LIFE SATISFACTION AND SOCIAL CAPITAL

A SYNTHETIC PANEL APPROACH

By

XING, Wenju

THESIS

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

for the degree of

MASTER OF PUBLIC POLICY

2008

LIFE SATISFACTION AND SOCIAL CAPITAL

A SYNTHETIC PANEL APPROACH

By

XING, Wenju

THESIS

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

for the degree of

MASTER OF PUBLIC POLICY

2008

Professor Tae Jong KIM

LIFE SATISFACTION AND SOCIAL CAPITAL

A SYNTHETIC PANEL APPROACH

By

XING, Wenju

THESIS

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

for the degree of

MASTER OF PUBLIC POLICY

Committee in charge:

Professor Tae Jong KIM,Supervisor

Professor Kyong Dong KIM

Professor Jaeun SHIN

Approval as of November 25,2008

ABSTRACT

LIFE SATISFACTION AND SOCIAL CAPITAL
A SYNTHETIC PANEL APPROACH

by

XING, Wenju

The present study investigated, through regression procedures, the extent to which the social capital(SC) co-varied with perception of life satisfaction, main indicator of subjective well-being(SWB). We measured social capital at individual level using WVS datasets for analyzing their relationships with life satisfaction. Also the original WVS datasets were transformed into a synthetic panel for further exploration of these relationships with Pooled OLS (POLS) and Fixed Effects (FE) strategy.

It was predicted and found that more stocks of social capitals are allied with higher level of satisfaction. Findings proved that main indicators of social capital are positively correlated, at individual level, to life satisfaction in samples of original datasets, while in generated panel datasets,only those horizontal type SC indicators show significant impact over SWB. The implication is that, at area level and with time period effects, vertical type SC may be less salient in explaining SWB differences across regions and cultures.

Further tests of sensitivity are needed.

Keywords: Subjective Well-being;social capital;synthetic panel;fixed effects

Contents

1 INTRODUCTION AND LITERATURE REVIEW **9**

1.1 Subjective Well-beings: A Life Satisfaction Approach 9

1.1.1 Definition and Measurement of SWB 10

1.1.2 Controversies about SWB 11

1.2 Social Capital: Definition and dimensions 14

1.2.1 Definition 14

1.2.2 Forms and Dimensions 15

1.2.3 Selection of SC Indicators and their Measurement 16

1.3 Social Capital and life Satisfaction 18

2 DATA **21**

2.1 Data sources 21

2.2 Variables 22

2.2.1 Dependent Variables 23

2.2.2 Independent Variables 25

3 STATISTICAL METHODS **28**

3.1 A Two Level Test Approach 28

3.2 Inclusion of Birth Cohort and Construction of Panel 30

4 RESULTS **32**

4.1 Results from WVS Original Datasets 32

4.2 POLS and FE Test in Synthetic Panel 34

5 DISCUSSION **41**

List of Tables

3.1 Summary of Life Satisfaction by Cohort Groups 30

4.1 Summary Statistics 32

4.2 Cross-correlations of SC 33

4.3 Cross-correlations of SE 33

4.4 First Level Test 34

4.5 Second Level test: FE and POLS 37

4.6 Sensitivity Test: Asian VS. Others 40

4.7 Sensitivity test: Developed VS. Others 40

List of Figures

1.1 Concept Framework of SC 16

2.1 Life Satisfaction Differences among Asian Countries in Wave 4 . 22

2.2 Life Satisfaction of Asian Countries Across Waves 23

2.3 List of Variables 24

4.1 Age,Cohort and Period Effects 35

1 INTRODUCTION AND LITERATURE REVIEW

The use of social factors to explain community welfare and human feelings is not a new phenomenon. Subjective well-being (SWB) has been a interesting literature that attracts many social scientists and, in this arena, social capital (SC) has been recognized as a determinant to human well-being. A great deal of researches also link social capital and socio-economic (SE) indicators in order to explain human well-beings. This work is an attempt to discover associations between SWB and SC, using datasets of the World Values Survey, often referred as WVS (World Value Survey, 2006).Since the SE indicators are generally proved to be important factors of SWB, we include also SE variables for more comprehensive examination. The methodology used for the study includes introduction of cohort defined synthetic panel and fixed effects (FE) strategies. Our aim is to find which are those really robust SC determinants over SWB.

1.1 Subjective Well-beings: A Life Satisfaction Approach

What is and how to measure human well-being constitutes a fundamental question both in social sciences and in philosophy.

Clearly there are two possible doctrinal directions while studying human well-being: from top to down and from down to top. Usually the top-down approaches are much easier in practical means. However, from that arise questions that these approaches are too theoretical to take very feedback from human beings themselves. In this sense, the SWB approach substantially differs from those top-down approaches. It follows a bottom-up direction and focus more about the feelings of individuals.

The study of subjective well-being is commonly considered as a research area in psychology and economics. In this literature, life satisfaction is one of the most used indicators of SWB. In the beginning, economist could not be very optimistic about the future of systematic empirical analysis of this topic because of the confusing results of some earlier empirical studies, such as the seminal study by Easterlin (1974). However, this divergence encouraged more scholars to devote time and efforts in this field, which has witnessed a rapid growth over the last few years (e.g. Clark and Oswald, 1994; Di Tella et al., 2001; Easterlin, 2001; Frey and Stutzer, 1999). Previous well-being researches have emphasized the joint importance of personality, social environment and circumstances in determining levels of subjective well-being. Later this literature moved beyond the psychology literature and started calling attentions of economists and social policy researchers.

1.1.1 Definition and Measurement of SWB

Argyle defines that "satisfaction is one of the main components of happiness. Joy is the emotion part, satisfaction is the cognitive part-a reflective appraisal, a judgment, of how well things are going and have been going"(Argyle 2001). This definition is too conceptual to illustrate the effective ways to measure life satisfaction of human population. The main question from that definition is which line of investigations should be chosen and which indicator shall be taken as proxy of SWB.

In most studies, SWB is commonly understood and measured either in its life satisfaction or in its happiness conceptions (Ferrer-i-Carbonell, 2002; Cummins, 1997, 1998; Veenhoven, 1996, 2000). Life satisfaction is often measured by subjective or self-assessed satisfaction index in surveys, which reflects the surveyees' perception about life. More precisely, SWB is usually measured by answers to representative questions in surveys about a respondent's satisfaction with his life, which reflect the subjective perception of life experiences and expectations.

Recent Nobel laureate Daniel Kahneman introduced important distinction be-

tween subjective and objective well-being (or happiness). Subjective happiness is assessed by asking respondents to state how happy they are. Objective happiness is derived from a record of instant utility over the relevant period (Kahneman 1999, 5). Thus, from this distinction we note that the so-called objective happiness is just another systematically tested subjective happiness,in case that subjective happiness is used as measurement of individual's happiness.

1.1.2 Controversies about SWB

It's noted that this self-reported measurement has been used widely by psychologists, sociologists and political scientists. But in the beginning most economists emphasized the likely unreliability of this subjective indicator than accepting its effectiveness. For instance,"Economists have traditionally eschewed direct measures of well-being" (Kahneman et al. 2004, 429).Helliwell questioned about the objectiveness of using subjective evaluations of life satisfaction as proxy measures of utility (Helliwell, 2003).

The reasons may reside in their ignorance of researches done by psychologists and their beliefs that judges of human motivation are not possibly measured through subjective evaluations of individuals themselves.

The criticism which many economists held to this measurement is particularly focused on whether this indicator, direct and subjective, is objective enough to capture the concept of satisfaction itself and its causality with associated determinants, which implies the problem of subjectiveness of this measurement. Though measurement of subjective well-being seems to be suitable objects of analysis, but subjectiveness is possibly affected by many factors that are difficult to control. For instance, differences of personality among individuals may influence a lot the self-evaluation, which brings difficulties in its measurement.

For testing the reliability of SWB in study of well-beings, numerous psychologists proved that survey-based results on individual life satisfaction are quite reliable. The simple logic is that the feeling of happiness is emotional in essential means, but also is useful in term of practical means because it reflects

the attitude and mode of an individual. David G. Myers quotes Madame de la Fayette as saying: "If one thinks that one is happy, that is enough to be happy," and adds that "like Madame de La Fayette, social scientists view well-being as a state of mind. Well-being, sometimes called 'subjective well-being' to emphasize the point, is a pervasive sense that life is good" (Myers 1992, 23; cf. 1992, 27).

Besides, some researchers tried to interpret this logic by introducing the term "utility" (Kahneman et al. 1997). More specifically , they claimed that one's satisfaction level is based on "utility" of experiences, or in other words, the output of his behavior and the impact on his feelings. The so-called "experienced utility" or "remembered utility" can produce a consistent set of forward-looking decisions and backward-looking evaluations, which can make persons feel happy about the past and optimistic about the future. Subjectivity can produce utilities which indeed influence human being's happiness and enhance individual welfare.

As a test of the reliability of self-reported well-being , Alan B. Krueger and David A. Schkade (1997)concluded in their studies that, though reliability figures for subjective well-being measures are lower than those typically found for education, income and many other microeconomic variables, they are probably sufficiently high to support much of the research that is currently being undertaken on subjective well-being, particularly in studies where group means are compared (e.g., across activities or demographic groups).

Despite the consensus about its measurement remain elusive, the reliability problem does not stop researchers from continuing their efforts in measuring self-reported happiness in their studies. One similar measurement of self-reported evaluation is the self-assessed health, which is also a subjective evaluation based on past experiences and forward predictions of individuals and widely used in research arenas of health and social capital(Campell 2000;Kawachi et al. 1999; Kawachi 2000).

Another question about measurement of life satisfaction is whether those measures are meaningful in cross-regional or cross-national comparisons. In other

words, comparing subjective feelings in different areas and cultures could lead us to nowhere, since there is no objective and standardized methods of comparison. Furthermore, the bias in statistical methods while using cross-national datasets could mislead us.

Regarding to the problem, many researchers believe that their works are creditable and reliable, with introduction of more advanced and sophisticated statistical methods to reduce possible biases, such as wider survey, more concrete data, pooled panel data, etc. Hay Bernd (2007) analyzed the determinants to life satisfaction in a pooled data set of representative individual survey data from 7 East European countries collected during the early phase of economic and political transformation. He claimed that the individual effects of variables across countries were not statistically different from the results obtained from the pooled data set. Cross-country differences in aggregate happiness can be explained well by variations in the unemployment rates, the degree of political freedom and the human development index. On the other hand, Sanfey, Peter Teksoz and Utku (2007) analyzed life satisfaction in transition countries using evidence from the World Values Survey and demonstrated that individuals in transition economies, on average, recorded lower values of self-reported satisfaction of life, compared to those in non-transition countries. Welsch, Heinz (2007) used data from surveys of life satisfaction and found that European citizens' subjective well-being was inversely related to inflation and unemployment. Robust relationships between social capital and health at individual level were found in many cross-national studies (Islam et al., 2006), while in ecological studies the effects of social capitals on social welfare and health were mixed with more complex contextual properties, such as political system (Navarro Shi, 2001) or cultural differences (Eckersley, 2006; Forbes Wainwright, 2001). Many other researches followed this line and their effort produced significant results. It's thought that, with the development of statistical technology, the possible statistical errors remain no longer highly problematic to cross-sectional data studies in this arena.

In short, after reviewing literature of SWB and raising two questions about the

SWB measurement and analysis, we conclude that most of the studies in this literature consider self-reported happiness as effective indicators of SWB and the reliability of this measurement has been tested. In this paper, we shall feel confident about following the route of previous studies and using the self-reported happiness as target variable to study, which can not only reflect individual's subjective perceptions of life, but also gain objectivity in systematical aggregation over area and time variation.

1.2 Social Capital: Definition and dimensions

1.2.1 Definition

Though social capital has been an interesting issue for long time, it does not have a clear, undisputed meaning, for substantive and ideological reasons (Dolfsma and Dannreuther 2003; Foley and Edwards 1997), which results in a considerable controversy in the literature over the use of the term "capital" (Falk and Kilpatrick 1999; Hofferth et al. 1999; Inkeles 2000; Lake and Huckfeldt 1998; Schmid 2000; Smith and Kulynych 2002). Though there is no consensus on definition, the term of "social capital" is still widely accepted by most researchers. The commonalities of most definitions of social capital are that they focus on social relations that produce social and economic benefits, which can be considered as productive resources of human society.

Among those most distinguished proponents of notion of social capital, Coleman (1990) thinks that

> *social capital "consist of some aspect of social structure and they facilitate certain actions of individuals who are within the structure..."*

Putnam (1993) believes that

> *social capital as "features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions..."*

There are many other definitions also. However, social capital theory suffers criticism because its unclear definition, which is partially stem from the fact that social capital is complex, contextual and multi-dimensional "capital". From the empirical perspective, the classification of those possible dimensions of social capital is of crucial importance in sense of the operationalism of social capital. In this paper, we will review previous studies in order to take appropriate components from various dimensions of social capital to fit our model.

1.2.2 Forms and Dimensions

In conception of social capital, associational activity and socialization are the heart. Trust, norms and networks are all different facets of the same functional notion. In other broader definitions, the concept of social capital covers dimensions including institutions, relationships, attitudes and values governing interactions amongst people and contributing to economic and social development. Social capital also includes shared values and rules for social conduct including trust and civic responsibility(Sriyaiyer, Micheal K. And Bernardtoh, 2005).

As stated in those notions and following interpretations of them, it's generally accepted that social capital can be divided into cognitive and structural aspects: the first aspect encourages people to act in a socially beneficial way while the second one facilitates social interaction.

More precisely, two dimensions of social interaction are recognized and used in studies of social capital:

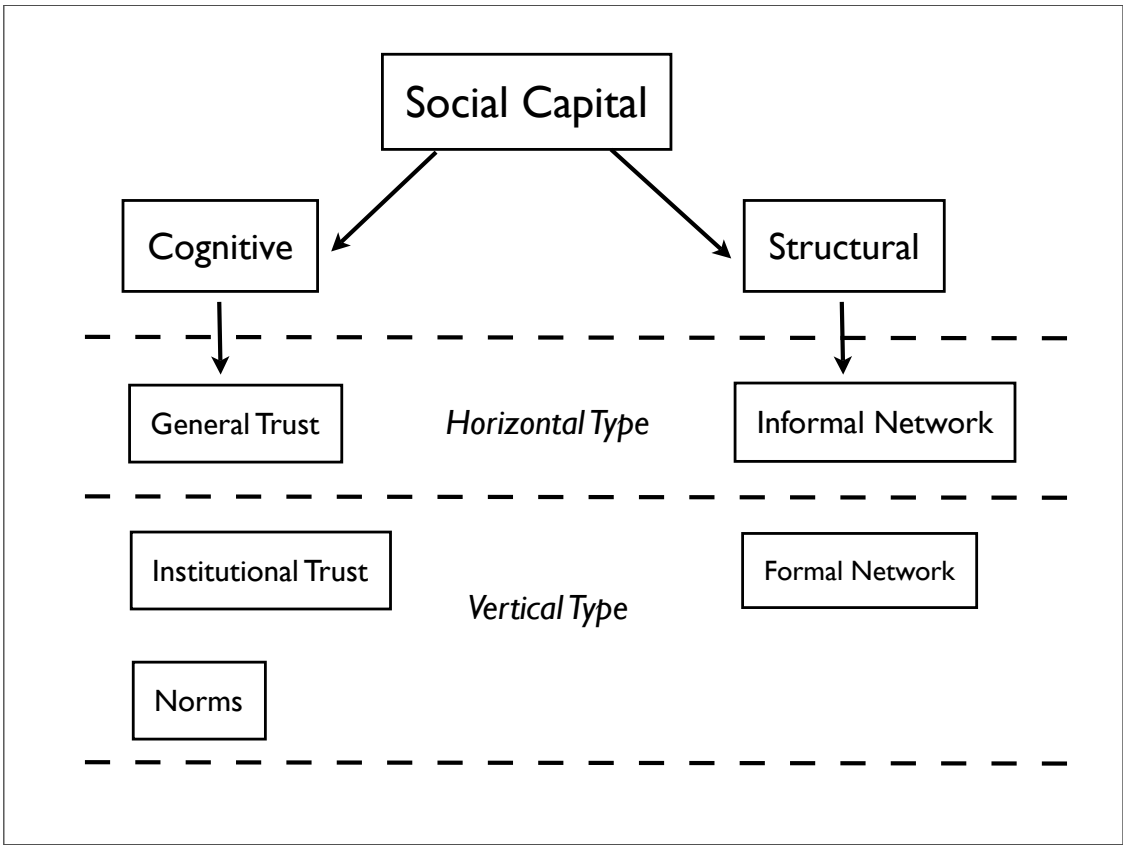
Cognitive social capital includes norms, values, attitudes and beliefs. The cognitive component assesses people's perceptions of the level of interpersonal trust, sharing, and reciprocity. This aspect includes different types of trust and civic norms, also referred to as trustworthiness.

Structural components of social capital refer to externally observable aspects of social organization, such as the density of social networks, or patterns of civic engagement. The structural aspect not only includes participation in formal and

informal networks,but also examines the extent and intensity of associational links and activity in society.

From other perspective,two types of social capital can be identified: vertical and horizontal. Vertical refers to hierarchical or unequal relations (i.e. trust in various institutions in society, formal network and associations) while horizontal reflects ties among individuals or groups of equals (generalized horizontal trust in other people, participation in the social networks and social activities of civil society).

Figure 1.1: Concept Framework of SC



1.2.3 Selection of SC Indicators and their Measurement

As meanings of concept of SC continue to be contested, the operationalization and measurement of social capital remain to be a challenge to researchers. From the perspective of empirical research, the primary task is to quantifying social

capital. One effective method is to identify observable variables that can be used as proxies for social capital.

And as a result of divergences over SC definition, it's difficult to make distinction between wide range of social capital indicators. But one thing is clear, while accepting the complex concept of social capital, we need not only be conscious that there are many factors which should be taken into consideration, but also be aware of which of them are meaningful to our study.

As question of Paldam (2001): whether social capital is "one or many"? If it's one, how to construct one single index representing such a multi-dimensional capital? If its many, how to choose among many indicators that can truly represent it? Since we accept the fact that social capital covers many facets of human society, it's logical to understand that, though challengeable, it is necessary to use data which can cover multi-dimensionality of social capital instead of using one dimension.

Thus the selection of effective and appropriate indicators is of high importance and can only be done based on a objective overview of the conceptual framework of social capital. In choosing those indicators, the current paper follows mostly the individual-based model of social capital (Bourdieu, 1985; Coleman, 1988), which concentrates on the ability of persons to obtain resources through networks or other social structures.

More precisely, we will study indicators selected from those two major dimensions and it's noted that the selection of variables are not based on author's subjective presumption, but from the commonly proved conceptual framework and the dimensions. And these indicators, aggregated in their own dimension, can be considered as proxies of social capital. It is also assumed that these two sides of the concept work interactively and are mutually reinforcing.

Following similar procedures of previous investigations, 5 components of social capital are included in this study, which are: formal and informal networks, general and institutional trust, and norms. From perspective of functions, those 5

components belong to 2 major dimensions of social capital(cognitive and structural). In contrast, according to nature of those components, general trust and informal network are defined as horizontal type while others are determined as vertical type.

From the contexts of our dataset, 10 indicators are chosen for easier collection of data. The careful selection of those variables and indicators is not based on presumptive judgment, but determined by the importance and representativeness of those aspects in the concept structure of the social capital. Considering that social capital is contextual and difficult to be explained with a single index, we will use these variables separately in our model. The exact descriptions of the indicators of social capital included in the analysis are presented in next section.

1.3 Social Capital and life Satisfaction

As mentioned before, there has been growing interest in the relationship between social capital and subjective well-beings. This is the reason that drives the author to continue research in this literature.

Previous studies covered most determinants to life satisfaction, ranging from demographic factors such as age, gender, marriage status, to socio-economic conditions such as income, workplace. Researchers usually included not only variable related to social capital but also socio-economic indicators in their study. Cross-country and cross-level comparison studies are the most common methods of study. It's recognized that, those variables of SC and SE dimensions not only cope with the concept framework of life satisfaction, but also have been proven to be effective in empirical means.

Most of these studies conceptualize and operationalize social capital in cognitive and structural dimensions and all indicators selected from those dimensions are associated with life satisfaction. However, one of the big issues in social capital research is noteworthy. Due to the ambiguity and complication of SC literature, along with empirical difficulties, many social scientists can only afford to use

partial interpretation of Putnam and Coleman's definition. The result is that empirical studies based on that interpretation have quite diverse consequences on different dimensions of social capital. That's how makes "discussion difficult" (Knack and Keefer, 1997).

The most outstanding contributions are made by Helliwell. Helliwell (2003) based his international comparison on international samples of individual respondents, rather than national average levels of life satisfaction. He found links between life satisfaction and social capital, but he also acknowledged that his findings can only show linkages and not establish the existence of of causation.

Starting from those results, Helliwell and Putnam(2004) conducted further studies using WVS data, the Social Capital Benchmark Survey in USA and Canadian data and they found that individual level social capital (measured by indicators such as the strength of family, neighborhood, religious and community ties) was strongly associated with subjective well-being. The conclusion was that all indicators of social capital appeared independently and robustly related to happiness and life satisfaction.

In line of studies about associations between SC and SWB, at least three unsolved questions in statistical means should attach our attention. First, due to unaddressed omitted variables bias, the estimation results may not be statistical significant. Second, the robustness of the empirical studies can not ensure that those determinants included are real determinants to the social capital. Third, estimations are generally based on datasets which omit the life time effects and the robustness of their results need more tests.

This work is an attempt to solve those questions by introducing synthetic panel FE strategy based on a synthetic panel generated from original WVS data, which can reduce the scope of possible biases, especially those due to omitted variables bias and life time effects.

More precisely, the availability of a time-series of cross-sectional WVS allows us to construct synthetic panels following methods described by Shorrocks (1975) and Deaton (1985).The key idea with synthetic panels is to divide the sample

into groups whose membership is assumed to be fixed over time. The average behaviour of these groups is then tracked over time. Sample in synthetic panels should be continually representative of the population that has fixed composition.

In the context of SWB and SC-SE, the synthetic panel method requires that we form various cohorts defined by date of birth and then follow them across the successive WVS. Similar cohorts methods were used by researchers in studying determinants to employment (Li Yaojun,2005; Kristin,2004) and health (Pavalko et al.,2005; Soldo J. et al., 2006), but neither with consideration of fixed effects nor related to life satisfaction. Thus this work is trying to make use of this methodology to investigate associations between social capital and subjective well-being.

The purpose of this article is to examine the effects of various individual-level determinants on life satisfaction and our focus is on those SC indicators. Since other important socio-economic indicators (such as income, education) are also closely related to social performances of individuals, we also included some indicators in socio-economic fields in this paper.

In order to further explore the relations between social capital and subjective well beings, we use the 4-wave World Value Survey (WVS) datasets to conduct correlation and regression analysis for testing possible associations between SC and SWB. Since evidences suggested possible unobservable time effects over this relationships, we control for these effects at the higher degree of data aggregation, using synthetic panel data constructed based on country, gender and birth cohort. Details about construction of synthetic panel will be explained in chapter 3.

The present work is constructed as follows. Firstly, reviews of previous studies are presented for constructing theoretical and empirical framework, as we did in part of introduction. Secondly, statistical methods and data sources are introduced in details. Thirdly, we conduct discussion on the results obtained from statistical process. Finally we present the conclusion of this study and point out directions of future investigation.

2 DATA

2.1 Data sources

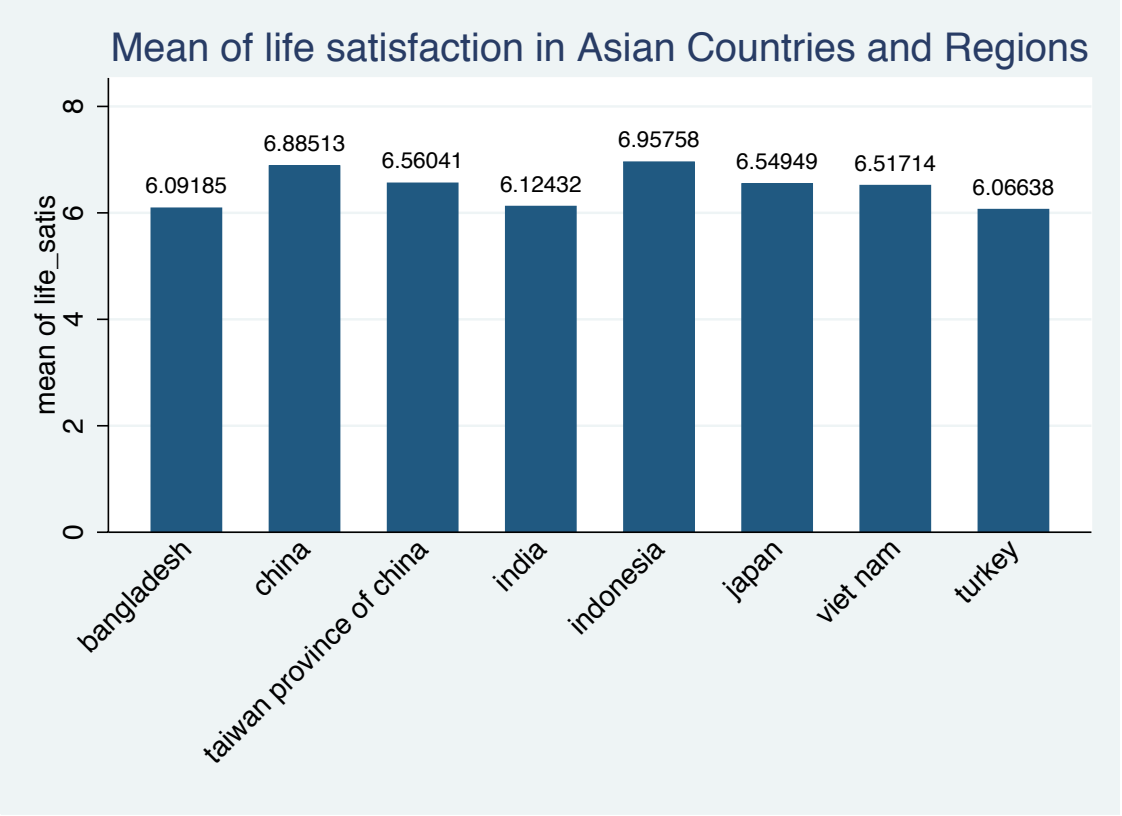
The data used for our study was taken from the World Value Survey datasets. The WVS aimed at designing and conducting a major empirical study of the moral and social values underlying world social and political institutions and governing conduct. This project was designed to explore empirically the patterns and changes in cross-national/regional differences and similarities in basic social values. Surveys were conducted by social scientists for investigating the basic values and beliefs of the publics of more than eighty countries and regions, on all six inhabited continents.

To achieve this, surveys were carried out using uniformly structured questionnaires, enabling generalizations and comparisons. Guidelines for the survey were provided to participatory organization in each countries and the national representatives had to complete a methodological questionnaire for feedback of standardized information.

From Figure 2.1 of page 22, we will clearly see the variation of self-reported happiness level of those countries and regions. Also Figure 2.2 in page 23 shows that variation of life satisfaction is evident across different waves. Our interest is to study whether variations of SWB are associated to those SC and SE variables that we included in our model.

For the purpose of a complete analysis of social capital and life satisfaction, the present study used information from the all four waves of WVS, which included

Figure 2.1: Life Satisfaction Differences among Asian Countries in Wave 4



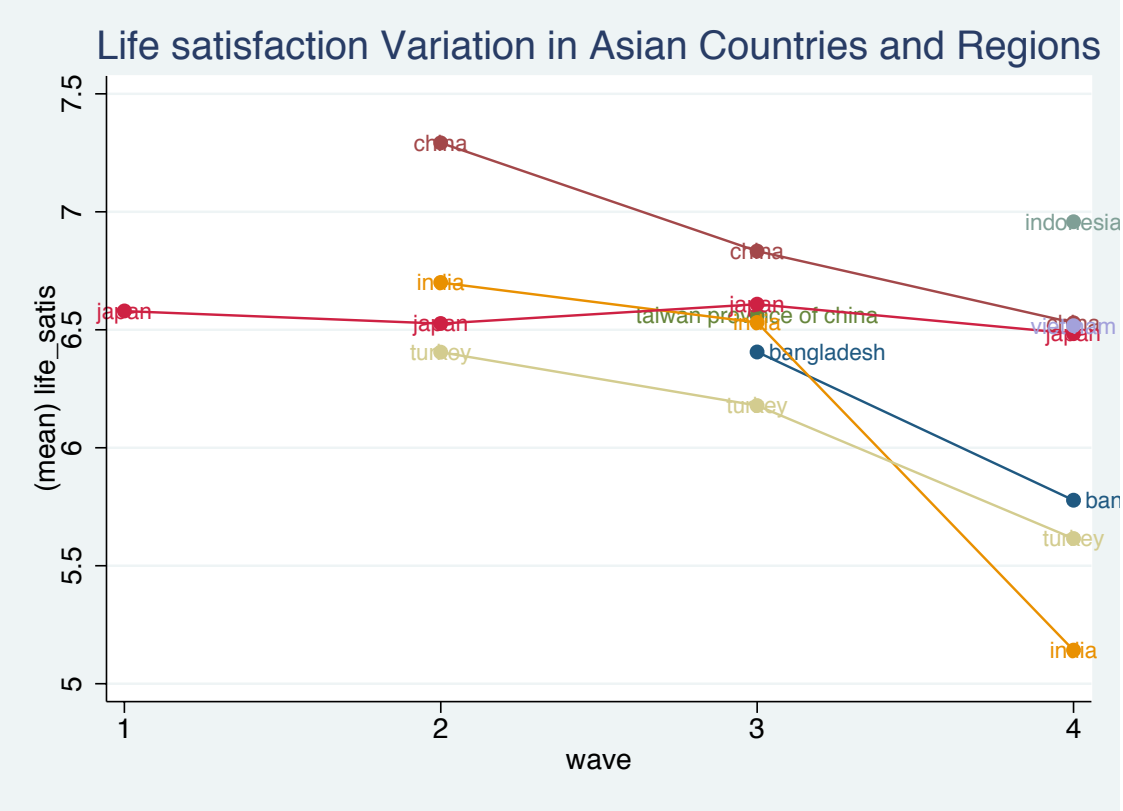
around 120 countries. However, considering survey deficiencies such as missing values, this number is reduced to about 50 countries.

As stated before, in this paper we tried to cover all those representative indicators. However, due to the space limit and model fit problem, it's impossible to include all of them. Thus, only those most representative indicators are chosen and the appropriate selection of variables will allow us to determine what may matter in our study instead of presumptive judgment.

2.2 Variables

Table 2.3 in page 24 lists the variable included in our test. Grouping variables (country, gender, year of birth) were used for transforming the original WVS datasets into a synthetic panel.

Figure 2.2: Life Satisfaction of Asian Countries Across Waves



2.2.1 Dependent Variables

The dependent variable is the life satisfaction. A basic assumption for our analysis is that the dependent variable could be treated as a continuos variable in order to retain information as much as possible from the value scale, though it was an ordinal scale. There were studies proving the worth and reliability of doing so (Maccallum, Zhang, Preacher, Rucker, 2002; Snijders and Bosker, 2000). In order to test the reliability of this data transformation, a residual analysis was carried out that plotted the standardized individual residuals against the predicted values as in studies conducted by Glodstein(1995) and no sign of heteroscedasticity in residuals was found. So our statistical methods are applicable in orignal WVS datasets. As for the synthetic panel, all values were aggregated in cells defined by grouping variables. Then the life satisfaction variables is actually continuos, which also fits our model.

Figure 2.3: List of Variables

Variable Name	Functions	Data Source	Notes
Life satisfaction	Dependent Variables	WVS a170	From 1 to 9 (1=unsatisfied, 9=satisfied)
General Trust (--)	General Trust	WVS a165	From 1 to 2(1=Trustful, 2=Not Trustful)
Institutional Trust(--)	Confidence: The Press	WVS e072	From 1 to 4(1=Great Deal, 2=Not at all)
	Confidence: The Police	WVS e074	
	Confidence: The Civil Services	WVS e076	
Norms (--)	Justifiable: claiming government benefits	WVS f114	From 1 to 10(1=Never, 10=Always)
	Justifiable: cheating on taxes	WVS f116	
	Justifiable: someone accepting a bribe	WVS f117	
Informal Network (--)	Family Important	WVS a001	From 1 to 4(1=Very, 10=Not at all)
	Friends Important	WVS a002	
Formal Network (+)	Memberships(Participation)	WVS a064-073	From 1 to 10(Sum of 10 items)
Income Scale (+)	Other variables	WVS x047r	From 1 to 9(1=lowest,9=highest)
Job satisfaction (+)		WVS c033	From 1 to 9 (1=unsatisfied, 9=satisfied)
Health (--)		WVS a009	From 1 to 5 (1=Very Good, 5=Very Poor)
Education (+)		WVS x025	From 1 to 8 (1=1owes, 8=highest)
Country		WVS s003	Country codes Transformed into dummy variables
Gender		WVS x001	1=Male, 2=Female
Year of Birth		WVS x002	4 digit Integral (1881-1988)

2.2.2 Independent Variables

Regarding to satisfaction, it is assumed that the hypothesized determinants such as social capital (with trust and participation as main components at cognitive and structural categories), income, health and education will influence satisfaction level, which will all be included in our test.

SC INDICATORS

General trust

Following previous empirical analysis (Beugelsdijk and Van Schaik, 2005; Helliwell,1996; Knack and Keefer,1997; Zak and Knack, 2001), this study measured the individual and national level of trust using the general trust index. The WVS corresponding question (a165) was: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?", of which the answers were a binomial choice (Trustful=1, Distrustful=2).

Institutional trust: Confidence on Press, Police and civil services

Institutional trust is described by three indicators: confidence in the police, the press and civil services. The WVS corresponding question (e072, 074, 076) were: "I am going to name a number of organizations. For each one, could you tell me how much confidence you have in them: is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all?", of which the answers were recoded in scale 1-4 (1=Great deal, 4=Not at all).

Formal Network: Memberships

Beside the interest in trust index, many empirical studies on social capital placed more emphasis on social participation, such as participation in association or other forms of civic engagement. In this study, individual memberships index

was computed through several items in WVS asking about memberships in different voluntary organizations, such as questions in section "Belonging to voluntary organizations " (index a064 to a073). The categories included in WVS were a broad range of associations from church to unions, even environment organizations. Questions were same in this section:"Please look carefully at the following list of voluntary organizations and activities and say...which, if any, do you belong to?". We coded responses as dummy variable with logical values (0=not mentioned, 1=belong) to build a memberships index by summing up those values, excluding church and religious memberships. Individual memberships index had a scale of 0-10, ranging from 0-10.

Informal Network: Family and friends

Informal network is described by two indicators: importance of family and friends. The WVS corresponding question (a001 and a002) were: "For each of the following aspects, indicate how important it is in your life", of which the answers were recoded in scale 1-4 (1=Very Important, 4=Not at all). Informal network index is also the sum of two indicators.

Norms: Confidences on institutions

When attempting to measure norms, one has to bear in mind that claimed norms can noticeably differ from the actual behavior. Because the respondents are likely to be reluctant to admit bad behavior (Knack and Keefer, 1997), survey results could be very subjective as reflection of actual behavior. In this paper, norms are described by three indicators: justifiability of cheating on taxes, of claiming government benefits to which one is not entitled, and of accepting a bribe (f114,f116 and f117). Answers' value scale is 1-10 (1= Never, 10= Always)

SE INDICATORS

Income

As stated in earlier studies, the WVS data offer some advantages and disadvantages in identifying the linkages between income and well-being like life

satisfaction (Helliwell, 2003). Income at individual level was measured with responses to the WVS question 047r: "Here is a scale of incomes. Would like to know in what group your household is". Answers' value scale is 1-9(1= Lowest, 9= Highest).

Job satisfaction

Satisfaction is measured by WVS question c033. Answers' value scale is 1-9(1= Unsatisfied, 9= Satisfied).

Health

Individual's health was measured in a 1-5-point scale. The corresponding WVS questions a009 was "how would you describe your state of health these days?", which was also a self-assessed satisfaction level (1= Very Good, 5=Very Poor).

Education

Education was measured with WVS question x025 "What is the highest educational level that you have attained (1=lowest, 8=highest)".

3 STATISTICAL METHODS

3.1 A Two Level Test Approach

Since the main purpose of this paper is to study relationships among life satisfaction and SC and SE indicators, we will focus on those variable datasets representing different dimensions of social capital. Mainly two levels of test are included in this study. First, we run a linear regression using the original WVS datasets over SC variables and SE variables to test effects of the those explanatory variables on life satisfaction. Second, we consider an extension of the above model, which allows for the possibility that the effect of the conditional variables experience variations across area and life period. For the second test, a synthetic panel is created by aggregating the original observations into panel cells with the 3 grouping variables.

The first level test follows previous study patterns, with large amount of observations, which can reflect associations at individual level in general means. As for the second level test, the heart of the our study is the following model:

$$Y_{ijskt} = X_{ijskt}\beta + u_{ijskt} \tag{3.1}$$

where Y is the measure of life satisfaction of individual i in birth cohort j with gender s in country k in year t;X is the collection of SC variables and individual level socio-economic characteristics such as income and educational attainment; u is the statistical error term.

POLS analysis is applicable to this model. However, as we stated in the part of introduction,there are possible biases due to measurement error and omitted

variables. The synthetic panel FE strategy is an attempt to overcome some of these problems. The strategy works on the following model:

$$Y_{jskt} = X_{jskt}\beta + u_{jskt} \tag{3.2}$$

where Y is the average value of life satisfaction among the individuals in the cell defined by birth cohort j, gender s, country k, and survey year t, and likewise for the X and u variables on the right-hand side. Note that this is the simple mathematical average of the previous equation, and that it makes no further assumption.

The FE strategy consists in the assumption that (a) the error term u_{jskt} is decomposed into the time-invariant cell-specific effect v_{jsk} and the time-varying effect e_{jskt} and that (b) the time-invariant cell-specific effect v may be correlated with the X variables but the time-varying effect e is NOT.

Furthermore, we have the equation:

$$Y_{jskt} = X_{jskt}\beta + v_{jst} + e_{jskt} \tag{3.3}$$

where u term is decomposed into v and e terms. Under the FE assumptions, either the "within" transformation or the time-differencing eliminates the potentially troublesome time-invariant effect v (troublesome because of the potential correlation with the X variables). Least squares estimation on the transformed equation then may produce consistent (or unbiased) estimates of the slope coefficients.

Since our original dataset is transformed into the panel which certain sets of observations came from certain units, it's reasonable that we include in our model the fixed quantities, allowing for different intercepts for our units, but constraining the slope to be the same across units.

It's noteworthy that the synthetic panel FE strategy helps us cope with the difficulty of intercultural, inter-temporal comparison: as long as the systematic tendency to over-stating or under-stating the level of life satisfaction remains unchanged over the span of our data period, this idiosyncrasy will be eliminated by the FE transformation (contained in the u to be eliminated) and stop being a source of trouble.

Table 3.1: Summary of Life Satisfaction by Cohort Groups

cohort	mean	p50	p25	p75	range	N
0	7.31	7.50	6.00	8.50	7.00	16.00
1	7.62	8.00	6.00	9.00	9.00	313.00
2	7.27	8.00	6.00	9.00	9.00	2,155.00
3	7.07	8.00	5.00	9.00	9.00	8,085.00
4	6.72	7.00	5.00	9.00	9.00	20,398.00
5	6.58	7.00	5.00	9.00	9.00	30,749.00
6	6.61	7.00	5.00	8.00	9.00	38,873.00
7	6.56	7.00	5.00	8.00	9.00	54,242.00
8	6.63	7.00	5.00	8.00	9.00	56,952.00
9	6.55	7.00	5.00	8.00	9.00	42,106.00
10	6.50	7.00	5.00	9.00	9.00	6,257.00
Total	6.62	7.00	5.00	8.00	9.00	260146.00

source:wvs.dta

3.2 Inclusion of Birth Cohort and Construction of Panel

For the second test, the original WVS is transformed to fit our test. Birth Cohort is computed from the years of birth, which range from 1881-1981 in our WVS sample. We combine individuals born in same year and recode them in different birth cohort. Table 3.1 shows the summary of life satisfaction of each cohort group. In the table, cohort is from 0 to 10. Cohort 0 includes those born in 1881-1890 range of year while cohort 10 includes those born in 1981-1990 period.

The original WVS samples are partitioned by countries and gender, crossed with ten 10-year-interval birth cohort (In this study we do not include each year in our panel data for simplification of our model). Our synthetic panel is the set of means of those variables in each group. The cells of the synthetic panel are filled with average value for each independent and dependent variable. Using this method, we aggregate individual record data into a new datasets separately for each 10-year-inverval cohort and then regress these aggregated values (mean of

those belonging to same cohort).

The inclusion of birth cohort is of crucial importance for our test, because it can reduce the possible statistical error caused by the use of datasets from different WVS waves. Allowing variation by cohorts seems sensible, since we would expect that individuals' decisions or self-evaluations at approximately same time would be influenced by similar factors. Thus samples from those cohorts show more reliability. However, age and cohorts effects are confined within one wave of survey. In order to extend the reliability of cohorts effects through all 4 waves, synthetic panel strategy is helpful by grouping those individuals (who are not real cohorts) into "synthetic" cohorts for our second level analysis.

The next part will present results of our analysis.

4 RESULTS

4.1 Results from WVS Original Datasets

Summary of variables included in our model is shown in Table 4.1.

Table 4.1: Summary Statistics

Variable	Mean	Std. Dev.	N
life_satis	6.616	2.488	263097
gral_trust	1.705	0.456	255399
instrust	7.661	1.913	231916
norms	6.421	4.738	237278
infnet	2.886	0.888	236797
fnet	0.831	1.326	78669
income_scale	1.954	0.793	227535
job_satis	7.324	2.189	68871
health	2.249	0.928	215997
education	4.444	2.279	187668

Pearson correlations for all individual-level items in social capital dimension are shown in Table 4.2 . All individual level covariants are significantly related to life satisfaction. The association is not very strong and the large sample may induce the statistical significance of each. The strongest association is between life satisfaction and general trust and informal network. As expected, all the indicators of social capital show significant correlation with life satisfaction. Note here first 4 indicators (except formal network) have negative signs because higher

values in those indicators actually mean low stock of social capital, for example, general trust takes values from 1(trustful) to 2(not trustful) and increase of its value implies low level of trust.

Table 4.2: Cross-correlations of SC

Variables	life_satis	gral_trust	instrust	norms	infnet	fnet
life_satis	1.000					
gral_trust	-0.103	1.000				
instrust	-0.094	0.085	1.000			
norms	-0.065	0.030	0.104	1.000		
infnet	-0.116	0.063	0.083	0.057	1.000	
fnet	0.091	-0.096	-0.133	-0.024	-0.076	1.000

Table 4.3: Cross-correlations of SE

Variables	life_satis	income_scale	job_satis	health	education
life_satis	1.000				
income_scale	0.156	1.000			
job_satis	0.428	0.106	1.000		
health	-0.296	-0.166	-0.175	1.000	
education	0.086	0.336	0.036	-0.161	1.000

Pearson correlations for other non-SC items are shown in Table 4.3. The strongest correlations are between job satisfaction and life satisfaction, also between income and education. Health is also negatively correlated to life satisfaction, which in fact means that good health status brings more satisfaction.

The regression analysis result are presented in Table 4.4. The included variables are as follows: general trust, institutional trust, norms, informal networks, formal networks, income scale, health, and education. All explanatory variable are reported to be significant except the education. Health and general trust report highest coefficients. The post-estimation is also passed.

Results of first level test confirm again findings of previous researches about the association between SWB and SC-SE. However, we need to control time and area effects for exploring further how reliable the association is.

Table 4.4: First Level Test

	(1)	(2)
	SC	SE
most people can be trusted	-0.576*** (-26.13)	
instrust	-0.0794*** (-15.54)	
norms	-0.0139*** (-6.80)	
infnet	-0.325*** (-28.69)	
fnet	0.112*** (15.51)	
income level		0.195*** (4.60)
job satisfaction		0.403*** (31.10)
state of health (subjective)		-0.520*** (-14.60)
highest educational level attained		-0.00972 (-0.67)
Constant	9.141*** (147.58)	4.850*** (30.34)
Observations	63990	4804

t statistics in parentheses

source:wvs.dta

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.2 POLS and FE Test in Synthetic Panel

Considering the fact that our datasets are collected in 4 different waves, we also did regression by using the dummy variable of survey wave in order to analyze the effects of survey waves over estimation results. The results show that the recent two waves have negative effects on individual life satisfaction perception (wave 2 was dropped due to some of our main independent variables are not included in this wave since there were no corresponding questions, such as those related to social participation). However, the result is not very useful since there

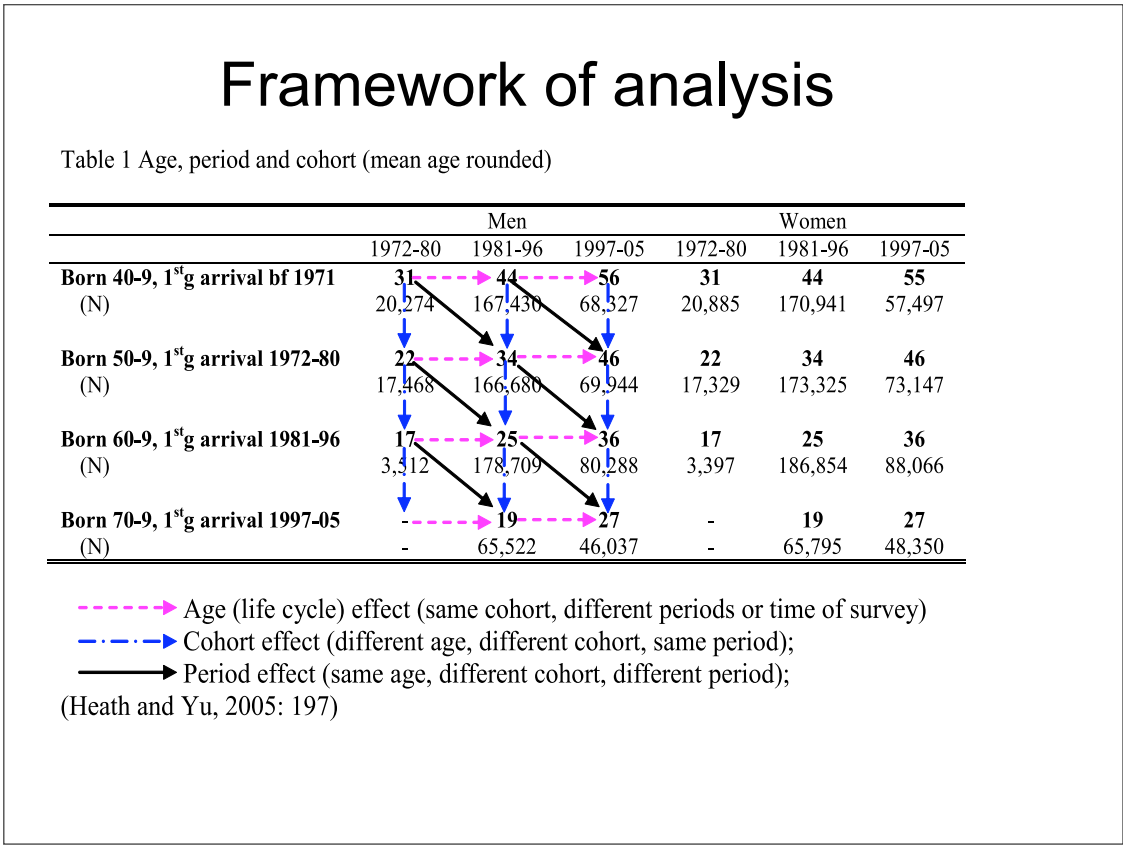
are possible time effects, which are omitted in this model.

Acknowledging that simply including the wave dummy did not yield many meaning for our statistical process, we now estimate the relations between life satisfaction and social capital indicators in two different models, pooled OLS (POLS) and fixed effects (FE) on a synthetic panel consisting of cells grouped by country, gender and birth cohort. This is the core of our econometric investigation in this work.

Age Effects,Cohorts Effects and Life Period Effects

Before starting cohort effects analysis, we first make distinctions between age effects, cohorts effects and life period effects,which have been illustrated by Heath and Yu(2005) as in the following figure 4.1.

Figure 4.1: Age,Cohort and Period Effects



In original survey data, it's more appropriate to use survey results of four waves as four different samples, as respondents in each survey are supposed to be dif-

ferent groups of people. Since surveyees chosen for 4 waves WVS are from different sampled groups, there are differences of life satisfaction among different ages within each of the four waves. Note here cohorts within each wave itself are real cohorts. Between each group of cohorts, the age may be a factor influencing their life satisfaction. But this type of age effects can not go easily beyond the same wave. This question arises when we conduct analysis over more than one wave, thus the estimation results are questionable. In order to overcome this problem, it's appropriate to use "synthetic" cohorts in a synthetic panel for further analysis.

We further explore variations of variables across birth cohort, in the pattern of birth cohort as a time series for life cycle. In synthetic panel analysis, surveyees who are not real cohorts are considered as "real cohorts" through our cohort grouping variable recoded from year of birth. By doing this, we are able to reduce statistical errors by considering observations from different cohorts as observations from different life period of same individual. Thus, using synthetic cohort approach enables us to explore association between SWB and SC, by controlling errors caused by time effects.

POLS and FE Results

The synthetic panel includes about 1000 observations (reduced to about 600 with inclusion of all SC and SE variables due to missing data) grouped by country, gender and birth cohort. For each country, we have about 10-20 cells. Values of those cells are mean of original values of those synthetic cohorts. Those cohorts are from four different wave, but we measure their values as in different time period of their life. The large size of sample is helpful for the synthetic cohort approach, because aggregation units can be defined sufficiently narrow to assure homogeneity without loss of statistical precision.

In our test,the dependent variable (life satisfaction) is generally normally distributed (transformation with square value seems more normally distribution, and could be considered as underlined dependent variable in future researches) and matrix between life satisfaction and each SC variables does indicate signs of linear relationships.

Table 4.5 reports two sets of results: POLS and synthetic panel FE results. We combine them together to facilitate easy interpretation. The variables are the same from the first level test. All of them are regressed both in POLS and FE model as in 4.5.

Table 4.5: Second Level test: FE and POLS

	FE	POLS
gral_trust	-1.066*** (-4.91)	-0.678** (-2.92)
instrust	0.0845 (1.85)	0.0455 (0.90)
norms	-0.00934 (-0.56)	0.00816 (0.44)
infnet	-0.617*** (-6.59)	-0.311** (-3.05)
fnet	-0.0255 (-0.45)	0.272*** (5.45)
income_scale	-0.0771 (-0.99)	-0.282* (-2.29)
job_satis	0.148*** (8.76)	0.375*** (14.00)
health	-0.404*** (-5.81)	-1.272*** (-17.44)
education	-0.0466 (-1.94)	-0.264*** (-8.89)
N	571	571
adj. R^2	0.217	0.718

t statistics in parentheses

source:Panel.dta

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

As shown in Table 4.5, the regression result confirms again the correlation and regression outcomes of original WVS datasets. As expected, we can see significant effects (though not all of them) of explanatory variables over the dependent variable both in FE and PLOS model. All the coefficients in FE model are smaller than their counterparts in POLS model, which is reasonable because their effects in POLS are divided into time-variant and time-invariant effects.

General trust and informal network show significant coefficients in both FE model and POLS model and signs of those coefficients are as we expected. General trust reports highest coefficient, which implies that the time-variant effects of general trust is most notable in determining life satisfaction. Since higher val-

ues of cells of general trust mean generally lower level trust in human society, the negative sign of its coefficient implies that more trust is positively associated with satisfaction. The same happens in case of informal network.

The SC indicators in institutional/vertical level (including institutional trust, norms and formal network) do not report any significant results in our panel analysis. Their variations have no impact over one's perception of life across life period. One interesting thing is that the coefficient of formal network experienced a dramatic change of sign. Considering that the coefficient in FE model is not significant while its counterpart in POLS does, the FE model results demonstrate that formal network may have no impact over life satisfaction with inclusion of fixed effects.

In those socio-economic variables, health and job satisfaction report significant results while income and education do not in FE model. The signs of them also confirm our assumption about their effects on self-reported happiness.

In summary, the results reveal more significant facts than the first level test. Independent variables show significant impact except institutional type SC variables, along with income and education in our FE model. The effects of them in FE model show more consistency compared to the first level test. It's noted that general trust and informal network, two indicators belonging to horizontal type are positively associated with SWB while all three vertical type SC indicators are not. The implication of this difference is that horizontal social capital are more specifically associated with life satisfaction both in FE and POLS strategies.

A natural extension of the second level test is to ask whether similar patterns would appear in different size of samples or different equations of model. The panel is split into datasets of subgroups according to regions and development level of those countries and regions, in order to test the robustness of our model. The mixed results only partially confirm the previous regression results.

In the sensitivity test I (Table 4.6), we split panel data into Asian countries and other countries. Only few of coefficients are significant in Asian countries groups while the output of other countries show higher consistency with our

assumption. While in the sensitivity test II (Table 4.7), we split panel into developed countries and others. The results show that those developed countries report coefficients very similar to the second level test, both in FE and in POLS model. This divergence implies that variables of region and development level may be an important factor omitted in our analysis. The report results show that those developed countries (mainly those American and European countries) are more likely following relations between social capital and life satisfaction. There are possible systematical differences among different cultures and regions. Thus the robustness of our model needs more further test of sensitivity.

Table 4.6: Sensitivity Test: Asian VS. Others

	Asian_FE	Other_FE	Asia_POLS	Other_POLS
gral_trust	0.532 (0.82)	-1.274*** (-5.67)	-0.162 (-0.25)	-0.268 (-0.99)
instrust	-0.585*** (-4.18)	0.128** (2.74)	0.0287 (0.21)	0.0372 (0.68)
norms	-0.103 (-1.71)	-0.00820 (-0.49)	0.0365 (0.60)	-0.00471 (-0.23)
infnet	-0.698* (-2.58)	-0.678*** (-7.04)	0.607 (1.96)	-0.457*** (-3.90)
fnet	-0.496** (-3.08)	0.00642 (0.11)	-0.281 (-1.28)	0.270*** (4.96)
income_scale	0.375 (1.87)	-0.149 (-1.85)	-0.0442 (-0.15)	-0.231 (-1.75)
job_satis	0.181*** (4.43)	0.132*** (7.43)	0.253*** (4.40)	0.346*** (11.25)
health	0.0761 (0.33)	-0.439*** (-6.21)	-0.214 (-1.04)	-1.323*** (-17.16)
education	0.0487 (0.69)	-0.0466 (-1.88)	0.0201 (0.23)	-0.292*** (-8.70)
N	65	506	65	506

Table 4.7: Sensitivity test: Developed VS. Others

	Dev_FE	Other_FE	Dev_POLS	Other_POLS
gral_trust	-0.890*** (-3.81)	-0.480 (-1.06)	0.629* (2.11)	-1.917*** (-4.88)
instrust	-0.183** (-2.98)	0.125 (1.50)	-0.313*** (-3.64)	0.173* (2.55)
norms	0.0496** (2.67)	-0.0499 (-1.50)	-0.00530 (-0.23)	0.0125 (0.41)
infnet	-0.852*** (-8.37)	-0.118 (-0.69)	-0.859*** (-5.86)	-0.0532 (-0.34)
fnet	0.0730 (1.17)	-0.206* (-2.00)	0.318*** (5.09)	0.199* (2.27)
income_scale	0.0201 (0.23)	0.110 (0.75)	0.0634 (0.46)	-0.476* (-2.05)
job_satis	0.0765*** (4.07)	0.238*** (7.64)	0.242*** (7.19)	0.466*** (10.14)
health	-0.321*** (-4.38)	-0.351* (-2.31)	-1.102*** (-12.95)	-1.407*** (-10.25)
education	-0.0388 (-1.37)	-0.0176 (-0.46)	-0.254*** (-6.43)	-0.241*** (-5.36)
N	368	203	368	203

t statistics in parentheses

source:Panel.dta

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5 DISCUSSION

Recall from our review that most of studies consider combination of cognitive and structural dimensions of SC and find correlations between SC variables and SWB variable. The basic hypothesis is whether variations of SWB are associated to SC and SE variables. Also we are particularly interested in two questions: Firstly, how robust are those observations over relationships between SC and SWB. Secondly, what potential differetiations of SC influences over SWB may be identified through synthetic panel FE approach. The results from our two level tests are useful for resolving these issues.

As for the first question, we found significant statistical relations between dependent variable and independent variables included in our model based on individual level observations from the original WVS datasets. Similar relations (not all of them) were found also in FE and POLS models based on the synthetic panel constructed from the original datasets.

By running regressions over the original dataset and POLS over the panel dataset, we demonstrated that social capital has positive effects (it's noted that some variables have negative coefficients, but "negative" sign actually means "high" social capital) on life satisfaction, both in large size sample and in synthetic panel sample.

In our test based on original WVS data, social capital is positively related to life satisfaction (variables in all dimensions of SC show significant impact on life satisfaction). Among them, the trust as cognitive measure of social capital shows stronger impacts over life satisfaction than participation as structural measure.

The effects from cognitive and structural dimensions seem to be equally import in determining the variation of happiness.

Findings in the synthetic panel analysis resolve partially the second question we raised. Statistical results show that higher average life satisfaction is associated with higher stocks of social capital at horizontal level, while the association between life satisfaction and vertical social capital is not clear.

It's very interesting that the regression results of panel analysis are consistent with the results of first level test over original datasets, but only those horizontal type SC indicators reported significant coefficients. All vertical type indicators loosed their significance with consideration of period effects.

As to why this change of significance happens, we can only offer some tentative thoughts. Because of potential SC externalities, the influence of vertical SC over SWB may be difficult to identify. For example, formal network implies more structural "bundle" and could make individuals less happy about his life, especially when the negative influence of excessive engagement in organizations becomes more and more prevalent. Recall the previous quotations of experienced "utility" term in explaining SWB, we may say that the utility of institutionalized factors is likely decreasing with time going.

Regarding to the SE variables, the direct effects from health and job satisfaction are very evident in each model. But the income and education seem to lose the effects in second level test. If we take both POLS and FE model as sampling variation across different life period of an individual, this result may imply that, without fixed effects, income and education show influence over one's happiness. However, if there is a fixed level of income and education that satisfy basic demand of one's happiness, more changes of income and education may not have impact on happiness.

To summarize, we did not find, in our analysis, conclusive evidences in support of social capital as contextual construct which has an influence on subjective well-beings (sensitivity tests reported mixed results). However, we showed that, in general means and life period contexts, horizontal SC variables are associated

with SWB while vertical SC variables are not. This distinction among those two types of social capital is noteworthy. The issue concerning which are those really effective SC determinants to SWB are partially answered and proved by this paper.

Limitations

Results of this study must not be interpreted in a absolute way. Arguments about self-rated subjective indicators remind us to be more careful in drawing our conclusion.

Firstly, cautions should be taken for the limitations in explanation of causality and limits of time series change. Our life cycle effects analysis is simply based on birth cohorts, which possess wide range of age gap. We assume those cohorts do exist. However, in reality, few people can live as long as in our assumption.

Secondly, few WVS indicators are included in our measurements of social capital. Contextual variables at national level derived from synthetic panel could have statistical errors involved.

Thirdly, we did not cover much about the cross national differences in life satisfaction and social capital. Specially, the dependent variable is self-rated perception of individuals, which can vary in distribution among and within different nations. There are possible systematic differences in meanings of responses caused by economic and cultural differences. For above reasons, findings in this study should be considered in a preliminary way.

Future research

The relative importance of social capital may be particularly sensitive to unmodeled factors or unobservable variables, which may include both political and cultural fields. In our investigation, we did not analyze the international differences of life satisfaction and social capitals. Geographical variables are not included due to limited space of work.

Future researches should explicitly consider that differences among countries could alter the interaction effects between social capital and life satisfaction,

or explore further determinants of those differences from scopes of culture and politics. Further analysis of cross-level interactions between individual and national levels will be very helpful to determine underlying effects of social capital in life satisfaction. A further sensitivity test is necessary to confirm the fixed effects of our test.

The main conclusion we draw in this study is the possible existence of association between life satisfaction and social capitals along individual's life time, taking time effects into consideration. Also between horizontal and vertical type SC components, there are different level of impacts over SWB. Even no clear policy implication emerged from our study, it may definitely help policy-makers in understanding importance of social capital and improving future in-depth case studies in this area.

Acknowledgement

I wish to thank Professor Tae Jong KIM, KDI School of Public Policy and Management , who led me to conduct research on social capital and offered help while I was working on this paper. I am also grateful to the Academic Affairs Office of KDI School for their help and support. I am alone responsible for any errors and mistakes in the paper.

Bibliography

[1] Alan B. And David A. Schkade, THE RELIABILITY OF SUBJECTIVE WELL-BEING MEASURES, NATIONAL BUREAU OF ECONOMIC RESEARCH, Working Paper 13027, NBER WORKING PAPER SERIES, April 2007 http://www.nber.org/papers/w13027

[2] Argyle, M. (2001) The Philosophy of Happiness, Routledge

[3] Beugelsdijk H.L.F. de Groot and A.B.T.M. van Schaik (2004) Trust and economic growth: a robustness analysis, Oxford Economic Papers 56 (2004), pp. 118–134.

[4] Beugelsdijk S. and Van Schaik (2005) Social Capital and regional economic growth in European regions; and empirical test, European Journal of Political Economy 21, 301-324

[5] Bourdieu and Wacquant (1992) An invitation to reflexive sociology. Chicago: The University of Chicago Press.

[6] Campbell C: Social Capital and Health(2000): Contextualizing Health Promotion with Local Community Networks. In Social Capital: Critical Perspectives Edited by: Stephen Baron, John Field,Tom Schuller. Oxford: Oxford University Press.

[7] Clark and Oswald (1994) Unhappiness and unemployment, Econ. J. 1994-104, pp. 648–659.

[8] Coleman (1988). Social capital in the curation of human capital. Amercian Journal of Sociology, 94 (suppl.), S95-S120

[9] Cummins, R. (1997) " Comprehensive Quality of Life Scale – Adult," fifth edition manual, Deakin University, Australia.

[10] Cummins (1998) The second approximation to an international standard for life satisfaction, Soc. Indic. Res. 1998-3-43 (3), pp. 307–334.

[11] Dolfsma, Wilfred, and Charlie Dannreuther (eds.) (2003) Globalization, Social Capital and Inequality. Cheltenham: Edward Elgar.

[12] Di Tella, MacCulloch, Oswald (2001) Preferences over inflation and unemployment: evidence from surveys of happiness, Am. Econ. Rev. 91 (2001), pp. 335–341.

[13] Diener and Suh (1999) National differences in subjective well-being. In: D. Kahneman, E. Diener and N. Schwarz, Editors, Well-Being: The Foundations of Hedonic Psychology, Russell Sage Foundation, New York (1999), pp. 444–450.

[14] Easterlin (1974) Does economic growth improve the human lot? Some empirical evidence. In: P.A. David and M.W. Reder, Editors, Nations and Households in Economic Growth, Academic Press, New York, pp. 89–125.

[15] Easterlin (2001) Income and happiness: towards a unified theory, Econ. J. 2001-111, pp. 465–484.

[16] Falk and Kilpatrick (1999), What is Social Capital? A Study of Interaction in a Rural Community, University of Tasmania, Australia

[17] Ferrer-i-Carbonell, A. (2002) Subjective Questions to Measure Welfare and Well-Being: A Survey, Tinbergen Institute Discussion Papers.

[18] Frey and Stutzer (1999) Measuring preferences by subjective well-being, J. Inst. Theor. Econ. 1999-155, pp. 755–778.

[19] Foley, M. and B. Edwards (1997). "Editors' Introduction: Escape From Politics? Social Theory and the Social Capital Debate." American Behavioral Scientist 40(5): 550.

[20] Goldstein (1995) Multilevel statistical models, Arnold, London .

[21] Hayo, Bernd(2007). Happiness in transition: An empirical study on Eastern Europe, Economic Systems, 31-2, pp 204-221

[22] Helliwell J.F. (1996) Economic growth and social capital in Asia. Working Paper No. 5470. NBER, Cambridge, MA.

[23] Helliwell J.F. (2003) How's life? Combining individual and national variables to explain subjective well-being, Economic Modelling 20 331-360

[24] Helliwell, J., Putnam, R.D. (2004), The Social Context of Well-Being, Philosophical Transactions of the Royal Society (London), Series B, 359: 1435-1446.

[25] Hofferth, Sandra L., Johanne Boisjoly, and Greg J. Duncan (1999) The Development of Social Capital. Rationality and Society 11(1): 79-110

[26] Inkeles, A. (2000) Measuring social capital and its consequences, Policy Sciences, 33, pp. 245–268.

[27] Islam, Merlo, Kawachi, Lindström, Gerdtham (2006) Social capital and health: Does egalitarianism matter? A literature review, International Journal for Equity in Health 5,3.

[28] Kahneman, Daniel (1999) 'Objective Happiness,' in Kahneman et al. (1999), pp. 3-25.

[29] Kahneman, Daniel, Alan B. Krueger, David Schkade, Norbert Schwarz, and Arthur Stone (2004) 'Toward National Well-Being Accounts', American Economic Review 94: 429-434.

[30] Kawachi I, Kennedy B, Glass R(1999): Social capital and self-rated health: A contextual analysis. American Journal of Public Health,89(8): 1187-1193. Knack S. and Keefer P. (1997) Does social capital have an economic payoff? A cross country investigation,Quarterly Journal of Economics 112, 1251

[31] Kawachi I, Berkman L(2000): Social cohesion, social capital and health. In Social Epidemiology Edited by: Barkman LF, Kawachi I. New York:Oxford University Press

[32] Kristin M. Ferguson(2004)Social capital and children's wellbeing: a critical synthesis of the international social capital literature, International Journal of Social Welfare,Volume 15 Issue 1, Pages 2 - 18

[33] Lake, Ronald La Due and Robert Huckfeldt (1998) "Social Capital, Social Networks, and Political Participation." Political Psychology. 19(3):567-84.

[34] Li, Yaojun. (2005) 'Social capital, ethnicity and the labour market', Proceedings of International Conference on Engaging Community, jointly organized by the United Nations and the Government of the State of Queensland in Australia. http://engagingcommunities2005.org/abstracts/Li-Yaojun-final.pdf

[35] MacCallum, Zhang, Preacher, Rucker (2002) On the practice of dichotomization of quantitative variables, Psychological Methods 7 (1), pp. 19–40.

[36] Myers, David G. (1993) The Pursuit of Happiness: Who is happy and why? (New York: William Morrow).

[37] Navarro Shi (2001) The political context of social inequalities and health. Social Science and Medicine, 52, 481-491

[38] Paldam (2001) Social capital: one or many? Definition and measurement, Journal of Economic Perspectives 2001-14, pp. 629–653.

[39] Pavalko, E. K., Gong, F. and Long, J. S. (2005, Aug) "The Changing Health Gap: Cohort Differences in the Health Effects of Women's Labor Force Behavior" Paper presented at the annual meeting of the American Sociological Association, Marriott Hotel, Loews Philadelphia Hotel, Philadelphia, PA Online ¡PDF¿ Retrieved 2008-09-05 from http://www.allacademic.com/meta/p21044index.html

[40] Putnam Leonardi and Lanetti (1993) Making Democracy Work. Princeton University Press, Princeton, NJ.

[41] Read, D. (2004), Utility theory from Jeremy Bentham to Daniel Kahneman, Working Paper No: LSEOR 04-64, Department of Operational Research, London School of Economics.

[42] Sanfey, Peter Teksoz, Utku (2007) Does transition make you happy? Economics of Transition, Oct2007, Vol. 15 Issue 4, p707-731

[43] Schmid, A. A. (2000) Sources of Social Capital. Michigan State University, Dept. of Ag. Econ.Staff Paper 00-07. 17p

[44] Smith, S. and Kulynych J.(2002), "It May Be Social, But Why Is It Capital? The Social Construc-tion of Social Capital and the Politics of Language", Politics and Society, 30 (1), 149-186

[45] Snijders Bosker (2000) Multilevel analysis: An introduction to basic and advanced multilevel modeling, Sage Publications, London.

[46] Soldo,Beth J., Mitchell,Olivia S., Tfaily,Rania, McCabe,John F.(2006) Cross-Cohort Differences in Health on the Verge of Retirement - National Bureau of Economic Research Working Paper Series, VL - No. 12762

[47] Sriyaiyer, Michael Kitson and Bernardtoh (2005) Social Capital, Economic growth and Regional development, Regional Studies, Vol. 39.8, pp. 1015–1040, Rout-ledge.

[48] Veenhoven, R. (1996) Developments in Satisfaction Research, Life Indicator Research 37, 1-45.

[49] Veenhoven, R. (2000) The Four Qualities of Life. Ordering Concepts and Measures of the Good Life, -Journal of Happiness Study 1, 1-39.

[50] Varelius, J. (2004), Objective Explanations of Individual Well-being, Journal of Happiness Studies, 5 (1): 73-91, 2004

[51] Welsch, Heinz (2007) Macroeconomics and life satisfaction: revisiting the "misery index", Journal of Applied Economics, Nov2007, Vol. 10 Issue 2, p237-251

[52] World Value Survey (2006) 1991-2004 Integrated Questionnaires v.20060423, http://www.worldvaluessurvey.org

[53] Zak P.J. and Knack S. (2001) Trust and growth, Economic Journal 111, 295-321