

Beliefs and Economic Growth: Cross-National Evidence Based on the World Values Survey (WVS)

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Abstract: This paper is concerned with the relationship between beliefs and economic performance and explains the differences of country performance in global economic growth over the past two decades based on the composite belief index comprising the beliefs on trust, social justice, competition and work-leisure. By influencing personal motivations, beliefs shape society and the institutions and policies of a country in the form of collective ideology. Beliefs demonstrate great differences across countries and change with time, which helps explain the country and intertemporal differences of growth. This paper also found that China's composite belief index is very high, which helps explain China's economic growth miracle.

Key words: belief, cultural, economic growth, World Values Survey (WVS).

JEL Classification: Z10, O47, Z13

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1. Introduction

In the field of economics, one of the most exciting topics is the fundamental causes of economic growth. Among a multitude of economic theories, from classic growth theory that attributes different per capita incomes to different paths of factor accumulation (Solow, 1956; Cass, 1965; Koopmans, 1965) to the endogenous new growth model that introduces technology innovation, specialisation and human capital (Romer, 1986, 1990; Lucas, 1988; Grossman and Helpman, 1991; Aghion and Howitt, 1992), none of these theories has succeeded in offering an answer that fundamentally explains both how the economy grows in the long-term and how growth varies across countries. Subsequent literature explored the fundamental factors behind economic growth, such as the origin of law (Glaeser and Shleifer, 2002; La Porta *et al.*, 2008), institutional quality (Hall and Jones, 1999; Acemoglu *et al.*, 2001, 2002; Glaeser *et al.*, 2004) or geological factors (Sachs, 2003).

Culture is also considered as a fundamental cause of growth differences (Granato *et al.*, 1996; Guiso *et al.*, 2006; Tabellini, 2008, 2010; Algan and Cahuc, 2010). A natural explanation is that countries with different ethnicities boast different cultures that determine the values, preferences and beliefs of individuals and the society as a whole, which in turn play a pivotal role in the economic performance of countries (Acemoglu *et al.*, 2005). However, culture is a broad and inexact concept and the same culture may contain both positive and negative elements for growth. In fact, most literature concerned with the cultural influences on economic growth defines culture in the narrow sense encompassing by only taking up a couple of key elements (e.g. Granato *et al.*, 1996; La Porta *et al.*, 1997; Knack & Keefer, 1997; Barro & McCleary, 2003).

Beliefs and culture are closely correlated with each other but are not concepts at the same level. To some extent, culture is the shared belief system of a community but the cultural background also shapes the beliefs of its members. Dominant beliefs of the members of a social community may induce institutional change, production and trade. The origin of industrialization in Western Europe was a set of worldviews embedded in the Protestant doctrine (Weber, 1930). Culture engenders beliefs on the appropriateness of human behavior, which may change the result of equilibrium in a given institutional environment (Greif, 1994). This view is echoed by Landes (1999), who believes that the rise of the Western world originated from a host of beliefs on how the world and human behavior will reshape the world. These theories all lend credence to the view that the mainstream beliefs of a country or regional community are a key determinant of its economic development.

Beliefs play an important role in individual decisions at the micro level as well as economic performance at the macro level. Beliefs on work, competition, trust and social justice determine not only individual incentives but the realization of macroeconomic policies. These beliefs demonstrate remarkable country differences and, over time, constitute the key drivers of cross-national and intertemporal differences of economic performance. We have selected four belief variables with great economic significance from the World Values Survey (WVS), including trust, social justice, competition and work-leisure and created a composite belief index to measure the differences of countries in those economic related beliefs. This approach offers a new perspective that enriches the already diverse

theories on growth and development.

In particular, previous explanations on China's growth miracle rarely mentioned the beliefs of the Chinese people. Based on our analysis of WVS data, the level of trust in China ranks the fourth among 87 surveyed countries and regions, next only to England, Sweden and Denmark¹. In addition, more than 72% of Chinese respondents believe that hard work brings about a better life and the number of people who believes that work is more important than leisure is six times greater than those who think otherwise ; 81.5% of Chinese respondents believe that work is a social responsibility. All these numbers are far higher than in the United States². China's composite belief index ranks the second in the world, which may play as a key driver of China's rapid economic growth.

2. Beliefs and Economic Performance: Paths of Interplay

Beliefs are a broad concept with different connotations in economics. Based on Aoki's (2011) classification of beliefs in economics, this paper is primarily concerned with "cultural beliefs", i.e. a set of shared beliefs or ideas for a specific community, and "values or moral convictions", i.e. perceptions that people consider are justifiable and appropriate. Beliefs take root in the heart of every person and are embedded in the cultural gene of a nation or ethnicity. While people may hold completely different approaches to life and world views, each nation or ethnicity as a whole demonstrates consistent propensities and the average level of beliefs varies across countries (e.g. Suhrcke, 2001).

To explain why such significant differences of beliefs exist and what their effects on economic performance are, we must answer two important questions. First, what is the origin of beliefs? Second, will beliefs change over time? The origin of beliefs and changes in beliefs are essential to understand the relationship between beliefs and economic growth. According to Bisin & Verdier (2001), Bisin *et al.* (2004), Guiso *et al.* (2008) and Tabellini (2008), beliefs derive from two sources: first, the contemporary social environment in which individuals live; second, the succession of ancestral beliefs. While the latter underscores the influence of culture and the solidity of beliefs, it cannot reconcile with intertemporal differences in explaining growth, for instance, in explaining how China managed to transition from a stagnant economy to one of the fastest growing economies in the world.

The influence of and beliefs in intrinsic cultural factors will also change with education. Psychological changes of individuals induce social transformation on a much wider scale. As revealed by the comparative study between East and West Germany conducted by Alesina & Fuchs-Schündeln (2007), socialism profoundly transformed the beliefs of a significant proportion of the population. Based on natural experiment, Di Tella *et al.* (2007) proved that ownership will induce the change of beliefs. Di Tella *et al.* (2012) discovered that in the backdrop of predominantly negative attitudes on privatization, private firms changed people's beliefs on privatization by investing in water supply systems. These

¹ In responding to the question on trust, 54.2% of Chinese respondents believed that most people are trustworthy, while this figure is 41.6% for Japan, 37% for the US and 34.6% for India.

² In addition, 57% of China's respondents believe that becoming a wealthy person is very important, while this ratio is less than 38% in the US; about 77.6% of China's respondents believe that achieving success and recognition is very important, while this ratio is about 67.6% in the US.

studies indicate the possibility of two-way causality between beliefs and economic results: with different beliefs come different results of economic performance, which in turn shape people's beliefs.

Beliefs may affect economic results in the following ways. (1) Beliefs influence individual motivations. Individuals who trust others are more inclined to work and trade with others. Individuals who believe in social justice will invest in their own and their children's education and strive to succeed in life through hard work. Those who believe in the importance of competition will engage in constant innovation and self-improvement. Those who believe that work is more important than leisure naturally spend more time and energy on their work. (2) Beliefs determine the efficiency of cooperation. It is easy to understand that in a society with positive beliefs, it is much easier to engage in cooperation and trade. (3) Beliefs shape the formation and change of fundamental systems. The fundamental difference in economic performance may derive from different political and economic systems of countries (Acemoglu *et al.*, 2005), which are systems of "shared beliefs" (Aoki, 2011; Denzau and North, 1994; Greif, 1994). (4) Beliefs shape public policy. For instance, beliefs on social justice may cause differences of economic performance through their effects on redistribution policy (Alesina and Angeletos, 2005).

Moreover, public perception on the role of government in the economy, ownership arrangements and judicial systems is all shaped by beliefs. As demonstrated by Di Tella & Dubra (2008), the system of beliefs characterized by the American dream encompasses not only the beliefs in social justice but the awareness of penalties. The following paragraphs will separately discuss the economic significance of the four types of beliefs defined in this paper.

2.1 Trust

In this paper, trust refers to the belief in trust to be differentiated from such concepts as private capital and culture. According to Gambetta (2000), who defined trust as a belief that can be measured by probability, "when we say we trust somebody or somebody is trustworthy, the implied message is that the probability for this person to act in our favor is so high that it is worthwhile for us to consider engaging in some sort of cooperation with him." The economic significance of the belief in trust has been extensively investigated in literature. As noted by Arrow (1972), "most economic failures in the world can be explained by the lack of mutual trust." This view has been echoed by Coleman (1990), Greif (1993) and Putnam (2000). La Porta *et al.* (1997), Knack & Keefer (1997) and Tabellini (2010) discovered correlation between trust and the economic performance of countries but the problem they faced is how to define the causality between trust and economic growth. Using the inherited trust of descendants of US immigrants as instrumental variable, Algan & Vahuc (2010) carried out an empirical study and found that inherited trust may explain a large part of country differences of economic development during 1935-2000 and that the low per capita GDP of developing countries may be largely explained by the low level of trust in these countries.

2.2 Social Justice

It is important that people believe that they live in a just world, a world where people generally get what they deserve (Lerner, 1982). The belief in optimism that each and every person will get what they

deserve is crucial to motivating people (or their children) to work hard, invest in education, persevere in hardships and avoid slipping into the abyss of sloth or drugs. While justice is a shared belief for humanity, survey shows that beliefs on social justice vary greatly across countries and regions (Table 1)³.

Alesina *et al.* (2001) demonstrated significant positive correlation between a country's social welfare spending and the belief that luck and connections determine income. According to Alesina & Angeletos (2005), Benabou & Tirole (2006) *et al.*, the American society believes that personal income is determined by hard work and is inclined to adopt a relatively low level of income redistribution and tax rate. Under equilibrium state, personal hard work outweighs luck and the results of market competition are relatively fair, thus reinforcing the social belief. In Europe, where luck, birth and cronyism are believed to be key determinants of wealth, a high tax rate system is adopted to distort the relationship of distribution and maintain such belief. In addition, Hirschman & Rothschild (1973), Piketty (1995, 1998), Benabou & Ok (2001) and Rotemberg (2002) all carried out model analysis on the role of social justice and belief in the making of policies on distribution. Alesina *et al.* (2012) revealed why two countries that had everything in common except beliefs on fairness embarked upon an entirely different paths in the long run.

2.3 Competition and Work-Leisure

The importance of competition to the economy goes without saying. The foundation of economics as a discipline is built upon competition. Competition is an intrinsic characteristic of market and the primary mechanism for value creation (Adam Smith, 1776). In the natural world, survival of the fittest is the fundamental impetus of evolution and competition spurs survival and success (Axelrod, 1984). At the individual level, highly competitive individuals have a greater risk-taking propensity and make greater efforts to succeed in life. The finger length ratio, ratio between the index finger and the ring finger, is significantly correlated with the achievements of athletes in sports events (Manning & Taylor, 2001 and Honekopp *et al.*, 2006) and the incomes of financial traders (Coates *et al.*, 2009). According to an experiment conducted by Charness *et al.* (2010), the pursuit by individuals for their relative status keeps them motivated to work hard through the fundamental mechanism of competitive preference.

At the macro level, people's beliefs on social competition are a key factor in the realization of social competition. The belief that people should have equal opportunities to engage in the competitive production, sales and purchase of products and services is the key of economic success (Adam Smith, 1776). As revealed by a survey on the competitive beliefs of young people in 41 countries (Furnham *et al.*, 1994), competitive beliefs are significantly correlated with economic growth over the past ten years.

³ According to Benabou and Tirole (2006), the different beliefs on the role of luck and hard work in life can be explained by three theories: First, the problem of learning cost raised by Piketty (1995), in experimenting with different degrees of exertion in order to ascertain real social mobility, people will be ultimately stuck at a purely unconscious and incidental misperception; rooted in the Marxist doctrine, the second theory maintains that workers, who are brainwashed by the education and media controlled by capitalists, wrongly believe in the fairness of market return and the prospect of changing their future. Alesina and Glaesr (2004) consider that ideology is controlled by the rich class and in Europe, influenced by Marxist trade unions, teachers and politicians. According to the third theory, personal beliefs are shaped by personal functional objectives, psychological needs and real data and to some extent, people believe in what they want to believe.

Beliefs on social competition will influence demand for social redistribution and government responsibility for the provision of public goods (Duman, 2013).

In any society, labor is the source of all wealth. In explaining the differences of economic performance between the United States and Europe, many scholars have emphasized their great differences of working hours (Prescott, 2004; Alesina *et al.*, 2006). Small differences in leisure preference may lead to very different working hours and economic growth, which may explain the different paths of development between Europe and the United States (Azariadis *et al.*, 2013). While work-leisure differences can be explained from various perspectives such as taxation (Prescott, 2004), an obvious explanation is people's difference of beliefs. With other incentives being equal, if the cultural belief considers that the meaning of life is creation, such belief will motivate people to spend more time in their creative work. While the perceptions of work and leisure vary across countries and regions with different historic and cultural backgrounds, such perceptions will evolve with the change of social wealth and feed into work inputs that bring about different growth performance.

3. Choice of Variables and Data Description

Based on WVS data, this section provides an empirical study on the effect of beliefs on economic performance. As a large cross-national survey on people's values and beliefs, the World Value Survey (WVS) has been carried out in five rounds, i.e. 1981-1984, 1990-1993, 1995-1997, 1999-2004 and 2005-2007. In the questionnaire, we selected four indicators with major economic significance: trust, social justice, competition and work-leisure. Our choice of these four variables is based on the following considerations: these four beliefs have been extensively investigated in economics literature and found to have great economic significance; as opposed to religious or political faiths that are more culturally unique, these four beliefs have common traits across nations.

In our question now, we have designed the following questions:

- (1) Trust: Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people? 1-Most people can be trusted; 0-Can't be too careful.
- (2) Social justice: Express your views in the scale from 1 to 10 on matters listed below: 1 means you totally agree with the statement on the left and 10 means you totally agree with the statement on the right; if your view is in between 1 and 10, you may choose any value within this range. 1-Hard work doesn't generally bring success - it's more a matter of luck and connections; 10-In the long run, hard work usually brings a better life.
- (3) Question about competition: Express your views in the scale from 1 to 10 on the matters listed below: 1 means you totally agree with the statement on the left and 10 means you totally agree with the statement on the right; if your view is in between 1 and 10, you may choose any value within this range. 1-Competition is harmful. It brings the worst in people; 10-Competition is good. It stimulates people to work hard and develop new ideas.
- (4) Question about work-leisure: Which point on this scale most clearly describes how much weight you place on work (including housework and schoolwork), as compared with leisure or recreation?: 1-It's

leisure that makes life worth living, not work; 5-Work is what makes life worth living, not leisure. You may express different opinions by choosing any number in between 1 and 5.

Based on data of Round 2 to Round 5 surveys, we have generated the long-term average data of beliefs for various countries, excluding the data of Round 1 (1981-1984) survey that only covers a few countries. Table 1 presents a descriptive statistics of variable data at the national level. Then, Figure 1-Figure 4 depict the correlation between the four beliefs and per capita GDP growth during 1991-2012, which is all positive.

Table 1: Descriptive Statistics of the Average Level of Beliefs for Major WVS Countries

Variable of beliefs	Number of countries	Mean	Standard deviation	Min.	Max.
Trust	86	0.254	0.138	0.038	0.695
Competition	82	7.406	0.561	5.973	8.560
Work-Leisure	67	3.616	0.545	1.624	4.641
Social Justice	75	6.620	0.835	4.962	8.633

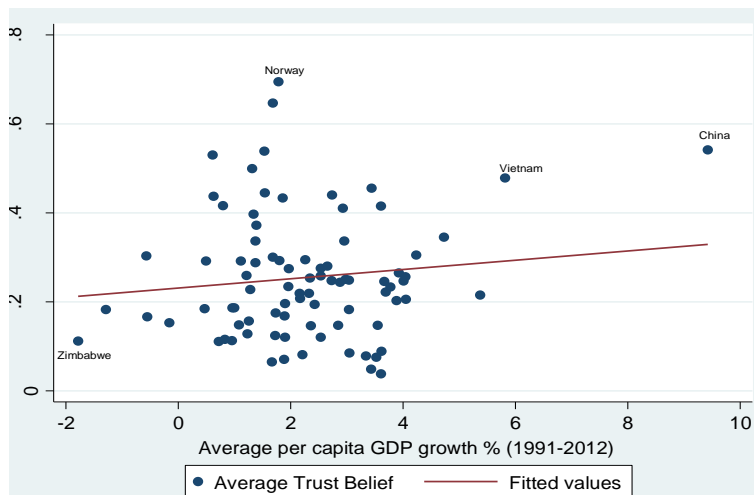


Figure 1: Relationship between Trust and Economic Growth

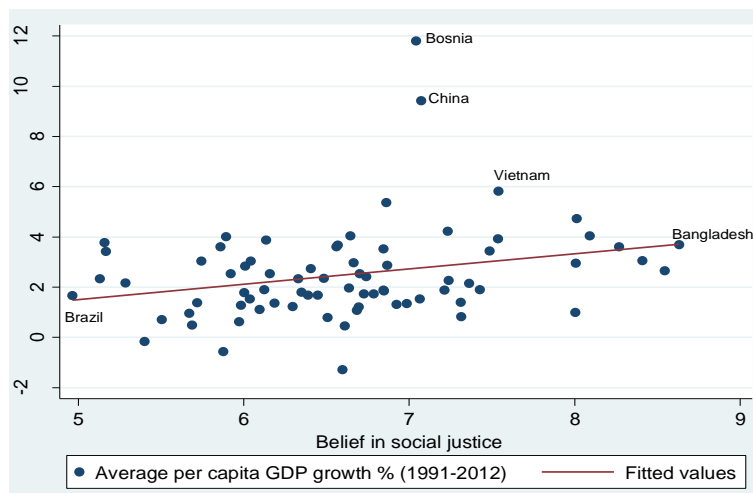


Figure 2: Relationship between the Belief in Social Justice and Economic Growth

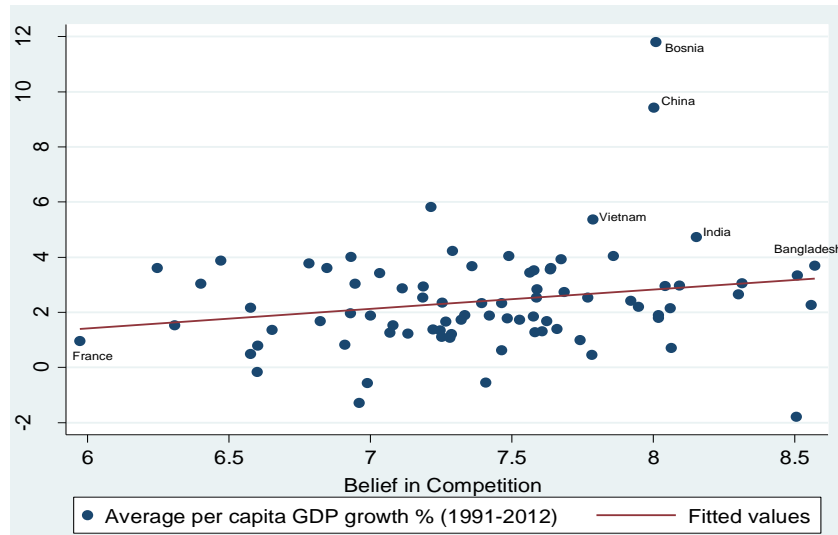


Figure 3: Correlation between the Belief on Competition and Economic Growth

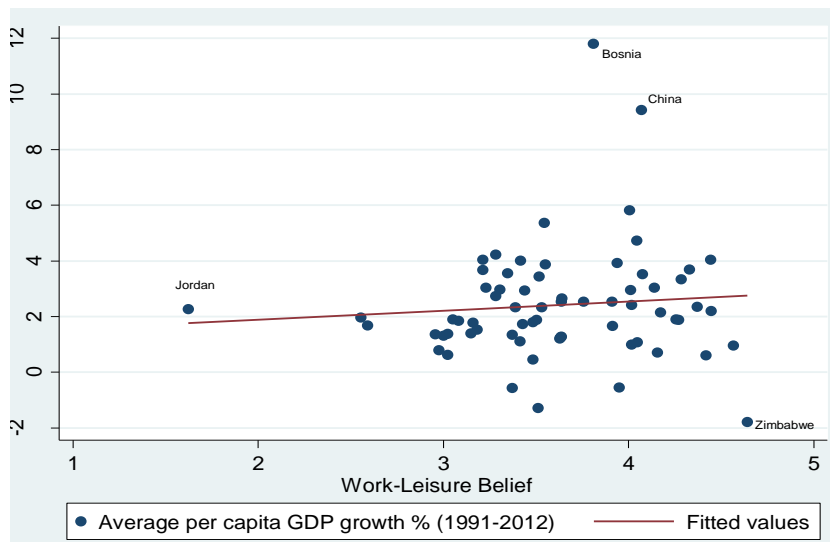


Figure 4: Correlation between Belief on Work-Leisure and Economic Growth

In this paper, the quality of a country's beliefs is measured by the composite belief index comprising four major beliefs. The four beliefs, acquired through the same survey and undifferentiated in terms of their relative importance as no theory supports such differentiation, are given the same weight and aggregated to arrive at composite belief index after standardized treatment⁴. Figure 5 shows the correlation between composite belief index and long-term average per capita GDP growth, which is a long-term positive correlation. The composite belief index is very high in countries that are growing rapidly, such as China, Vietnam and India⁵.

⁴ Method for aggregating the survey data of beliefs to obtain composite index is referenced from the study of Alesina and Giuliano (2010) on family concepts.

⁵ Due to the use of average calculation method, Bosnia-Herzegovina exhibits the highest average per capita GDP growth rate. Growth rate of Bosnia-Herzegovina in the World Bank data in 1996 approach to 90% but fell behind China's most subsequent years and even turned negative in recent few years. If Bosnia-Herzegovina is excluded, China enjoys the

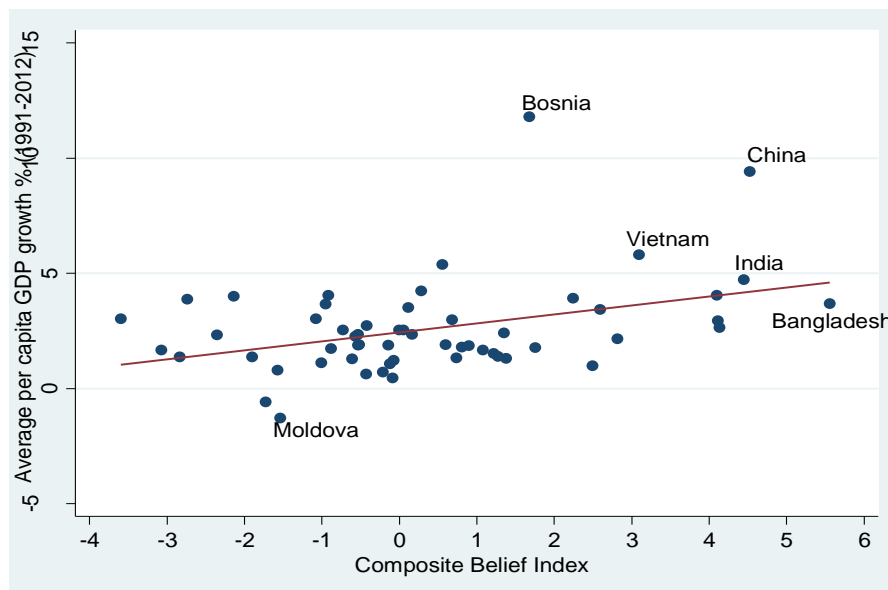


Figure 5: Correlation between Composite Belief Index and Economic Growth

4. Beliefs vs. Economic Growth: an Empirical Analysis

We set out to examine the relationship between beliefs and income from an individual perspective. WVS divides countries into eleven grades by the income with Grade 1 representing the lowest income and Grade 11 representing the highest income. Then, we conduct regression analysis on the income of individuals based on the four beliefs and the composite belief index. Explained variable is the grade of personal income (Income) and explanatory variables include the belief on trust (Trust), the belief on social justice (Social_justice), the belief on competition (Competition), the belief on work-leisure (Work_leisure), the composite belief index (Belief), sex (Sex), age (Age) and its quadratic term (Age^2), as well as level of education (Edu). Regression results are indicated in Table 2, where Equations 1 and 2 are OLS regression results and Equations 3 and 4 are ordered Probit regression results.

Table 2: Regression Results of the Effect of Beliefs on Personal Income

Explanatory variables	Explained variable: income			
	1 (OLS)	2 (OLS)	3 (Ordered Probit)	4 (Ordered Probit)
Belief		0.027*** (0.005)		0.012*** (0.002)
Trust	0.129*** (0.022)		0.060*** (0.011)	
Social_justice	0.010*** (0.003)		0.005*** (0.002)	
Competition	0.047*** (0.004)		0.022*** (0.002)	
Work_leisure	-0.102*** (0.009)		-0.049*** (0.004)	
Sex	0.189*** (0.019)	0.199*** (0.019)	0.092*** (0.009)	-0.096*** (0.009)
Age	0.066***	0.065***	0.032***	0.031***

highest growth rate and very high composite belief healthiness index at the Same Time.

	(0.003)	(0.003)	(0.002)	(0.002)
Age ²	-0.001*** (0.000)	-0.001*** (0.000)	-0.0004*** (0.000)	-0.0004*** (0.00002)
Edu	0.343*** (0.005)	0.350*** (0.005)	0.165*** (0.002)	0.168*** (0.002)
_Cons	2.827*** (0.111)	2.181*** (0.092)		
No.	52433	52433	52433	52433
R ²	0.299	0.295	0.080	0.079

Note: Regression has controlled for country fixed effect and the round effect of survey (by adding dummy variables). Due to the limit of length, only the results of major variables are reported. Numbers in parentheses are robust standard deviations. *** denotes significance at 1% level and ** denotes significance at 5% level. R² reported by ordered Probit is pseudo-R².

As revealed by the above table, men's income is remarkably higher than women's and the regression coefficient of age is positive, while the quadratic term of age is negative, which implies an inverted U-shaped pattern of income with the increase of age. An increase in the level of education may significantly improve the level of income, which is consistent with general theories and research conclusions. The regression coefficients of trust, social justice and competition are all significant at 1% level, meaning that these beliefs are positively correlated with personal income. The regression coefficient of work-leisure is significantly negative, a result that may be attributed to the following reasons: at individual level, people with higher income have more time for leisure and in contrast, those who are less well-paid have to spend more time on their work to make ends meet; second, the regression coefficients of the four beliefs, which derive from the results of the report on the same individuals, may have been partially offset by each other due to strong correlation and the two effects at the national level will vanish. Composite Belief Index is significant at 1% in both regressions, which indicates a positive effect on personal income.

The above micro-level analysis shows that beliefs at the individual level are significantly correlated with the level of national income, which verifies the great economic significance of beliefs. Then, we proceed to investigate how the beliefs of a social community affect economic growth performance. The way beliefs influence economic growth is rather different from the conventional economic growth theory. Instead of building upon classical growth model, literature on this subject directly examines the avenues through which beliefs affect growth. Due to small sample size and limited significance for our study, literature on the relationship between values and economic growth (Barro and McCleary, 2003; Algan and Cahu, 2010) excluded certain factors that may also affect growth performance, such as a country's socio-economic system, political system, religious faith, ethnic diversity, length of history and population. Hence, this study does not engage in an extended discussion based on classical growth model and instead employs a few control variables to investigate the effects of beliefs on economic growth.

First of all, our analysis is carried out using long-term mean data. Based on the mean data of WVS Round 2 to Round 5 in various countries, we have collected 86 samples. Explained variable is the average per capita GDP growth rate (Growth_Rate) of countries during 1991-2012 and the explanatory variable is composite belief index (Belief). Correlation between per capita GDP growth rate and the four beliefs is shown in Table 3, which shows that per capita GDP growth rate is positively correlated with

the four beliefs and also justifies the use of composite index. Based on previous literature (Barro and McCleary, 2003), we have employed the per capita GDP of 1990 (GDP1990) as the initial level of economy; average aggregate capital formation (Capital) during 1991-2012 as the measurement of material capital; the average secondary education enrolment during 1991-2012 (Sec_Edu) as the measurement of human capital input. In regression, we took natural logarithms of above control variables. Regression results are shown in Equations 1 and 2 of Table 4.

Table 3: Correlation between Per Capita GDP Growth Rate and the Four Beliefs

	Growth_Rate	Trust	Socail_justice	Competition	Work_leisure
Growth_Rate	1				
Trust	0.0771	1			
Socail_justice	0.2846	0.1155	1		
Competition	0.254	0.0253	0.5113	1	
Work_leisure	0.2488	-0.446	0.2183	0.0845	1

Table 4: Effects of Beliefs on Long-Term Economic Growth

Dependent variable: Growth_Rate				
Independent variables	1 (Long-term mean OLS)	2 (Long-term mean OLS)	3 (Fixed panel effect)	4 (Hybrid panel regression)
Belief		0.313** (0.148)		0.231* (0.121)
logGDP1990	-0.630** (0.275)	-0.921** (0.433)	-1.364*** (0.299)	-1.427*** (0.307)
logCapital	3.098** (1.208)	1.683 (1.451)	4.482*** (1.531)	5.035*** (1.441)
logSec_Edu	0.727 (0.674)	2.823 (2.316)	2.417*** (0.819)	5.726*** (1.282)
_cons	-5.500 (3.734)	-8.068* (7.078)	-10.672** (4.903)	-26.084*** (5.994)
No.	82	56	345	48
R ²	0.288	0.393	0.105	0.529
Prob > F	0.000	0.000	0.000	0.000

Note: Equations 1 and 2 are regressions of long-term mean data and Equations 3 and 4 are regressions using panel data. Among them, Equation 3 is model regression of fixed panel effect and Equation 4 is hybrid regression and regression of cluster robust standard error with countries as cluster variables. Goodness of fit reported in Equation 3 is overall R². *** denotes significance at 1% level, **denotes significance at 5% level and * denotes significance at 10% level. Data of beliefs are from the WVS; economic data are from the World Bank website; missing data of certain countries are replenished with the IMF data and Mundi database. For certain years, missing per capita GDP data and secondary education enrolment data are replaced with data of adjacent years. In Regression 4, the number of samples has reduced to 48 due to matching between belief data and economic data.

As can be seen from the comparison between Equations 1 and 2, controlling for initial economic level, material capital and human capital, the average national beliefs measured by composite belief index exerts a significant impact on long-term per capita income growth (5% significance level), which verifies that beliefs have a positive effect on economic growth. Since 1990, the effect of initial per capita income and subsequent economic growth is significantly negative in Equations 1 and 2, which is consistent with the relatively poor growth performance of developed countries over the past 20 years. Effects of capital formation rate and secondary education enrolment rate both have positive effects on economic growth. However, the effects of secondary education enrolment and capital formation rate in Equation 2 are both insignificant. Nevertheless, the above analysis is based on the average situation over

20 years ago and great changes of material and human capital must have occurred in the meantime. In addition, the causality between beliefs and growth is difficult to define in the above analysis.

In order to make the conclusions more robust, we carried out further data treatment. By the rounds of WVS, we divide the data into five stages, i.e. 1981-1985, 1989-1994, 1994-1999, 1999-2004 and 2005-2007 with per capita GDP growth rates during 1985-1990, 1991-1996, 1997-2002, 2003-2007 and 2008-2012 as explained variables. Control variables include the average aggregate capital formation rate, per capita GDP in 1984, 1990, 1996, 2002 and 2007, as well as secondary education enrolment. With such choice of variables, the timeframes of economic growth rate are generally behind belief data acquisition and the effect of other control variables on growth is more direct. Regression results are shown in Equations 3 and 4 of Table 4. In equations 3 and 4, traditional variables including material and human capital are significant at 1% and conducive to growth, while initial per capita GDP level has a negative effect on growth, which is consistent with the conclusions of Equations 1 and 2. The core variable under our attention - composite belief index - is also significantly positive at 5% level.

5. Further Discussions

While the above sections have demonstrated the significant correlation between beliefs and economic growth, no sufficient justification has been given to prove whether beliefs lead to differences of growth or the other way around. Normally, literature resorted to instrumental variables to resolve the endogeneity problem. For instance, Algan and Cahuc (2010) used the beliefs of second-generation immigrants as a proxy of the beliefs of native nationals. Given that this study marks the first of its kind to investigate the correlation between composite beliefs and economic growth, we believe that causality between the two theoretically exists without attempting to address the endogeneity problem using other instrumental variables. It would be more meaningful to explore the patterns of beliefs and economic growth and the way the beliefs of social community change. Answers to these questions will provide a basis for explaining country and intertemporal differences of economic growth.

Economic slowdown of developed countries has aroused great interest among economists (Maddison, 1987), who have yet to provide a satisfactory answer. Yet we cannot overlook the fact that after their achievement of prosperity, diligent nations would become less hard-working and be less preoccupied with wealth and status; their perceptions of competition and work would change; theoretically, people's beliefs about social competition may change with the increase of social wealth. When resources are scarce, the challenges of everyday life would spur people's sense of competition; on the contrary, when social affluence reaches a certain level and life becomes easier, the sense of competition would diminish. This may help explain an extremely important question of convergence in economic growth.

Using per capita GDP of 5,000 US dollars in 1990 as the demarcation line, we divided countries covered by the WVS into low-income countries and high-income countries (25 out of 82 countries are high-income countries) and compared the average beliefs on competition between the two groups of countries, which led to the discovery that the average beliefs in competition in high-income countries are

dwarfed by those in low-income countries (Mann-Whitney-Wilcoxon Test, $p=0.028$). We further divided countries into high-growth and low-growth countries with the dividing line at 3% of per capita GDP growth rate during 1991-2012 (25 out of 82 countries are high-growth countries). Our analysis showed that the average beliefs in competition in high-growth countries are higher but not significantly higher ($p=0.597$) than those in low-growth countries.

Similar to the beliefs on competition, people in rich countries are more inclined to enjoy leisure yet people in developing countries have stronger beliefs in work. Comparing the average beliefs on work-leisure between the two groups of low-income and high-income countries, using per capita GDP of 5,000 US dollars in 1990 as the demarcation line, we find that the average beliefs in work in high-income countries are significantly below those in low-income countries (Mann-Whitney-Wilcoxon Test, $p<0.001$). Further, the average beliefs in work in high-growth countries are higher but not significantly ($p=0.186$) than those in low-growth countries, which is consistent with the conclusions on the beliefs in competition.

Table 5: Effect of Economic Factors on Beliefs

	Trust		Social justice		Competition		Work-Leisure	
GDP1990	0.035*** (0.012)		-0.192*** (0.058)		-0.137*** (0.040)		-0.222*** (0.027)	
Growth_Rate		0.006 (0.008)		0.119*** (0.041)		0.061** (0.028)		0.023 (0.033)
No.	86	86	75	75	82	82	67	67
R ²	0.1433	0.0071	0.1119	0.0722	0.1315	0.0428	0.3300	0.0076

To provide more evidence, we conducted a regression analysis with the four beliefs as explained variables and the per capita GDP level of 1990 (GDP1990) and long-term average per capita GDP growth rate (Growth_Rate) as explanatory variables for regression, with results shown in Table 5. As can be seen from the table, the initial level of per capita income in 1990 has a positive effect on trust but its effect on the remaining three beliefs is all negative. The effect is particularly significant for the beliefs on work-leisure. GDP growth rate has positive effects on all of the four beliefs. Among them, the effects on the beliefs in social justice and competition are the most significant and the effects on the remaining two beliefs are insignificant. The implication is that rising income may indeed change people's beliefs, which in turn affect economic performance. In developing countries such as China, India and Vietnam where the economy kick-started from a relatively low base, people have a strong desire to pursue wealth and success. Healthy economic beliefs fuelled rapid growth in these countries. While people in developed countries have attached great importance to leisure and social welfare, they are less motivated to pursue economic growth, which naturally results in slower growth.

Sweeping social transformations will change people's beliefs in profound ways. As one of the most important political incidents over the past few decades, the turbulence of Eastern Europe in the early 1990s inevitably shook people's economic beliefs, particularly in the former socialist Eastern Bloc countries. Based on data availability, we have selected a few representative countries to examine the change of

people's beliefs before and after a certain period of time. Using Round 2 of WVS, which coincided with the turbulence of Eastern Europe, we examined whether significant statistical differences exist in the data of specific countries in different rounds of survey, with results shown in Table 6.

Table 6: Statistical Test of Differences in Beliefs

Country (Round R)	Trust	Social justice	Competition	Work-Leisure
China (R2 Vs. R3)	3.889 (0.000)	11.783 (0.000)	-2.402 (0.016)	-
China (R3 Vs. R4)	-1.059 (0.290)	-	1.718 (0.086)	-1.079 (0.281)
Russia (R2 Vs. R3)	9.046 (0.000)	-5.612 (0.000)	-8.120 (0.000)	-
Russia (R3 Vs. R5)	-2.002 (0.045)	-11.301 (0.000)	-0.614 (0.539)	-
Czech Republic (R2 Vs. R3)	0.840 (0.401)	-8.859 (0.000)	-13.166 (0.000)	-
Poland (R2 Vs. R3)	8.358 (0.000)	-0.067 (0.947)	-10.918 (0.000)	-
Poland (R3 Vs. R5)	-0.909 (0.363)	-0.923 (0.356)	-3.373 (0.001)	-
Slovakia (R2 Vs. R3)	-1.650 (0.099)	-3.980 (0.0009)	-5.173 (0.00009)	-

Note: Numbers in the table are the z values of the Mann-Whitney-Wilcoxon Test and the numbers in parentheses are the corresponding p values.

Obviously, from Round 2 to Round 3 surveys, significant changes occurred in the beliefs in Russia and some Eastern European countries under examination. In Table 6, obvious changes can be seen in the beliefs of countries influenced by the former USSR. During this timeframe (from Round 2 to Round 3 surveys), the beliefs of Chinese people also changed in significant ways, which can be associated with the ideological impacts of Comrade Deng Xiaoping's speeches during his tour to south China in 1992. However, no significant difference can be found in the beliefs of Chinese people from Round 3 to Round 4 surveys.

6. Concluding Remarks and Outlook

In the community of social economics, a growing consensus is that social development in today's world is largely determined by the collective beliefs of social groups as a whole; these beliefs or values are converted through various mechanisms into actions and drivers of future economic and social development. On the basis of traditional economic growth theories and cultural economics, this paper highlights the role of beliefs in economic growth. We believe that the differences of beliefs held by people across countries or regions represent a major cause of different social systems and economic performance. Our study marks the first literature that carries out a theoretical demonstration and empirical test with the relatively subjective factor of beliefs as a major variable of economic growth. We found that beliefs in trust, social justice, competition and work-leisure at the national level are significantly positively correlated with the long term growth rate of countries. The composite belief index comprising indicators of the four beliefs may explain the differences of economic performance

across countries.

Our analytical approach may partially overcome the difficulties facing the growth theory. In explaining the growth differences between the Democratic People's Republic of Korea and South Korea, Acemoglu *et al.* (2005) concluded that the natural experiment of division of the two countries that share a common culture fully demonstrates the fundamental role of institutional systems. Yet their analysis did not address the question of how such institutional differences came about in the first place. If the role of beliefs is brought into discussion, we may conclude that despite the common culture shared by both countries, the intervention of different external forces led to different beliefs and thus different economic performance in the two countries. In addition, China ranks the second among the 82 sampled countries in terms of the composite belief index and some other high-growth developing countries including Vietnam and India also demonstrate a relatively high composite belief index. These facts help explain the real story behind China's growth miracle: the "Chinese dream" embodied by the values of diligence, wisdom and enterprise of the Chinese people provides an unremitting force for China's progress.

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