128 give no answer. Thus the total number

of effective observations is 5653, 3183 (56.31%)from urban citizens and 2727 from male citizens (48.38%).

Table 1
Descriptive statistics of variables

| Variable | Description of Variable | Mean | SD | Minimum | Maximum |
|---|---|---|---|---|---|
| Variables reflecting individual features of interviewees | | | | | |
| Happiness | 1—very unhappy, 5—very happy | 2.74 | 0.92 | 1 | 5 |
| Age | years old | 43.113 | 13.189 | 18 | 70 |
| Self-assessed health condition | 1—very unhealthy, 5—very healthy | 3.68 | 1.04 | 1 | 5 |
| Social status | 1—the top level, 10—the lowest level | 6.40 | 1.96 | 1 | 10 |
| Household income per capita | yuan/year | 11930.97 | 33877.6 | 100 | 1200000 |
| Change of social level compared with 10 years ago | the number of social level of 10 years ago minus the number of the present | 0.46 | 1.73 | -9 | 9 |
| Registered residence | proportion: urban citizens(56.31%), rural citizens (43.69%) | | | | |
| Gender | proportion: male (48.38%), female (51.62%) | | | | |
| Marital status | proportion: married (84.06%), single (10.82%), divorced (1.61%), widowed (3.18%) | | | | |
| Education | proportion: primary education and below (32.86%), secondary education and vocational education (52.52%), higher education and above (14.62%) | | | | |
| Employment condition | proportion: employed (67.27%), unemployed (5.23%), retired (15.61%), never employed (11.89%) | | | | |
| Variables concerning location of interviewees | | | | | |
| Economic globalization | import + export volume/GDP (city-level) | 0.296 | 0.501 | 0.001 | 2.668 |
| Inflation rate | annual CPI (province-level) | 0.061 | 0.010 | 0.046 | 0.085 |
| Unemployment rate | registered unemployment rate (province-level) | 0.037 | 0.005 | 0.018 | 0.046 |
| Economic inequality | GINI coefficient (county or district level) | 0.384 | 0.131 | 0.21 | 0.70 |

Source: CGSS2008, *China Statistical Yearbook(2009)* and *China Statistical Yearbook for Regional Economy (2009).*

The data of inflation rate and unemployment rate in this paper are from *China Statistical Yearbook* (*2009*); the data of import and export volumes of different cities are from the *China Statistical Yearbook for Regional Economy* (*2009*)*;* the data of total GDP of cities are from *China City Statistical Yearbook* (*2009*)*;* the data reflecting individual features such as interviewees' sex, age, health condition, and marital status are from CGSS2008. Table 1 shows descriptive statistics of individual features such as interviewees' age, family income, and health condition—as well as the macroeconomic status, such as the degree of economic globalization and inflation rate of their respective locations.

## 3. Preliminary conclusions

### *3.1. Preliminary analysis*

Table 2 reports the estimated results of the ordered probit model of the relationship between economic globalization and personal happiness. The common control variables in the empirical analysis of happiness economics usually include macroeconomic variables such as the inflation rate and unemployment rate, as well as individual features like marital status and health conditions. According to Angrist & Pischke (2009), there are three types of control variables. The first type is variables affected by interested variables (economic globalization in this paper). Controlling such variables will cause bias in estimating the effect of explaining variable. This study focuses on economic globalization, which directly affects macroeconomic variables such as inflation rate and unemployment rate and may exert indirect influence on individual features such as income, health, and unemployment through affecting the macroeconomy. Controlling these variables will underestimate the influence of economic globalization on individual happiness(the common macro and micro variables in previous studies are listed below to examine the robustness of the estimated results). The second type is variables which are irrelevant to interested variables. For example, variables such as marital status and education level in this article are not directly related to economic globalization and controlling them has no effect on the unbiasedness and consistency of the estimate. Third, there are variables which influence both interested variables and dependent variables. Failing to control such variables can lead to severe biases in the estimate of interested variables. This paper focuses on the third type of variables and the results are reported in Table 2.

Table 2
Economic globalization and individual happiness: preliminary conclusions

| | Full sample (1) | Full sample (2) | Full sample (3) | Top 10 economically-globalized cities excluded (4) | Last 10 economically-globalized cities excluded (5) | Residents with urban household registration (6) | Residents with rural household registration (7) |
|---|---|---|---|---|---|---|---|
| Trade/GDP | 0.115*** (0.039) | 0.165*** (0.064) | | 0.480* (0.288) | 0.164** (0.064) | 0.134* (0.077) | 0.216** (0.092) |
| Export/GDP | | | 0.364*** (0.112) | | | | |
| Provincial fixed effect | NO | YES | YES | YES | YES | YES | YES |
| Observations | 5637 | 5637 | 5637 | 4785 | 4952 | 3183 | 2454 |

Note: The robust standard errors are presented in the brackets, which are adjusted by city-level. *, ** and *** mean statistical significance at 10%, 5% and 1% respectively.

Column (1) in Table 2 shows a higher happiness on average in regions with a higher degree of economic globalization, with the significance level of 1%. Historical and cultural factors may be the common causes between more happiness and higher degree of globalization in regions (P. F. Ni, Q. B. Li & C. Li, 2012). In order to control such invisible factors, a provincial fixed effect variable was added. The result in Column (2)[1] shows that the index of economic globalization on individual happiness is 0.165 ($p$<0.01) after controlling provincial fixed effect. This indicates that the highly positive correlation between economic globalization and individual happiness is not dominated by invisible historical and cultural factors. Other indexes are also adopted to measure the degree of economic globalization in China. In Column (3) the degree of globalization is described by the proportion of export volume in GDP.[2] This result also shows high-positive correlation between economic globalization measured by the proportion of export volume in GDP and individual happiness ($p$<0.01).

The relationship between economic globalization and individual happiness is not affected by sample selection. In order to examine whether the relationship between economic globalization and individual happiness is dominated by the observations from specific cities, we delete the observations from the top 10 and last 10 cities measured by economic globalization, and the results are reported in Columns (4) and (5). There has long been huge economic and social differences between urban and rural areas in China, which may cause varied understanding of happiness between urban and rural citizens (Hu & Lu, 2012). The observations are divided into urban and rural samples according to the registration to examine the influence of economic globalization on individual happiness. The results presented in Columns (6) and (7) show that the coefficient of economic globalization on individual happiness is 0.473 after eliminating the top 10 prefecture-level cities, and the significance level drops sharply ($p$ = 0.096). A possible explanation is that the highest degree of globalization of cities other than the top 10 most globalized cities, such as Beijing, Shanghai, Shenzhen, and Tianjin, is only 0.41. The deviation of the interested variable—the degree of economic globalization—among the rest of cities in the sample becomes small, which leads to a higher standard error of estimates, and makes the statistical inference less efficiency. In all the other samples, economic globalization has a positive effect on individual happiness with the significance level of at least 10%.

[1] One defect of Ordered Probit Model is the incomparability of coefficients among different models. The focus of this paper is the relative degree of coefficients and their level of significance.

[2] Along with the general long-term trade surplus in international trade, there are cases in which import is larger than export, for instance, the import in 2008 was four times as much as the export(214.3 billion U.S. dollars and 51.7 billion U.S. dollars respectively). Different trade patterns have varied effects on individual happiness.

### *3.2. Self-selection, economic globalization, and individual happiness*

The highly positive correlation between economic globalization and individual happiness may be the result of self-selection bias. An individual citizen has little effect on the degree of globalization of the city they live in. However, at least some people can choose where to live in China, though household registration management is strict. Individuals who have a higher happiness are more likely and willing to move to more economically globalized cities. Thus, this could contribute to the positive correlation between economic globalization and individual happiness.

How to eliminate self-selection bias is a difficult issue. One way is to adopt only the observations of residents who have lived in a certain place since birth. But this still cannot eliminate self-selection bias because it is also the self-selection of these individuals to stay in their place of birth. Even though the data of consistent observation of individuals are available, it is hard to identify who moves among places with different degrees of economic globalization without a time span long enough. Thus, the cause-and-effect relationship between economic globalization and individual happiness can not be inferred.

Table 3
Early character, economic globalization, and individual happiness

| Control variable—character or attitude at the age of 14 | Once the study goal is made, I am sure I can achieve it (1) | Generally speaking, I can do as well as others (2) | Although it takes a long time to see the achievements, I can maintain good performance (3) | I get along well with others (4) | I think that things related to study are always under control (5) |
|---|---|---|---|---|---|
| Trade/GDP | 0.197*** | 0.189*** | 0.191*** | 0.189*** | 0.199*** |
| | (0.061) | (0.062) | (0.061) | (0.054) | (0.059) |
| control group: totally disagree | | | | | |
| Totally agree | 0.475*** | 0.445*** | 0.121 | 0.495*** | 0.221** |
| | (0.148) | (0.155) | (0.109) | (0.161) | (0.102) |
| Agree | 0.298** | 0.309** | 0.0250 | 0.350** | 0.142 |
| | (0.143) | (0.152) | (0.098) | (0.147) | (0.090) |
| Disagree | 0.110 | 0.0580 | -0.123 | 0.193 | -0.0110 |
| | (0.160) | (0.154) | (0.099) | (0.132) | (0.087) |
| Unable to select | -0.144 | -0.0790 | -0.423*** | -0.0330 | -0.270*** |
| | (0.156) | (0.165) | (0.117) | (0.156) | (0.104) |
| Provincial fixed effect | YES | YES | YES | YES | YES |
| observations | 5636 | 5636 | 5637 | 5637 | 5637 |

Source: The same as Table 1.

Fortunately, CGSS 2008 offers data of character and attitude at the age of 14 of interviewees. The variable questions are in the form of "do you agree that…" The options for answers are "totally agree"—1 to "totally disagree"—4 and "unable to select"—5. The options for answer are translated as a series of dummy variables and "totally

disagree" is set as the controlled group. There is evidence that character and attitude are determined by genetics to a large extent and thus are rather stable (Weiss & Bates, 2008). It is taken in this paper as the proxy variable of interviewees' happiness at an early stage. For argument conveniently, five positive questions are chosen from the questionnaire, and answers to the five questions are used to describe interviewees' happiness.[1]

The results shown in Table 3 suggest that economic globalization still has a positive influence on individual happiness after a series of variables reflecting interviewees' early character and attitude were included. This coefficient is statistically significant at the level of 1% at least. It can be seen in general that individuals who were confident, persevering, agreeable, and could complete education plans on time are happier in adulthood. There is no intention in this paper to explore the influence of early character and attitude on a happiness later in life. The results in Table 3 merely indicate that the positive and significant influence of economic globalization on individual happiness is not changed after the limited variables reflecting interviewees' early character and attitude were controlled. In other words, the positive correlation between economic globalization and individual happiness is not affected by self-selection bias.

Wooldridge(2010) summarizes three sources of endogeneity: (1) reverse causality, (2) missing variables, (3) measurement error in explanatory variables. The above discussion has excluded the first two causes. What to be discussed next is the influence of measurement error in economic globalization on estimated results. It is known that there are severe misdeclarations in Chinese imports and exports due to high import tariffs and export rebates for certain goods. If the error in explanatory variables presents normal distribution around the true value, the OLS estimate will be lower, which results in an underestimated coefficient (Wooldridge, 2010). Despite the possible underestimation, the coefficient of economic globalization in this paper remains significantly above 0. In other words, the underestimation of coefficient caused by error has no effect on the general conclusion of this paper.

## 4. Analysis of the transmission mechanism

### *4.1. Economic globalization and individual happiness: analysis of control variables*

Table 4 reports the estimated results of the relationship between economic globalization and individual happiness after a series of macro-variables and variables reflecting individual features are controlled. Column (1) shows that residents in regions with a higher degree of economic globalization have a higher happiness when common variables in happiness economics such as sex, family income per capita,

[1] Answers of 5 other questions are also used to describe the interviewees'earlier happiness, and the estimated results are consistent with the results from the 5 questions concerning the control variable—early character and attitude.

employment status, marital status, health conditions, and the wealth gap are added. In Table 4, the influence direction of control variables such as sex, age, marital status, health condition, employment status, and the change in social status on individual happiness is basically consistent with existing literature. We do not have any interest to explore the operating mechanism of these variables on individual happiness. Results in Column (1) merely indicate that after variables reflecting individual features of interviewees and inequality in economic distribution among different locations are controlled, economic globalization still positively and significantly affects individual happiness ($p$=0.011).

Table 4
Economic globalization and individual happiness: analysis of control variables

| | Full sample (1) | Full sample (2) | Excluding top 10 economically globalized cities (3) | Excluding last 10 economically globalized cities (4) | Residents with urban household registration (5) | Residents with rural household registration (6) |
|---|---|---|---|---|---|---|
| Trade/GDP | 0.179*** | 0.016 | -0.155 | 0.007 | 0.009 | 0.067 |
| | (0.068) | (0.045) | (0.229) | (0.048) | (0.045) | (0.060) |
| Family income per capita | 0.0110 | 0.008 | 0.005 | 0.007 | 0.007 | 0.006 |
| | (0.008) | (0.008) | (0.009) | (0.009) | (0.011) | (0.010) |
| Female | 0.124*** | 0.120*** | 0.108*** | 0.126*** | 0.165*** | 0.08 |
| | (0.031) | (0.031) | (0.034) | (0.033) | (0.042) | (0.050) |
| Age | -0.056*** | -0.056*** | -0.058*** | -0.055*** | -0.067*** | -0.038*** |
| | (0.008) | (0.008) | (0.009) | (0.008) | (0.012) | (0.011) |
| Square of age | 0.001*** | 0.001*** | 0.001*** | 0.001*** | 0.001*** | 0.001*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Social status | -0.153*** | -0.149*** | -0.158*** | -0.148*** | -0.153*** | -0.147*** |
| | (0.016) | (0.016) | (0.015) | (0.017) | (0.019) | (0.020) |
| Change of social status compared with 10 years ago | 0.028** | 0.032** | 0.029** | 0.031** | 0.042** | 0.020 |
| | (0.012) | (0.013) | (0.013) | (0.013) | (0.016) | (0.016) |
| Economic unequality | -0.0390 | -0.00900 | 0.0770 | 0.0510 | -0.329* | 0.495 |
| | (0.188) | (0.170) | (0.244) | (0.173) | (0.184) | (0.304) |
| Inflation rate | | -4.871 | -6.203* | -6.058* | -4.084 | -7.459* |
| | | (3.203) | (3.405) | (3.400) | (3.258) | (4.391) |
| Unemployment rate | | 3.496 | -1.724 | 2.657 | 3.874 | 2.104 |
| | | (4.398) | (6.849) | (4.547) | (3.918) | (8.697) |
| Character at the age of 14 | YES | YES | YES | YES | YES | YES |
| Provincial fixed effect | YES | NO | NO | NO | NO | NO |
| Observations | 5343 | 5343 | 4526 | 4702 | 3017 | 2326 |

Note: The control variable of character in all the regression equation in this Table is "in general I can do as well as others"; variables of marital status, self-assessed health condition, education level, employment status are also controlled, but the results are not listed here in order to save space. They are available on request.

The numbers in the brackets are standard errors of city-level robustness. *, ** and *** mean the statistical significance of 10%, 5% and 1% respectively.

Two macroeconomic variables—inflation rate and unemployment rate—are added in Column (2). Literature in happiness economics generally believes that inflation and unemployment have significant influence on individual happiness (Di Tella et al., 2003). As only provincial-level data are available for these two variables, the provincial fixed effect is not controlled any more in Column (2). It is worth pointing out that in China there is currently no similar standard national unemployment report system to that of developed countries. China's statistical yearbooks issue only unemployment registered in towns, which is highly controversial (Ren, 2013). Thus, we should be very careful in explaining index and significance levels related to unemployment rates. The results in Column (2) show that after inflation rates and unemployment rates are added, the consistently significant coefficient of economic globalization reduces to nearly 0 and fails to pass the 10% significance level statistical test. The possible reason for this is that inflation and unemployment are highly correlated to economic globalization as macroeconomic variables. In other words, economic globalization may indirectly influence individual happiness through inflation and unemployment. The operation mechanism and channels of economic globalization affecting individual happiness will be discussed below.

The conclusion that there is an insignificant influence of economic globalization on individual happiness after inflation and unemployment are controlled, and has not been affected by the choice of samples. The results in Column (3) to Column (6) indicate that the influence of economic globalization on individual happiness in all the subsamples is not significant after inflation and unemployment are controlled. We also notice that inflation and unemployment fail to pass the significance testing. What's more, some coefficient signs do not meet the expectations. The possible explanation is that many controlled variables lead to severe multicolinearity. Therefore, an attempt is made to reduce the number of independent variables; economic globalization, inflation rate, and unemployment rate are three remaining independent variables and the results are reported in Table 5.

Table 5 shows that when the inflation rate and unemployment wate are the only controlled variables, whether in entire sample or subsamples, the influence of economic globalization on the individual happiness still failed to pass the statistical test of a 10% significance level. In all the subsamples except the sample of urban citizens (p=0.16), inflation rate significantly reduced individual happiness. When the observed value from the top ten economically globalized cities are eliminated, unemployment rate has significantly negative influence on individual happiness ($p$=0.089); but in other subsamples, the negative influence of the unemployment rate on happiness does not pass the statistical test at the 10% significance level.

Table 5
Inflation, unemployment, and individual happiness

| | Full sample (1) | Full sample (2) | Excluding top 10 economically globalized cities (3) | Excluding last 10 economically globalized cities (4) | Residents with urban household registration (5) | Residents with urban household registration (6) |
|---|---|---|---|---|---|---|
| Trade/GDP | 0.105*** | 0.0670 | 0.258 | 0.0460 | 0.0430 | 0.0240 |
| | (0.040) | (0.047) | (0.261) | (0.049) | (0.045) | (0.083) |
| Inflation | | -6.964* | -9.290** | -8.442** | -4.742 | -8.907* |
| | | (3.667) | (4.003) | (3.915) | (3.393) | (4.849) |
| Unemployment rate | | -4.310 | -14.751* | -4.814 | -0.614 | -13.72 |
| | | (4.450) | (7.884) | (4.527) | (3.422) | (8.891) |
| Character at the age of 14 | YES | YES | YES | YES | YES | YES |
| Provincial fixed effect | YES | NO | NO | NO | NO | NO |
| Observations | 5636 | 5636 | 4693 | 5118 | 3182 | 2454 |

### *4.2. Analysis of the influence of economic globalization on inflation, unemployment and wealth gap*

Inflation, unemployment and the gap between the rich and the poor are generally regarded in happiness economics as important factors affecting individual happiness(Di Tella et al., 2003). There are also literatures which hold that economic globalization may influence macro-variables like inflation, unemployment and the wealth gap, as well as individual features such as family income and health condition(Dreher et al.,1990). Thus, quantitative inspection will be carried out below to examine the influence of economic globalization on such macro-variables and individual features in the sample period. As mentioned earlier, this paper draws upon the work of Tsai(2007) and summarizes in Figure 1 the possible operation mechanisms of economic globalization's effect on individual happiness.

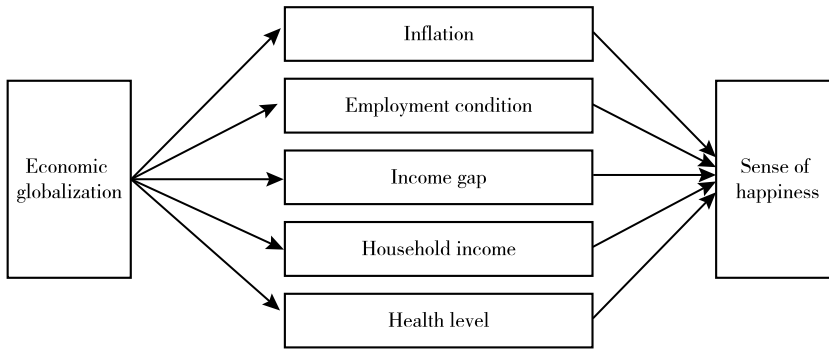


*Figure 1.* The possible operation mechanism of economic globalization affecting individual happiness

As mentioned above, the influence of economic globalization on macroeconomic factors such as inflation, unemployment, the wealth gap, and on individual factors like family income and personal health is uncertain theoretically. Economic globalization dominated by international trade and cross-border investment may reduce production costs and inflation by improving productivity (Dixit & Stigliz, 1977); in the mean time, however, a highly open entity may import inflation more easily(Rodrik, 1999). Departments with a comparative advantage may increase employment and employees' incomes by expanding production to explore overseas markets (Firebaugh, 2004); at the same time, though, large amounts of inexpensive imported goods may increase the risk of unemployment for those in comparatively disadvantaged industries (Dixit & Norman, 1980), and further enlarge the wealth gap. Economic globalization may help to increase fiscal revenue so that the government can improve the social security system and increase health care expenditures, which is beneficial to relieving unemployment and inflation, and improving the health of the citizens (Rodrik, 1999); in the meantime, economic globalization may intensify economic fluctuation and increase social risks, which may cause a fiscal deficit, and the incomplete market-oriented reform of medical systems may deteriorate the health conditions of citizens (Pestras & Veltmeyer, 2001).

Table 6
Analysis of the operation mechanism of economic globalization affecting individual happiness: OLS results

| Dependent variable | Inflation rate | Unemployment rate | Economic unequality | | Household income per capita | | Health condition | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Trade/GDP | -0.003* | -0.004 | -0.083** | -0.081 | 0.794*** | 0.636*** | 0.192*** | 0.156* |
| | (0.002) | (0.003) | (0.032) | (0.049) | (0.126) | (0.237) | (0.067) | (0.088) |
| Provincial fixed effect | NO | NO | NO | YES | NO | YES | NO | YES |
| Character at the age of 14 | NO | NO | NO | NO | YES | YES | YES | YES |
| Observations | 5637 | 5637 | 5637 | 5637 | 5343 | 5343 | 5637 | 5637 |
| adjustment $R^2$ | 0.02 | 0.13 | 0.10 | 0.57 | 0.02 | 0.09 | - | - |

Note: Column(1)—Column(6) are the estimated results of OLS; column (7) and (8) are the estimated results of Ordered Probit.

Source: CGSS 2008.*China Statistical Yearbook (2009),*and *China Statistical Yearbook for Regional Economy (2009).*

Table 6 reports the influence of economic globalization on the macro-variables such as unemployment rate, inflation rate and the wealth gap, as well as on individual features such as family income and health conditions. The results show that in the sample period, economic globalization has reduced inflation and unemployment rates, narrowed the gap between the rich and the poor, and raised family income per capita, and is beneficial to the health condition of citizens. However, the unemployment rate fails to pass the statistical test of 10% significance level. One possible reason

is that only the registered unemployment data in cities and towns are accessible for the variable of unemployment, in which there may be huge error. Therefore, the real employment status in China can not be pictured merely with this variable.

It is generally believed in the mainstream literature of happiness economics that unemployment rate, inflation rate and the gap between the rich and the poor have remarkable negative effects on individual happiness (Di Tella et al., 2001; Lu & Wang, 2011). Results in Column (1) to Column (4) of Table 6 indicate that, on average, a higher degree of economic globalization reduces inflation and unemployment and narrows the wealth gap, which can obviously enhance the individual happiness. The positive effect of higher family income and good health conditions on individual happiness receives support from the empirical studies of happiness economics (Frey & Stuzer, 2002). Results in Column (5) to Column (8) show that a higher degree of economic globalization increases family income and improves individual health conditions, which undoubtedly will strengthen the happiness.

If the observed value of prefecture-and-lower-level cities can be obtained for dependent variables, we report at the same time the estimated results after provincial fixed effects are controlled. The influence of economic globalization on the wealth gap, family income per capita, and health conditions do not change much after provincial fixed effects are controlled, but its influence on the wealth gap becomes insignificant at the 10% significance level. One possible reason is that income difference at the provincial level is a major part of the income difference at county level (Hong, 2009).

### *4.3. Endogeneity*

When studying the influence of economic globalization on macro-variables such as inflation rate, unemployment rate and the Gini Coefficient, the possible bilateral causality between dependent variables and independent variables can not be excluded. Meanwhile, there are factors of third party involvement which affect both economic globalization and macro-variables. These two situations can both cause correlations between explanatory variable and residual terms, and lead to endogeneity. One solution to this is to find an instrumental variable which indirectly works on macro-variables such as inflation, unemployment, and the wealth gap through economic globalization and has no other directly or indirectly influential approaches. Drawing on the thinking of Ma (2011), we choose the distance from cities at prefecture level and above to the closest port as the instrumental variable of economic globalization.

Specifically, 18 ports are chosen according to the website of the Ministry of Transportation of the People's Republic of China. Then we calculate the distance from the prefecture-level-and-above city to the closest port and set it as the instrumental variable of the degree of economic globalization of the city. The distance between a

city and the closest port measures the resistance force to international trade through ocean transport.[1] China's traffic data from 1996 to 2009 indicate that over 70% of domestic freight is through road transport, and railway and waterway transport take up about an equal proportion in domestic freight transport. Usually roads from a city to the closest port go through other provinces and their construction is under the planning and coordination of the central government. Therefore, the distance from a specific place to the closest port is an exogenous variable(Ma & Xie, 2013).

Table 7

Analysis of the operation mechanism of economic globalization affecting individual happiness: 2SLS results

| Dependent variable | Individual happiness (1) | Inflation rate (2) | Unemployment rate (3) | Family income per capita (4) | Wealth gap (5) | Health condition (6) |
|---|---|---|---|---|---|---|
| Trade/GDP | 0.249* (0.131) | -0.015** (0.007) | -0.011** (0.005) | 1.594*** (0.572) | -0.227** (0.093) | 0.613*** (0.233) |
| Character at the age of 14 | YES | NO | NO | NO | NO | NO |
| The first stage F-value | 9.23 | 9.22 | 9.22 | 8.83 | 9.22 | 9.23 |
| Observations | 5637 | 5637 | 5637 | 5343 | 5637 | 5636 |

Note: The instrumental variable is the distance from cities at prefecture level and above to the closest port.

Source: CGSS2008. *China Statistical Yearbook(2009)* and *China Statistical Yearbook for Regional Economy (2009)*.

Table 7 shows the estimated results of 2SLS of economic globalization on individual happiness and macro-variables such as inflation rate, unemployment rate and the Gini coefficient, as well as on micro-variables like family income and personal health. Column (1) show that improved economic globalization has remarkably strengthened individual happiness after endogeneity is controlled ($p$=0.06). Columns (2) to (6) indicate that improved economic globalization could help to reduce inflation rate and unemployment rate, narrow the gap between the rich and the poor, and improve the health conditions of the citizens, which are all beneficial to individual happiness.

## 5. Conclusions

Economic globalization is a featured fact in China's rapid growth. There are studies which have examined the influence of economic globalization on different dimensions of Chinese society, such as capital formation, technology spillover, institutional change and so on. However, there has been little research exploring the effect of

[1] For border cities in the west such as Bortala Mongol Autonomous Prefecture in Xinjiang Uygur Autonomous Region, the distance to the closest railway hub is taken as the instrumental variable.

economic globalization on the subjective well-being of Chinese residents. This paper quantitatively examines the influence of economic globalization on individual happiness in China and further explores its mechanisms of influence and functional channels.

Economic globalization promotes individual happiness through improving their livelihood. After regional fixed effects and self-selection effects are controlled for, citizens in more open region were happier, and it is statistically significant. This conclusion is not affected by sample seleticon or endogeneity. The influence of economic globalization on individual happiness is mainly indirect. Once factors such as inflation and unemployment are controlled, the influence of economic globalization on the individual happiness became insignificant whether considered from the perspective of either economics or statistics. Economic globalization influences individual happiness mainly through improving family income and health conditions, reducing inflation and unemployment rates, as well as narrowing the gap between the rich and the poor.

We should take full advantage of economic globalization to promote individual happiness. It is known to all that China's export-oriented economy has received much controversy. Thus, it is hard to promote individual happiness merely with economic growth. As the results of this study reveal, economic globalization generally influences individual happiness by affecting their livelihood. The Chinese government should pay much more attention to the vulnerable groups, while orderly advancing economic globalization, increasing national wealth, and improving individual livelihood. It is worth pointing out that it doesn't indicate restriction to the process of economic globalization because giving up a comparative advantage will only lead to universal social poverty. One possible solution to relieve the negative effects of economic globalization is to improve livelihood with increased fiscal revenue. First, a complete social security system covering all citizens should be built so as to buffer the possible negative influences brought on by unemployment and inflation. Second, improving the proportion of expenditures on medical care and education to meet individual needs for good health and education. Third, exploring compensation mechanisms and strengthening reemployment training for workers in departments vulnerable to economic globalization.[1] Only when efforts are made in the above aspects will every Chinese citizen enjoy the benefits of economic globalization and live in dignity and further achieving the ultimate goal of improving individual happiness.

[1] The mutually beneficial Cross-Strait Service Trade Agreement arose controversy among some people in Taiwan lately. One important reason is Chinese Taiwan authority failed to issue detailed compensation plans for people that suffered from it.

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