STRATEGIC SCORECARD FOR GOVERNMENTS

A Dissertation
Submitted to
the Temple University Graduate Board

In Partial Fulfillment
of the Requirements for the Degree
DOCTOR OF PHILOSOPHY

by
Ki Kyung Song
August 2013

Examining Committee Members:

Rajiv Banker, Advisory Chair, Department of Accounting
Sudipta Basu, Department of Accounting
Mihir Mehta, Department of Accounting
Paul Pavlou, External Member, Department of Management Information Systems

ABSTRACT

This study draws on socio-economic accounting research and the concept of Balanced Scorecards to develop a scorecard that evaluates a government's performance. Citizens' well-being is used as a government's primary outcome suggested by utilitarianism and economics of happiness theories. Based on the development literature, human development (income, health, and education) is used as an intermediate outcome of government. Economic factors, governmental factors, national resources, and national system are used as the performance drivers.

The governmental scorecard's validity is evaluated using both international and U.S. regional data. Citizens' well-being in both settings is driven only by income, not by health and education. However, health and education, along with economic factors, governmental factors, national resources, and national systems, contribute to income. Gender is also studied to determine: 1) if there are gender difference in well-being; 2) whether gender has a moderating role in the relationship between well-being and personal, social, and economic characteristics of individual; 3) whether the gender effect changes over time. The results show that gender has a different effect on the relationship between well-being and individual characteristics (i.e., race, degree obtained, working status, frequency of attending religious service, and income).

TABLE OF CONTENTS

ABSTRACT.....	i
LIST OF TABLES.....	iv
LIST OF FIGURES.....	v
CHAPTER 1 INTRODUCTION.....	1
1.1 Motivation.....	1
1.2 Outline.....	2
1.3 Contributions.....	5
CHAPTER 2 CONCEPTUAL FRAMEWORK OF GOVERNMENTAL SCORECARD.....	7
2.1 Introduction	7
2.2 Research on Socio-economic Accounting.....	8
2.3 Suggestions by William W. Cooper.....	12
2.4 Performance Measure for Governments.....	15
2.5 Causes-and-Effect Framework.....	24
2.6 Conclusions.....	31
CHAPTER 3 GOVERNMENTAL SCORECARD FOR INTERNATIONAL COMPARISONS.....	33
3.1 Introduction.....	33
3.2 Measurements.....	34
3.3 Research Design and Data Description	49
3.4 Results.....	53
3.5 Conclusions.....	66
CHAPTER 4 GOVERNMENTAL SCORECARD FOR U.S. REGIONAL COMPARISONS.....	68
4.1 Introduction.....	68
4.2 Measurements.....	70
4.3 Research Design and Data Description.....	72
4.4 Results.....	76
4.5 Conclusions.....	86

CHAPTER 5 SCORECARD ANALYSIS TO COMPARE INDIVIDUAL	
DIFFERENCES: ROLE OF GENDER.....	87
5.1 Introduction.....	87
5.2 Literature Review.....	88
5.3 Research Design and Data Description.....	99
5.4 Results.....	102
5.5 Conclusions.....	115
CHAPTER 6 CONCLUSIONS.....	116
REFERENCES.....	119
APPENDICES	
A. CALCULATING HUMAN DEVELOPMENT INDEX.....	135
B. DEFINITION AND SOURCE OF VARIABLES FOR INTERNATIONAL	
COMPARISONS.....	136
C. DEFINITION AND SOURCE OF VARIABLES FOR U.S. REGIONAL	
COMPARISONS.....	142
D. NINE REGIONS OF THE U.S.....	144
E. FOUR REGIONS OF THE U.S.....	146

LIST OF TABLES

Table	Page
1. Country, Year, Number of Respondents, and Development Status	54
2. Descriptive Statistics: International Comparisons.....	56
3. Correlation between Well-being and Three Well-being Dimensions.....	57
4. Citizens' Well-being and Human Development: International Comparisons.....	59
5. HDI Income Index and Its Drivers: International Comparisons.....	62
6. Human Development and Individual Financial Satisfaction, Subjective Health, and Educational Attainment	65
7. Number of Respondents by Region and Year	78
8. Descriptive Statistics: U.S. Regional Comparisons.....	78
9. Citizens' Well-being and Human Development: U.S. Regional Comparisons.....	80
10. Personal Income per Capita and Its Drivers: U.S. Regional Comparisons.....	83
11. Test for Self-reported Finance, Health, and Education	85
12. Region, Year, and Number of Respondents	103
13. Descriptive Statistics: Role of Gender	106
14. Distribution of Happiness	107
15. Gender Effect on Well-being	113

LIST OF FIGURES

Figure	Page
1. Scorecard for Governments	28
2. Scorecard for Governments with Measurements.....	34
3. Scorecard for Governments with Measurements: Empirical Results.....	67
4. Percent of Female and Male to Each Category of Happiness.....	107
5. Proportion of Female and Male to Total Respondents Each Survey.....	108

CHAPTER 1

INTRODUCTION

1.1 Motivation

In this project a scorecard for governments is developed. Like the Balanced Scorecard for the for-profit-sector, a scorecard for governments clarifies the objective and performance drivers of government. It specifies the relationship between outcome and performance drivers in a cause-and effect relationship. It makes policy makers better understand the objective of the government and the effect of policy choices on the desired outcomes. As a result, it can improve efficiency and effectiveness of governments. The validity of the governmental scorecard is evaluated using international data and the U.S. regional data. In addition, one of the segments of citizens, gender, and its effect on well-being is further investigated to understand the well-being in depth.

Measuring government performance has been of interest to accounting researchers since the 1950s. Previous studies in socio-economic accounting research examined the role of accounting in measuring governmental outcomes such as national income, but data limitations led to limited subsequent research (Birnberg and Gandhi 1976). However, the rapid progress and evolution in data collection by governments and international authorities such as the World Bank and the United Nations resulted in increased availability of governmental data on a consistent and comparable basis across governments, which in turn facilitated robust research in socio-economic accounting. I exploit this new data to develop and evaluate the validity of a governmental scorecard by utilizing the recent improvement in data availability.

A scorecard approach is taken for two reasons. First, it is capable of incorporating multiple aspects of government performance. Government activity is wide in scope and diversity (Birnberg and Gandhi 1976). Thus government performance cannot be captured by one measure such as national income. The scorecard approach is capable of incorporating and organizing the multiple aspects in a systematic way. Second, it can show the cause -and-effect between outcome and performance drivers. In a government setting, it is always not clear for policy makers to understand the link between outcome and performance drivers. A scorecard can help them to see through the relationship between performance drivers and outcomes and to make policy decision.

1.2 Outline

In Chapter 2, I develop a scorecard for government. First, it is needed to specify the objective and performance drivers of government. Based on the utilitarianism and economics of happiness, I adopt well-being as the objective of government. Survey databases are used to directly measure citizens' well-being. I suggest human development as the intermediate objective of government. Human development is measured by objective indicators such as Gross Domestic Product (GDP) per capita. Human development has been often regarded as a measure of social welfare. (England 1998; Vemuri and Costanza 2006; Constanza et al. 2009; Afsa et al. 2009; McGillivray 1991; Fleurbaey 2009; OECD 2007). One reason for this is that greater development is associated with opportunities for higher well-being at the individual level. That claim has prevailed even without a direct investigation. Taking the argument, human development (income, health, and education) is used as the intermediate objectives of government. For

performance drivers for governmental outcome, four dimensions are identified: economic factors, governmental factors, national resources, and national systems. Economic factors capture the microeconomic conditions which influence human development and then citizen's well-being. Governmental factors incorporate governmental activities to provide public and merits goods which are otherwise not or less obtained through markets. National resources represent the factors of production. National systems are constraints that structure political, economic and social interaction (North 1991). They affect behavior and decision-making of people. These four dimensions of performance drivers affect human development and citizen's well-being with lags.

The scorecard for government is established on the early accounting literature, socio-economic accounting, and William W. Cooper's suggestions. Socio-economic accounting is "the ordering, measuring, and analysis of the social and economic consequences of governmental and entrepreneurial behavior" (Mobley 1970). National income accounting is one of the examples of socio-economic accounting using government as an accounting entity. Cooper, one of the most influential researchers in management, also supported the extension of accounting to the public sector. He had his own research on measuring quality of life (Charnes et al. 1973).

In Chapter 3, a series of empirical evaluation is done to evaluate the validity of governmental scorecard. First, I use international data covering 45 countries to check the relationship between outcome and performance drivers across countries. The cause-and-effect relationship is evaluated by using a hierarchical model with lagged variables. Even though the international analysis is a direct evaluation of whether the scorecard can capture the causality between outcome and government performance drivers, it has a

couple of limitations. First, it does not have enough time-series data to test the lagged effect of performance drivers. For example, national systems such as democracy may have a long lagged-effect on outcome of interest (well-being and human development). To test the possible long lagged-effect of government performance drivers, it is necessary to have a relatively long time-series data on well-being and human development. However, international data is also not rich enough to explore the lagged relation despite the recent development and progress of data collection. Other limitations are omitted variables and measurement errors. It is impossible to control for all of the national characteristics which affect well-being and human development of a nation. Omitted variables such as culture may lead to the wrong inference of empirical evaluation. There are measurement errors as well. For instance, democracy variable provided by Polity IV database may suffer from measurement errors.

In Chapter 4, I use the U.S. regional data for an additional evaluation of governmental scorecard in order to overcome the limitations of international study. Well-being data for the U.S. region is available from the period of 1972 to 2010 for individuals in nine regions of the U.S. It makes it possible to test the governmental scorecard with relatively long time-series data. This is a big advantage to evaluate the lagged-effect of performance drivers on the outcomes. It also allows tracking the well-being trend. There is much detailed data such as crime rate and insurance coverage across regions which are not available in international database. Another advantage of using the U.S. regional data is that the problems of omitted variables and measurement errors are less severe than international data since it is within a country analysis.

Unlike Chapter 3 and 4 which focus on the national/regional level characteristics, I further explore one of the individual characteristics and its effect on well-being in Chapter 5. Specifically, I focus on females and explore whether females' well-being are the same as males. Gender effect on well-being is further investigated for two reasons. First, literature in psychology and economics shows the mixed results of gender effect on well-being. Second, in case that women report higher well-being than men, the result is intriguing. Since women are disadvantaged in social and economic status such as income and power, some are expected to have lower well-being than men. It is an interesting question why women report higher well-being despite their disadvantage in economic and social status and how their gender affects the relationship between well-being and personal, social and economic status of individual.

Chapter 6 summarizes the results of the study and provides suggestions for future research.

1.3 Contributions

This study makes a number of contributions. First, it develops a scorecard for governments, specifying outcomes and government performance drivers and showing cause-and-effect relationship among them. Causality is important since it allows politicians to understand the effect of their policy decisions and, therefore, guides future policy decisions. For instance, McKinsey & Company, one of the biggest management consulting groups in the U.S. is also interested in causality and recently published an article titled "Game changers: Five opportunities for U.S. growth and renewal" specifying five performance drivers for U.S. economic growth (Lund et al. 2013). It is

believed that a governmental scorecard is an important step to guide public administration and to enhance democratic accountability and responsibility (Holmes et al. 2006).

Second, the study introduces measures that can be used to determine government performance by taking advantage of the increased availability of government data. The governmental scorecard is evaluated across countries and within the U.S. over time to determine its validity and provide a basis for future refinements of the instrument. Third, this study looks at health and education and their relationship with well-being. The results check development literature's claim that health and education are as important as income. Fourth, the field of accounting is expanded from the private to the public sector. While it is clear that accounting plays an important and relevant role in decision-making in many environments (including the public sector), there are few structures that consider the role of performance measurement at an aggregated governmental level. Drawing accounting researchers' attention to government performance can contribute to improved governmental efficiency and effectiveness.

CHAPTER 2

CONCEPTUAL FRAMEWORK OF GOVERNMENTAL SCORECARD

2.1 Introduction

Although measurement and evaluation of government performance is not commonly addressed in accounting research, government performance has been used. The U.S. government needed summary statistics about the economy during the Great Depression (Marcuss and Kane 2007). Demand for a measure of economic conditions also increased during World War II (Ruggles 1982; Marcuss and Kane 2007). As a result of these events, a measure of national income, GDP, was developed to provide an accurate, up-to-date, comprehensive and meaningful description of the economy and society. Similar demands for a measure of national income arose in other countries such as the U.K. and Canada Leading to development of GDP measures in those countries as well.

Accounting played a role in producing measures of an economy's performance (Holcombe 2004). For example, early accounting studies suggest that a double-entry book keeping method is the most suitable method for measuring national income (Cooper 1949). As a result the U.S. national income was published in accounting form for the first time in 1947 (Cooper 1949). The American Accounting Association (AAA) had the Committee on National Income to promote the accounting literature on national accounts (Husband 1953). The Committee suggested that the separate national accounts be combined in an accounting framework (Sigel 1962; Pyatt et al. 1978). For instance, economists emphasize income measures but accountants look at national wealth measures, such as the balance sheet, and the nation's equity (Goldsmith 1950; Hart

1950). As a result, flow-of-funds accounting, balance-of-payments accounting, input output analysis, and national balance sheet are suggested in the accounting literature (Mathews 1960; Kendrick 1970). Accounting researchers were also interested in evaluating social programs and social effects (e.g., pollution emission) of corporate actions (Estes 1972).

Since government activity and its effect are wide in scope, government performance should also be measured from various aspects. This is best accomplished through the scorecard approach. Another advantage of using a scorecard is that it is able to show a cause-and-effect relationship between outcome measures and performance drivers. Citizen well-being, the utilitarian objective of government, is used as the government outcome. Using citizen well-being as the government outcome underlies recently developed government performance measures such as the Human Development Index (HDI). Human development is used as the intermediate outcome measure. Human development is often used as an objective measure of well-being since it is related to the opportunities which increase personal well-being. Economic factors, governmental factors, national resources, and national systems are used as performance drivers.

This study represents the first attempt to develop a governmental scorecard. Although more research is needed in order to refine the conceptual framework, this scorecard can help politicians and policy makers understand the effects of their policies to guide future policy decisions.

2.2 Research on Socio-economic Accounting

Accounting is a rational system providing information for decision-making (Ansari and Euske 1987). Specifically, accounting provides information by collecting, classifying, and summarizing data in quantitative terms which is related to the organization's objective. Since businesses have a clear objective (profit-maximization) and economic consequences are easily measured in monetary terms, traditional accounting has been used mainly in for-profit sectors. However, early accounting research argues that accounting can expand the scope and role of accounting (Linowes 1968; Mobley 1970; Estes 1972; Burton 1977; Spicer 1978; Shane and Spicer 1983; Birnberg and Gandhi 1976; Cooper and Ijiri 1977; Colantoni et al. 1974).¹ Social responsibility accounting, also known as accounting for corporate social responsibility, is one area that has been suggested. Corporate social responsibility approaches argue that reliable social responsibility disclosures would be useful to external users by disclosing or including the social consequences of corporate actions in financial statements (Ingram and Frazier 1980). The information included in social responsibility accounting deals with preservation of the environment, improvement in labor welfare, and protection of human life (Dhaliwal et al. 2012; Colantoni et al. 1974; Cooper and Ijiri 1977). Social responsibility accounting first appeared in the research in the 1970s. Wiseman (1982) looks at the quality and accuracy of environmental disclosures made in corporate annual reports. Belkaoui (1980) examines whether disclosure on abatement costs of pollution affects the investment decisions of potential users. Milne and Chan (1999) also

¹ Mathews (1984) classifies non-conventional accounting (called social accounting) into four groups: Social Responsibility Accounting, Total Impact Accounting, Socio-economic Accounting, and Social Indicator Accounting. According to Mathews (1984), Social Responsibility Accounting refers to disclosure items that have a social impact. Total Impact Accounting measures the total cost of running an organization. Socio-economic Accounting evaluates publicly funded projects involving both financial and nonfinancial measures. Social Indicators Accounting allows for long-term non-financial quantification of societal statistics. Please refer to Table 2 of Mathews (1984) for more information.

investigate the effect of narrative social disclosure from corporate annual reports on investment decision-making. This idea has recently received increased attention (Yongtae et al. (2012) Moser and Martin (2012) Dhaliwal et al. (2011) Dhaliwal et al. (2012).

Other literature calls for a greater use of accounting, specifically socio-economic accounting, in not-for-profit entities such as governments. Linowes (1968) defines socio-economic accounting as the application of accounting in the field of the social science, including sociology, political science and economics. Mobley (1970) defines it as “the ordering, measuring, and analysis of the social and economic consequences of governmental and entrepreneurial behavior”. Socio-economic accounting includes national income accounting, the evaluation of social programs, the role of accounting in economic development, and efforts to develop an index of a social progress (Estes 1972). National income accounting, one aspect of socio-economic accounting, is believed to play an important role in governmental performance measures. Holcombe (2004) notes that accounting plays an important role in producing a national income measure because double-entry bookkeeping is used to measure national income. Socio-economic accounting has social programs as the subject. For instance, Cooper (1948) suggests using accounting data for general economic analysis and policy formation. Criss (1971) adopts socio-economic accounting to evaluate water resources management. Charnes and Cooper (1980) evaluate the “Program Follow Through” program, a large scale social experiment in public school education for disadvantaged children, and further suggest a “comprehensive audit” for improvement in decision-making and increase in accountability.

Socio-economic accounting, specifically for government, is an important accounting research area. It provides data which permits both an understanding of the results of past activity and a projection of future possibilities for non-profit organizations such as governments (Linowes 1968). Thus, it can help politicians and economists make decisions about which social projects to expand and which to reform, leading to increased government efficiency and efficacy. However, socio-economic accounting has not received much attention over the last 30 years due to fundamental problems in evaluating social programs (Birnberg and Gandhi (1976). First, in contrast to the private-sector objectives, maximizing profit, government objectives are not clearly stated. This makes it difficult to measure government performance and evaluate administrators such as politicians. Second, there is disagreement on how to measure government outcomes given that the government has such wide range of programs and policies. Different groups of constituents are possible to evaluate government actions differently making it difficult to determine if a program is successful. Last, there was, until recently, little data on government available from which measurements could be derived.

From a utilitarian view, economics of happiness says that the objective of government is to maximize the well-being of citizens. Economists have already made much use of well-being as a research agenda (Kahneman and Krueger 2006). An ECONLIT search provided by the American Economic Association shows that 1,561 scholarly journal articles have been published from 1970 to 2013 with titles containing either 'happiness', 'life satisfaction', or 'well-being'. In addition, there has been a significant progress in measuring well-being in psychology and economics. Typically, survey technique is used to measure well-being since it is able to capture individuals'

direct evaluations of their life and, indirectly, of government quality. The availability of data on well-being and other governmental data has rapidly and consistently increased across governments for a relatively long period of time. For example, the World Values Survey has collected data on individual well-being around the world since 1980. The national income measure and other national accounts reporting macroeconomic statistics for analyzing and evaluating the performance of nations have been published since the United Nations System of National Accounts was established in the 1960s. As a result, the three main problems of adopting social-economic accounting are almost solved making it possible to accounting researchers to enter the arena of government performance measures.

2.3 Suggestions by William W. Cooper

The previous section reviewed one extension of conventional accounting, socio-economic accounting. This section discusses it further and introduces other extensions of accounting suggested by one of the most influential researchers in management, William W. Cooper. Cooper is renowned as a remarkably productive and innovative researcher in a variety of fields including accounting (Ijiri and Sueyoshi 2010). The biggest contribution he has made to the accounting literature is expanding accounting area in new directions.

Cooper is one of the early researchers attracted to socio-economic accounting, particularly the use of accounting in policy making and evaluating social programs. In one of his papers with Kohler (Kohler and Cooper 1945), Cooper states that accounting data and techniques were developed during World War II because of the need for central planning and control of war materials. In reviewing war programs such as price control

and contract renegotiation, he reports that accounting was employed extensively during the war and furnished valuable data for policy formation and decisions.

Cooper also recognizes the possibility of using accounting for social controls. He believes that accounting data should be statistically compiled and that accountants should pay attention to the development of accounting data compilation (Cooper 1948). As an example of accounting used in the evaluation of economy and policy formation, he shows how to measure national income from an accounting point of view (Cooper 1949; Cooper and Crawford 1953). He evaluates the efficiency of Program Follow Through (PFT), a large scale social experiment in public school education for disadvantaged children, as an example of using accounting to evaluate social programs and society itself (Charnes et al. 1981). He also attempts to measure quality of life by using objective measures from national accounts and subjective measures from survey data (Charnes et al. 1973). He examines the local and national application of measuring quality of life. He notices that quality of life requires constant attention of accounting researchers and that it provides many research opportunities. His idea to use objective and subjective measures to evaluate the quality of life has been linked to the approaches adopted by many nations and international organizations that have recently developed a performance measure for government.

Cooper's emphasis on socio-economic accounting is built on the concept of multi-dimensional accounting. He defines multi-dimensional accounting as the use of double-entry principles to portray transactions in more than one dimension (Charnes et al. 1976). Since multi-dimensional accounting can incorporate a wide variety of information (e.g., employment and pollution emission) he states that it can be used for government

(governmental reporting and budgeting) as well as business applications (multi-dimensional corporate income and expense statements) (Charnes et al. 1976). He further discusses the use of multi-dimensional accounting for corporations (Colantoni et al. 1974). He argues that corporations should report items that are not adequately reflected in market data (e.g., regulation compliance, pollution). These arguments led to the development of the accounting area known as corporate social responsibility which has recently drawn the attention of accounting researchers. He also argues that audits must extend their scope and character to include multi-dimensional accounting in the public sector at local, state and federal levels (Churchill and Cooper 1979).

Cooper introduces statistical methods as a way of incorporating multidimensionality in accounting. He suggests the use of goal programming to consider multiple measures simultaneously (Cooper and Ijiri 1977). He introduces many other statistical methods emphasizing the possibilities of statistical methods to solve accounting, auditing, and management control problems including: linear programming in dealing with breakeven analysis and making a balance sheet and income statement from a spread sheet (Charnes et al. 1963); chance-constrained programming formulation to do Cost-Volume-Profit analysis (Brockett et al. 1984); using stochastic decision tree to show the process of double-entry accounting and budgeting and financial planning.

It is interesting to note that his application of statistical methods is used mainly for planning purposes, in particular for government budgeting and multi-objective planning (Charnes et al. 1976). He shows that mathematically modeled double-entry accounting enhances management's ability to explore and to plan for the future (Charnes et al. 1972). He also recommends budget disclosure (Churchill and Cooper 1979)

referring to it as the published projection of next-period balance sheet, income and funds flow statements and arguing that it is the best source of information about future corporate action. (Cooper et al. 1968)

Cooper's work has far reaching effects in contemporary accounting research. This study extends his work on socio-economic accounting and quality of life and uses it to develop a governmental scorecard.

2.4 Performance Measure for Governments

The topic of organizational performance measurement has generated much interest from many disciplines over the years (Brignall and Modell 2000). While most academic discussions of performance measurement issues focus on the private sector, it has recently been recognized that performance measurement systems can play a role in improving the efficiency and effectiveness of government operations (Ittner and Larcker 1998).

Evaluating the performance of governments is of interest for at least two reasons. First, it helps politicians and policy makers evaluate the final outcomes of their countries' activities and make decisions about future expenditures and policy choices (Mayston 1985). Second, measuring government-level performance permits useful cross-government comparisons that allow governments to develop benchmarks for comparisons with other governments. Performance comparisons across governments play a very important role in policy design by measuring outcomes and suggesting possible improvements (Stiglitz et al. 2009a). Many countries and international organizations have

developed measures of government performance. The next section presents a review of established measures for government performance and their limitations.

2.4.1 Gross Domestic Product

GDP is defined as the market value of all final goods and service produced in an economy during a given time period (Holcombe 2004). It is widely used: as a national performance measure (Islam and Clarke 2002); by governments to prepare operating budgets and also by central banks to formulate monetary policy (McCulla and Smith 2007); as a benchmark to evaluate the relative performance of the economy.

The GDP was developed in the United States during the 1930s and 1940s, after World War I and during the time of the Great Depression and World War II (Constanza et al., 2009). The Great Depression was a catalyst for government involvement in economic affairs (Stewart, 1974). The government needed summary statistics about the economy to understand the country's economic condition and to describe the effect of its economic policies (Marcuss and Kane 2007). Official figures of national income first appeared in 1942 (Denison 1947; Allin 2007). World War II also increased demand for a measure of economic conditions to determine if the economy could support the production and purchase of sufficient supplies for the war (Ruggles 1982; Marcuss and Kane 2007). National income has been monitored, analyzed, forecasted for decision-making since its inception (Bos 2008). Other countries such as U. K. and Canada have also developed national income measures.

Proponents of the use of GDP as a measure of social welfare argue that it is generally associated with improvement in other economic conditions such as job growth (Stewart 1974). GDP also tends to have a strong positive correlation with social measures

such as health and education, implying that “wealthier” generally means healthier, better educated, and a less inequitable income distribution (OECD 2007). Simon Kuznets, a novel laureate economist who produced the first GDP estimate for the U.S., argues that GDP cannot accurately measure social welfare. Other economists, researchers and economic think tanks have expressed similar concerns (McGillivray 1991; Fleurbaey 2009). They argue that GDP fails to capture factors such as security, leisure, income distribution, and a clean environment, all of which make a difference in people’s lives and contribute to their happiness and well-being.² Politicians have also addressed the limitations of GDP as measure of citizen well-being. In 1968, Robert F. Kennedy said,

Our Gross National Product...counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage... It counts the destruction of the redwood and the loss of our natural wonder in chaotic sprawl... Yet the Gross National Product does not allow for the health of our children, the quality of their education or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages, the intelligence of our public debate or the integrity of our public officials... It measures everything, in short, except that which makes life worthwhile.

Researchers argue that emphasizing the growth of material welfare actually reduces well-being because of the negative consequences of pollution, depletion of natural resources, and limited attention to increasing income inequality (Giovannini 2007). Most recently, Stiglitz et al. (2009a) note that GDP does not represent what people experience in their lives and that there is a wide gap between measures of economic growth, inflation, inequality, and social mobility, and public perceptions. For instance, income might be increasing but people feel poorer, or people see increasing prices in their local stores even during deflation.

² In prior literature, welfare, quality of life, development, well-being, happiness, and life satisfaction are used interchangeably (Allin 2007).

Recognizing the GDP's limitations as a measure of government outcome, many nations and international organizations have developed comprehensive measures that incorporate other elements of governmental performance to capture a variety of government actions e.g., the UNDP's Human Development Index (HDI); the Commission on the Measurement of Economic Performance and Social Progress (CMEPSP) initiated by the French President, Sarkozy; Your Better Life Index of the Organisation for Economic Co-operation and Development (OECD); General Well-Being of the U. K.; Gross National Happiness (GNH) of Bhutan; National Happiness Index of China. The next section will discuss each measure.

2.4.2 United Nations Development Program - Human Development Index

The United Nations Development Program's (UNDP) HDI is a response to criticism about the use of the GDP. The HDI, first issued in 1990, incorporates elements that capture education and health as well as wealth (Morse 2003) and argues that well-being does not depend solely on level of income. Since its inception, it has become the most widely used yardstick of human development (Ivanova et al. 1999).

Based on the work of Amartya Sen, a Nobel Laureate in Economics, the HDI defines development as the process of enlarging peoples' choices thereby improving their level of well-being (UNDP 1990). The index identifies three critical factors that expand a person's choices: longevity, knowledge, and living standards. Longevity, measured by life expectancy at birth, is closely related to other health-related factors such as adequate nutrition. Knowledge, measured by mean years of schooling and expected years of schooling, reflects accessibility to education, a key driver of productivity. Living standards, measured by Gross National Income (GNI) per capita, captures people's

accessibility to required resources.³ The HDI is calculated as the mean value from scores on these three indicators.⁴

The HDI was controversial when first released (Streeten 1994) with criticisms focusing on three issues. First, is no theoretical basis for the use of the three sub-indices (income, health, and education). Second, the HDI is unable to capture inequality or discrepancies within nations. The HDI relies on country-level indicators like life expectancy at birth and thus only captures data for an average citizen. Third, the choice of three indicators is not convincing. On one hand, by including only three indicators, the HDI excludes other indicators which are important for government performance such as income distribution, economic security (Osberg and Sharpe 2005), environment factors (Costantini and Monni 2005), and national capital (Vemuri and Costanza 2006). On the other hand, the high correlation among the three indicators can cause redundancy in explanatory power (Chakravarty 2003).

Another limitation of the HDI is that the link between well-being and the HDI has not been established. Based on the capability theory, the HDI claims that it ultimately improves well-being. However, the link between the HDI and well-being has not been investigated.

2.4.3 France - Commission on the Measurement of Economic Performance and Social Progress

In 2008, former President of France Nicolas Sarkozy created the CMEPSP. Sarkozy was dissatisfied with available statistical information about the economy and the society that focused heavily on GDP. He argues that:

³ The variables and formula to calculate the HDI have changed since 2010. Previously GDP per capita for income and adult literacy rate were used.

⁴ Appendix A shows the formula used to calculate the HDI.

For years statistics have registered increasingly strong economic growth as a victory over shortage until it emerged that this growth was destroying more than it was creating. The crisis doesn't only make us free to imagine other models, another future, and another world. It obliges us to do so.
(Davies 2009)

The CMEPSP is chaired by a number of prominent economists: Joseph Stiglitz, Amartya Sen, and Jean Paul-Fioussi. The objective of the CMEPSP is to develop a measure of societal well-being focusing on a number of dimensions including material living standards (income, consumption and wealth), health, education, personal activities (work, political voice and governance), social connections and relationships, environment (present and future conditions), and economic and physical insecurity.

2.4.4 OECD - Your Better Life Index

The CMEPSP's work influenced the OECD's "Your Better Life Index". The OECD argues that GDP fails to capture many of the factors that influence people's lives, such as security, leisure, income distribution and a clean environment (OECD. 2011). As a result, the OECD launched the "Your Better Life Index" in 2011.

The Your Better Life Index defines societal progress as improvements in the well-being of people and households (OECD 2011). The measure includes 20 different indicators across 11 sectors in its 34 member countries.⁵ The 11 sectors are income, housing, jobs, community, education, environment, government, health, life satisfaction, safety, and work-life balance. A key difference between the Your Better Life Index and other indexes is that the former does not provide weights for each sector, instead it allows users to create their own index based on what they think is important for societal progress in their country.

2.4.5 U. K. - General Well-Being

Since World War I, the social and economic policies of the U.K. have focused predominantly on improving the economy (Waldron 2010). Other factors such as environmental issues have only recently become important. In May 1999, the U. K. government released a report titled “A Better Quality of Life” outlining a new strategy for economic development that links economic prosperity with reduced pollution levels and increased natural resources usage efficiency. Prime Minister David Cameron recently noted

“The country would be better off if we thought about well-being as well as economic growth” (BBC 2010).

In November 2010, the prime minister’s office instructed the Office for National Statistics, the national statistics agency of the U. K., to construct a national well-being measure for the country’s “quality of life” that incorporated factors that matter most to people’s well-being. The resulting instrument combines subjective measures such as fear of crime, job-satisfaction and self-reported health and objective measures such as crime, employment, and life expectancy rates in order to provide a more complete picture of national well-being.

2.4.6 Bhutan - Gross National Happiness

Bhutan was one of the first nations to recognize the importance of well-being and the limitations of using GDP to capture well-being. Bhutan’s Buddhist influence and history have produced a culture that considers not only society as a whole but also the individual. Buddhism emphasizes inner happiness as the ultimate purpose of life and has therefore contributed to Bhutan’s demand for measuring citizen happiness. In 1972 the

King of Bhutan, Jigme Singye Wangchuck, declared that economic growth would not necessarily lead to contentment and that public policy should be more closely tied to well-being (Mustafa 2005). The king led an initiative to create a happiness measure, GNH, that measures national-level development in terms of citizen happiness. The GNH is constructed using nine core dimensions regarded as the components of happiness and well-being in Bhutan. The dimensions include psychological well-being, time use, community vitality, culture, health, education, environmental diversity, living standard, and governance.

2.4.7 China - National Happiness Index

China has also identified the limitations of using GDP to capture well-being. China installed a planned economy after its civil war which lasted from 1937 to 1947. Under the central planning system, nearly three-fourths of industrial production was produced by centrally controlled state-owned enterprises (Morrison 2009). The Chinese economy suffered from stagnation and inefficiency as a result of inadequate incentives for individual efficiency and performance (Morrison 2009; Wang 2004). The GDP per capita of China was about \$183 in 1977, ranking it as 126 out of 136 countries and less than its neighbors in East Asia, such as Japan and South Korea (Morrison 2009).⁶

In 1978, in order to break away from its planned economic system, increase economic growth and raise living standards, China started economic reform focusing on economic growth through a market-oriented economy (Morrison 2009). The economic reform was successful leading to a GDP that has increased by 9.98% on average for 32

⁶ In 1977 the GDP per capita of Japan and South Korea was \$6,139 and \$1,042, respectively.

years from 1978 to 2009.⁷ In 2010, China became the world's second biggest economy with an estimated worth of \$5.8 trillion, second only to the U.S. While China's economic reform has improved the *overall* standards of living, there appear to be relatively fewer benefits in terms of the effects on citizen well-being. Brockmann et al. (2008) note that the percentage of Chinese who described themselves as very happy plummeted from 28% in 1990 to 12% in 2000, and life satisfaction over the same period decreased from an average of 7.3 to 6.5.⁸

Explanations for the discrepancy between GDP growth and declines in subjective well-being include rising income inequality, high inflation, and changes in social welfare policy. China's GINI coefficient, an income distribution gauge, has decreased from 0.5 to 0.3 over the last 25 years.⁹ The unequal distribution of wealth has caused feelings of deprivation, leading to a decreased sense of well-being (Brockmann et al. 2008). The number of citizens satisfied with current price levels has sunk to an 11 year low since 1999.¹⁰ High levels of inflation are believed to be the primary reason for growing public dissatisfaction about the quality of life (Chen 2010). Social welfare and services have not improved relative to the improvement in national income, contributing to the negative sense of well-being. Under a planned economy, Chinese citizens obtained social welfare provisions through their employers (typically state-owned enterprises). Since the start of the economic reform state provision and financing of social services has been reduced significantly (Leung 1994). China's 2003 National Health Service Survey found that

⁷The GDP per capita has grown to about 8.80% for the same period. GDP growth (annual %) or GDP per capita growth from World Development Indicators is used.

⁸ Life satisfaction is measured on a scale from 1 (dissatisfied) to 10 (satisfied).

⁹ Poverty researchers recognize anything above 0.4 as potentially socially destabilizing.

¹⁰ A survey of 20,000 Chinese nationals was conducted by the People's Bank of China, the central bank, in 2010.

about 45% of the country's urban population and almost 80% of the rural population did not have medical insurance (Banister 2009). Until the early 1990s, college education was virtually free. The government paid for tuition and lodging, while students only needed to pay for meals and books (Duan 2003). Decentralization and privatization of the education system has increased inequality in access to education, especially for low-income families (Zhang and Kanbur 2003).

Chinese government officials have recognized that many citizens are unhappy following three decades of economic growth and have begun to focus on citizen well-being.¹¹ Provincial governments such as Guangdong, Beijing, and Chongqing are at the forefront of attempts to measure citizens' well-being (Economist 2011). In the 2007 Report of the 17th National Congress of the Party, party leader Hu Jintao made it clear that a "people-first" approach is a priority (Angang 2011). Subsequently, the Chinese government has increased funding of social security programs and benefits by nearly 18 percent to US\$42.8 billion in 2009 (Xinhua 2009).¹²

2.5 Cause-and-Effect Framework

The performance measures of government reviewed in the previous section have two features in common. First, they identify well-being as the ultimate purpose of governments and attempt to measure it. Even though the HDI does not directly incorporate well-being as an indicator, it can be argued that the HDI improves well-being. The focus on measuring well-being stems from utilitarianism, which stresses 'happiness' or 'pleasure' as the overarching principle of nations, and argues that societies

¹¹ http://socialwelfare.berkeley.edu/NewsEvents/china_collaborative.shtml

¹² http://socialwelfare.berkeley.edu/NewsEvents/china_collaborative.shtml

strive for “the greatest happiness of the greatest numbers” (Diener and Suh 1997). A number of studies in development economics use well-being to evaluate economic policies (Frey and Stutzer 2002).¹³ Second, the measures acknowledge the multidimensionality of government performance. They try to measure not only economic performance but also other performance dimensions that improve the well-being of individuals. For instance the HDI suggests that income, health, and education enrich an individual’s choices thereby improving well-being. However, most of the recent national performance measures just list the important factors. Even though some of them make an index to evaluate government performance, their way of aggregating the multidimensionality of government performance is not scientific; they use arbitrary weights to combine the multiple measures.

The scorecard method proposed in this study is a way of incorporating the multidimensionality of government performance. The accounting literature has done in-depth research on the Balance Scorecard (BSC), a multi-dimensional performance measurement model. Unlike existing government performance measures that merely list important dimensions, the BSC organizes the multiple measures in a systematic way and shows the cause-effect relationship among them. This study uses the scorecard literature from accounting to develop a scorecard for governments.

2.5.1 Background: Balanced Scorecard

The BSC was popularized by Kaplan and Norton (1992). The BSC recognizes that managers need to view performance in several dimensions simultaneously because of the complexity of the management environment. Measurement systems that focus only on

¹³ For example, Di Tella et al. (2001) found that inflation and unemployment have an effect on well-being. Alesina et al. (2004) investigate how the level of inequality in society affects well-being.

outcome measures as incentives can cause managers to focus on short-term performance at the expense of long-term performance. The BSC addresses this problem by incorporating both outcome measures and operational measures (performance drivers). Outcome measures are placed at the top of the BSC to capture results from actions already taken. Operational measures are identified as drivers of future performance (Kaplan and Norton 1992).¹⁴ The BSC then links the outcome measures and performance drivers in cause-and-effect relationships by allowing simultaneous evaluation of outcome and operational measures. Thus, the BSC can provide managers with a comprehensive and more balanced view of organizational performance, helping in more efficient and cost effective managerial decision-making (Banker et al. 2004).

Since its introduction in 1992, BSCs have been increasingly adopted by for-profit companies (Kaplan and Norton 2001). Firm's objectives are to maximize profits, therefore financial measures such as return on equity (ROE) and return on assets (ROA) are placed at the top of the BSC as the outcome measures. Operational measures such as customer satisfaction, internal processes, and learning and innovation are the drivers of profits. The BSCs have also been used by non-for-profit organizations and government organizations (Kaplan and Norton 2001). In contrast to for-profit firms whose primary objective is profit-maximization, performance of government organizations should be measured by how they meet the needs of their constituencies (Kaplan and Norton 1996). Thus, the outcome measures at the top of government BSCs should be related to citizens of that country. Accordingly, constituents are often placed at the top of government scorecards (Kaplan 1999). One example of the use of the performance scorecard in a

¹⁴ Kaplan and Norton (1992) introduced three operational measures: customer satisfaction, internal processes, and the organization's innovation and improvement activities.

public setting is Charlotte, North Carolina.¹⁵ Charlotte focuses on the citizen's perspective (Quinlivan 2000) placing "Serve the Customer" at the top of its scorecard as the top objective and "reduce crime", "increase perception of safety", "strengthen neighborhoods", "provide transportation choices", "safeguarding the environment", and "promote economic opportunity" as the drivers of the top objective.

2.5.2 Development of Governmental Scorecard

To develop a scorecard for government, it is necessary to specify a government's objectives. Well-being can be used as a nation's overarching objective. Citizen well-being is affected by multiple national-level characteristics (Hofmann 1997). It is suggested that human development is an intermediate objective of nations because it is an objective measure of well-being and is identified as a key driver of citizens' well-being in the literature. Four dimensions of government performance have been identified as performance drivers of citizen well-being and human development: economic factors, governmental factors, national resources, and national systems. The economy and government are the main determinants of citizens' well-being and human development. The economy makes it possible for people to trade goods and services, earn an income, and obtain the resources they want. Government compliments the market by providing the goods and services which would either be unavailable (e.g., defense) or less available (e.g., education and health) in the market.¹⁶ By providing these products and services the government influences human development and citizens' well-being. The production of goods and services is determined by national resources and national systems. Figure 1

¹⁵ It is considered as the best example of BSC success in a public setting (Niven 2002) and documented in several academic papers (Quinlivan 2000).

¹⁶ It is a typical government role in a mixed economy where governments complement the market.

shows the developed conceptual framework of the governmental scorecard. Each dimension will be discussed in the following sections.

Figure 1. Scorecard for Governments.

2.5.3 Citizens' Well-being

Viewing citizens' well-being as the ultimate goal of government is relatively intuitive. Brock (1993) suggests three philosophical approaches to measuring citizen well-being. The first approach focuses on characteristics of government, such as normative ideals. An example of a well-being measure that follows this approach is the HDI; the higher the level of human development a government reaches, the higher the level of well-being experienced by the citizens. The second approach considers the government's ability to give citizen's access to the things they desire. In this approach,

when a government enables citizens to obtain the things they want, it achieves a higher amount of citizens' well-being. This approach uses national income as a government performance measure. The last approach is based on utilitarianism and the experience of individuals. Jeremy Bentham said that the only right and justifiable end of government is the greatest happiness of the greatest number (Bentham 2008).¹⁷ This philosophy is the underlying theme of the economics of happiness, which studies how economic variables such as income and inflation affect the well-being of people. According to this approach, a government with citizens that feel happy about their lives has provided a higher level of well-being to its citizens. The traditional utilitarian principle asserts that the maximization of happiness should be adopted by government as an aim of law and public policy (Duncan 2010). Utilitarianism is used by nations and international organizations such as the U.K., China, and the OECD to measure the well-being of their citizens.

This study uses the third approach to develop the conceptual framework for a governmental scorecard. It is argued that government wants to maximize citizens' well-being and therefore maximize the sum of well-being in a nation (Hirata 2001). The well-being of citizens is placed at the top of the governmental scorecard. It is not new to put constituents at the top of BSC adopted in the public sector (Kaplan 1999). Many BSCs adopted by the public sector place the citizens' perspective at the top of their scorecard (Quinlivan 2000).

2.5.4 Human Development

Unlike citizens' well-being which is based on subjective evaluations, human development is based on objective measures. They are often used to measure government performance since objective measures are relatively easy to define and to measure

¹⁷ Jeremy Bentham (1748-1832) is an English philosopher and classical utilitarian.

consistently across governments and regions with few measurement errors (Diener and Suh 1997).

Economic studies on human development typically assume that human development is a measure of social welfare as well as of economic performance (England 1998; Vemuri and Costanza 2006; Constanza et al. 2009; Afssa et al. 2009; McGillivray 1991; Fleurbaey 2009; OECD 2007). One reason for this is that greater human development is associated with opportunities for higher well-being at the individual level. The HDI uses this argument, saying that health, education, and income increase people's choices and improve their well-being. Following the HDI argument, it is suggested that human development is closely linked to citizens' well-being.

2.5.5 Economic Factors

Markets exist because they offer mechanisms for exchange of value between buyers and sellers (Easton 2007). For example, an individual sells labor, earns an income, consumes goods and services, and gains utility (well-being) through markets. Such exchanges help people reach a higher level of human development by providing income and the ability to consume products or services (e.g., education and health) thereby increasing satisfaction for market participants (Easton 2007).

2.5.6 Governmental Factors

Governments exist because of the market's inability to provide individuals with all the necessary goods and services, for instance defense (Stiglitz 2000). Even citizens earning high incomes do not necessarily have access to all the goods and services available through the market.

Merit goods are goods or services (e.g., health and education) that people consume less of than they should (Fiorito and Kollintzas 2004). Hence, government compels individuals to consume these goods and services.

By producing public and merit goods, government contributes to human development. People can get what they need and what they cannot get through the market. The end result is that government activities improve citizens' well-being.

2.5.7 National Resources

Michael Porter's work looks at the reasons why some countries have higher GDPs than others by looking for the characteristics that lead to higher national income (Porter 1990). One of the characteristics Porter identifies is abundant factors of production such as capital, labor, and technology. Countries with greater access to these factors are capable of producing more products and services at a lower cost. This allows citizens to consume more products and services and gain a higher sense of well-being.

2.5.8 National Systems

National systems (or institutions) are the humanly devised constraints that structure political, economic, and social interaction (North 1991). They make rules which people need to follow in making decisions and in taking actions. Porter also states that institutional differences across nations affect competitive advantage (Porter 1990). Literature in other disciplines (e.g., economics) documents the influence of economic and political institutions on economic performance and government decision making.

2.6 Conclusions

In Chapter 2, a conceptual framework for governmental scorecard is developed. The early accounting research in the 1950s and 1960s focused on socio-economic accounting that sought to measure outcomes of government activity. Since the late 1970s accounting for government has received less attention due to the problems encountered when applying accounting in a government setting (Birnberg and Gandhi 1976). The problems have recently lessened allowing the implementation of socio-economic accounting and the development a performance measure for government.

After reviewing the existing performance measures of government, two common features are identified. One, the measure of citizens' well-being is used as the ultimate outcome of government. Two, they accept the multidimensionality of government performance. A scorecard approach is adopted in order to incorporate governments' multidimensionality. Citizens' well-being is put at the top of the scorecard as the outcome of interest. The dimensions included in the framework are human development as the intermediate outcome measure, and economic factors, governmental factors, national resources, and national systems as performance drivers. Well-being and other dimensions of performance are organized in the framework to show a cause-and-effect relationship among them.

The conceptual framework presented in this study is the first attempt to measure national performance in the form of a scorecard. Even though further research is required to develop more rigorous national performance measure, it is believed that the governmental scorecard is a big step towards conducting performance measures of governments.

CHAPTER 3

GOVERNMENTAL SCORECARD FOR INTERNATIONAL COMPARISONS

3.1 Introduction

In this chapter, the governmental scorecard is validated using statistical analysis. International data is used to evaluate the cause-and-effect relationship between outcomes and government performance drivers suggested in Chapter 2. Empirical evaluation allows examination of the association between human development and well-being and whether human development is a good proxy for well-being as is claimed in the literature. The relationship between human development and government performance drivers are also evaluated.

Measurements for citizens' well-being (the ultimate outcome), human development, and government performance drivers (economic factors, governmental factors, national resources, and national systems) are collected through various databases. Citizen's well-being is measured by a factor score based on three survey questions: happiness, life satisfaction, and control over life. The Human Development Income, Health, and Education Index is used since it is currently the most widely used measure of human development (Ivanova et al. 1999). Unemployment growth, inflation rate, and investment per capita are used as the economic factors. Governmental factors include tax burden per capita, military expenditure per capita, and public health and education expenditure per capita. National resources include natural resources, working age population ratio, and information and communication technology. National systems include economic freedom and democracy. The following individual characteristics are

controlled for: financial satisfaction, subjective health, educational attainment, gender, age and age-squared, marital status, type of job, religious belief, and political belief.

3.2 Measurements

This section describes the instruments used to measure citizen's well-being, human development, economic factors, governmental factors, national resources, and national systems. Figure 2 shows the governmental scorecard with measurements. Appendix B shows the definitions of the measurement used in the scorecard.

Figure 2. Scorecard for Governments with Measurements.

3.2.1 Citizens' Well-being

The use of citizen well-being to capture the overarching objective of government is consistent with the economics literature. A branch of economics called economics of happiness typically uses a survey question about citizen happiness or satisfaction to proxy for well-being (Frey and Stutzer 2002; Helliwell 2003). Researchers then examine the relation between well-being and national-level performance such as GDP per capita (Easterlin 1974). Other variables examined include inflation and unemployment (Di Tella et al. 2001; Clark and Oswald 1994; Graham and Pettinato 2001).

There are problems with this approach. First, prior studies do not recognize the difference between happiness and life satisfaction and use the terms arbitrarily. If both are equally valid proxies, one would expect happiness and life satisfaction to have similar associations with explanatory variables. However, Gundelach and Kreiner (2004) find that self-reported happiness and life satisfaction demonstrate different relationships with a measure of life control; while there is a strong relationship between satisfaction and life control, there is no relationship between happiness and life control. This suggests that happiness and life satisfaction capture different elements. Second, even if happiness and life satisfaction are equivalent as well-being proxies, well-being cannot be captured by one question about happiness or life satisfaction. Well-being is a concept encompassing all aspects of life (Conceição and Bandura 2008). In order to construct a comprehensive measure of well-being, it is necessary to incorporate other aspects of life which are incremental to happiness and life satisfaction. Further, Kahneman and Krueger (2006) argue that using a single survey question cannot be reliable because it can be influenced in part by the respondent's current mood, memories, and immediate context.

These limitations are addressed by using three survey questions that have been identified as related to well-being: happiness, life satisfaction, and control over life. It is necessary to first distinguish between overall well-being (happiness and life satisfaction) and precondition (control over life) as they relate to well-being. Being happy and being satisfied with life address how people feel about their lives. They reflect an overall evaluation of an individual's life. The difference between them is that happiness is more likely related to daily life and life satisfaction is more likely associated with life overall (Chamberlain 1988).¹⁸

People gain happiness and life satisfaction through achieving their desires. To accomplish what they want, people must have the ability to make choices: autonomy. Autonomy is related to the freedom to choose. Autonomy can lead to happiness since it allows individuals to choose the most options that they value (Robeyns 2005). Thus, evaluation of autonomy is included as a precondition for well-being and measured by a survey question on control over life.

Three aspects of well-being can also be interpreted in the context of the capability approach developed by Amartya Sen, a Nobel laureate in economics.¹⁹ Sen states that people have “capability” which is a set of “doings and beings” (functionings) available to them. With the freedom to choose between different types of life (capabilities), people can achieve the level of functioning they value the most and, as a result, achieve higher utility. Freedom and utility in the capability approach can be interpreted as control over

¹⁸Happiness is often called affective well-being, and life satisfaction is often called cognitive well-being.

¹⁹ He was awarded the 1998 Nobel Memorial Prize in Economics Sciences for his contribution to welfare economics, poverty, famines, and human development. He introduced the concept of ‘capabilities’ in the 1980s as a way of thinking about well-being (Deneulin and McGregor 2009). His concept has been developed into the capability approach.

life, happiness, and life satisfaction. Each of the three aspects of well-being is discussed in detail in the following section.

Happiness

Happiness is one of the measures frequently used in well-being studies (Kahneman and Krueger 2006). Easterlin (1974) early work finds that within a given country, happiness is associated with higher income. Dynan and Ravina (2007) use happiness as a proxy for well-being to investigate whether level of happiness is affected by changes in the relative position of these groups within an income distribution. They find that people's happiness appears to depend positively on how well their group is doing relative to the average in their geographic area. Dorn et al. (2007) test the relationship between democracy and happiness and find a positive and significant relationship.

Life satisfaction

Di Tella et al. (2001) examine how life satisfaction alters with unemployment and inflation. They report that while people are happier when inflation and unemployment are low, unemployment has a greater negative effect on life satisfaction than inflation. Frijters et al. (2004) study on life satisfaction changes as a result of German reunification find that life satisfaction is affected by income and employment status. When distinguishing emotional quality of an individual's everyday experience from overall life evaluation, Kahneman and Deaton (2010) report that life satisfaction is closely related to income. .

Control over life

Control over life is an autonomous condition wherein people can act freely or choose what they value making it important for achieving well-being. Control over life has gained importance with increased industrialization and individualism (Veenhoven 1999). Recent studies show that happiness is affected by control over life. Diener (1984) work relates the degree of perceived freedom of choice or control in a person's life to well-being. Ross and Willigen (1997) find that education increases economic resources that bolster the sense of control over life, resulting in less emotional and physical distress. Gundelach and Kreiner (2004) find evidence of a positive relation between life satisfaction and feelings of life control. Johnson and Krueger (2006) show that control over life mediates the association between measures of actual wealth and life satisfaction.

3.2.2 Human Development

Unlike the citizens' well-being measure which is based on subjective evaluation of an individual's life, human development is an objective measure of well-being that evaluates circumstances which lead to a higher sense of well-being in a nation (Diener and Suh 1997).²⁰ GDP per capita or life expectancy is the typical measure of objective well-being. Since GDP and life expectancy data can be measured with few measurement errors both across governments and over time, they have high cross-government and inter-temporal availability. It is mainly for this reason that the use of objective well-being measures has been gaining popularity in government performance measures.

An example of a human development instrument is the HDI. It states that human development denotes both the process of widening people's choices and the level of their achieved well-being (UNDP 1990). The HDI uses knowledge and longevity as well as income to measure human development, makes an index, and ranks it to show human

²⁰ Objective measures of well-being are often called social indicators.

development for countries. Following the concept of the HDI, this study uses income, level of education, and life expectancy to measure objective well-being and to see the link to citizens' well-being. The HDI Income, Health, and Education Indices are used instead of the variables (GNI per capita, life expectancy at birth, and mean and expected years of schooling), which the sub-indices are based on. This provides an assessment of the validity of the HDI's claims concerning the relationship between human development and well-being.

*HDI Income Index Based on GNI per capita*²¹

The GNI per capita is a very crude measure of individual income. It captures people's accessibility to required resources, such as food, to meet their needs. Thus persons with higher income can afford what they desire (Frey and Stutzer 2002). From a government's perspective, income measures a government's capacity to deal with the material needs of its citizens (Giovannini et al. 2012). Many studies provide evidence that, on average, persons living in rich countries (higher GDP per capita) are happier than those living in poor countries (Inglehart 1989; Easterlin 1995; Vemuri and Costanza 2006).

HDI Health Index Based on Life Expectancy

The ability to live a long, healthy life can be considered a basic need of human beings (UNDP 1990). This implies that adequate nutrition and shelter and staying healthy also have indirect value to an individual's life (Nussbaum 2001). An optimum level of health makes it possible for people to perform basic activities of daily life. Further, it allows people to participate in the activities they value (UNDP 1990) leading to a higher level of well-being. Acemoglu and Johnson (2006) argue that improving health is an

²¹ GNI per capita is very closely related to GDP per capita. The correlation is 0.9934 in the sample.

important social objective because it contributes to longer and better lives for individuals and economic growth. Life expectancy at birth is often used at the national level as an aggregated health level (Subramanian et al. 2002).

HDI Education Index Based on Mean and Expected Years of Schooling

Education provides individuals with knowledge and skills. Knowledge, skills, abilities, and capabilities attained through education make it easier to achieve self-empowerment, civic engagement, and social participation (Lanzi 2007). It helps people understand their surroundings and culture (Lind 1992).²² Education is also related to income since it helps individuals improve their productivity thus leading to more stable careers and higher earnings (Quiggin 1999). Level of education is often used as a development measure for nations and a determinant of well-being.

3.2.3 Economic Factors

Economic conditions affect human development and a citizens' well-being. Three macroeconomic variables are used to measure economic conditions: unemployment rate growth, inflation rate, and investment per capita.

Unemployment Rate Growth

Studies have shown that higher unemployment rates have a negative effect on income. High unemployment (inactivity and skill loss) have an adverse effect on economic growth. High unemployment reduces the pool of savings available for investment in physical and human capital (Bean and Pissarides 1993). Unemployment also influences education and health directly and indirectly through income.

²² Lanzi (2007) mentions that under the capability approach, education has instrumental value (e.g., wage), intrinsic value (e.g., autonomy and well-being), and positional value (e.g., established social relation).

Unemployment affects well-being. Frey and Stutzer (2002) argue that unemployment makes people unhappy because of income loss, fear of future unemployment, and repercussions on the economy and society as a whole. Di Tella et al. (2001) find that a 1% increase in the rate of unemployment, from 9% to 10%, reduces life satisfaction by 0.028 points on a four-point scale. Alesina et al. (2004) also report that unemployment has a negative effect on well-being.

Inflation Rate

Inflation decreases the real value of money. Inflation increases the cost of goods and services making them less available to individuals. Reduced purchasing power reduces real income and therefore citizens' well-being. Prior studies document a negative relation between inflation and happiness. Di Tella et al. (2001) find evidence of a negative relationship in both European and U.S. studies. Graham and Pettinato (2001) find similar results using South American data. Inflation also affects education and health directly and indirectly through income.

Investment per Capita

Investment accumulates capital which is used to increase production. It is also related to the adoption and diffusion of the latest technologies and to economic growth. The economics literature has shown that investment determines economic growth (De Long and Summers 1991). Investment is included as an economic factor in order to capture capital accumulation and its effect on human development (income, education, and health).

3.2.4 Governmental Factors

Three governmental factors are measured: tax burden per capita, military expenditure per capita, and public health and education expenditure per capita.

Tax Burden per Capita

Government provides public and merit goods which affect human development and individual well-being. However, governments need funding to perform these activities. The funds come from citizens in the form of taxes which reduces their disposable income and decreases the well-being of individuals. To measure the extent of government's involvement and its burden to citizens, tax burden per capita is included.

Military Expenditure per Capita

Security is a fundamental public good and one of the primary justifications for the existence of the state (Frey et al. 2009). National defense enables the government to protect and enhance its own wealth (Holcombe 1997). It ensures the protection of citizens when the country is attacked. Citizens are more motivated to get involved with production to accumulate wealth. Thus, a sense of security affects human development (income) and well-being.

Public Health and Education Expenditure per Capita

Merit goods are products or services that are mandated by the government because people do not always recognize the true benefit of the goods. Health is an example of merit goods. An optimum level of health allows people to live their lives with minimal physical and mental difficulties, leading to higher well-being. Health is, therefore, one of the most important social goals for governments (Bloom and Canning 2003). Public health care systems make it possible for people to remain healthy and gain a higher level of well-being.

Another example of merit goods is education (Fiorito and Kollintzas 2004). Without public education, people might not attain sufficient levels of education even if they could afford it. Education is mentioned as one of the critical dimensions through which public policies for economic growth and human development can be assessed and analyzed (Lanzi 2007). So, from a government perspective, education is essential for advancing the overall competitiveness of the nation (Grasso and Canova 2008). From an individual perspective, education helps people achieve productive lives and higher well-being. Thus government spending on education can increase economic growth (Barro 1991; Cue 1995; Tanzi and Chu 1997), which then leads to higher well-being.

3.2.5 National Resources

The national resources used in the scorecard include natural resources, working age population ratio, and information and communication technology (ICT).

Natural Resources

Natural resources are a nation's available tangible resources for production. If a nation has abundant natural resources, it can have cheaper inputs and enable goods and services to be produced and delivered at a lower cost. Lower cost can be translated into lower prices for all products and services (Ayres and Warr 2005).

Working Age Population Ratio

Demographics is one of the factors often used to explain economic performance (Bloom et al. 1998). The working age population relative to total population is regarded as labor input (Brander and Dowrick 1994). A higher working age population implies more labor time to produce output.

Information and Communication Technology

A nation's infrastructure includes transportation systems, communication systems, and mail and parcel delivery systems (Porter 1990). ICT has become important since it started to diffuse in the late 1990s due to ICT price cuts. ICT enhances knowledge and skills and improves efficiency and productivity (Kramer et al. 2007). It also supplies access to goods, services, and sources of information which are otherwise unavailable. Thus ICT is included as one of the national resources.

3.2.6 National Systems

Economic freedom and democracy have been included as the rules for people to follow in making decisions and taking actions.

Economic Freedom

Economic structure defines the choice set for individuals and therefore determines transaction and production costs and the profitability and feasibility of engaging in economic activity (North 1991). Thus, economic structure is important for economic growth and development (Williamson and Mathers 2011). Material progress is greatest when the economic structure protects individuals' rights to pursue their own affairs without interference by the state.²³ Many empirical studies have found a positive relation between economic freedom and growth (Barro 1991; Barro and Lee 1994). Economic freedom is associated with higher income and a greater sense of well-being (Easton and Walker 1997).

Democracy

Democracy affects an individual's behavior. Since it emphasizes equality, it allows people to understand each other's viewpoints encouraging co-operation and

²³ Scully (1988) identifies two paths by which men progress economically: individualism and statism. Individualism emphasizes the individual's pursuit of his own affairs.

negotiation (Rodrik 2000). It also provides people with an incentive to express their opinion. Since democracy enables individuals to participate in the political process (Richards 2004), it encourages people to express their thoughts via public elections, and motivates politicians to govern based on the wishes of their constituents (Frey and Stutzer 2000).

Democracy affects economy. Some literature argues that democracy promotes economic growth, in that legal electoral limits on arbitrary power give individuals the security to plan for their economic future (Barro 1996). In contrast, other literature argues that democratic regimes actually hinder economic growth because they are unable to effectively implement the kinds of policies needed to facilitate rapid growth (Sirowy and Inkeles 1990). Democracy also affects well-being. Frey and Stutzer (2002) argue that people living in constitutional democracies are happier.

3.2.7 Individual Characteristics

Individual characteristics also affect well-being, an important field of psychology research (Frijters et al. 2004). Individual characteristics are controlled for in economic studies that examine the effect of economic variables such as income, inflation, or unemployment rate on well-being (Di Tella et al. 2003). Studies on well-being also control for individual characteristics. The individual characteristics considered in this study are financial satisfaction, subjective health, educational attainment, gender, age, marital status, type of job, and religious and political beliefs.

Financial Satisfaction

Financial satisfaction refers to an individual's evaluation of his/her financial conditions (Marcoen 1994). Previous literature identifies several financial factors that

affect an individual's level of financial satisfaction: income level, consumption level, and relative income (Kahneman and Krueger 2006). Oishi et al. (1999) show that financial satisfaction is strongly associated with life satisfaction in poor nations.

Subjective Health

Subjective health is an individual's evaluation of her physical condition. Prior work suggests that the measure for subjective health is related to well-being. Kahneman and Riis (2005) find subjectively-rated health is positively associated with multiple measures of life satisfaction.

Educational Attainment

Education can increase well-being by allowing individuals to make progress towards their goals or to adapt to environmental changes (Diener et al. 1999). On the other hand, education can reduce well-being if it leads to unrealistic or unattainable expectations (Diener et al. 1999; Clark and Oswald 1994). Blanchflower and Oswald (2004) find a positive relationship between each additional level of education and level of well-being whereas Stutzer (2004) finds that mid-level education is related to the highest level of life satisfaction.

Gender

Research examining the effect of gender on well-being is inconclusive. Alesina and Ferrara (2005) find that women tend to report higher well-being, whereas Louis and Zhao (2002) find no differences in well-being between genders. Madden (2010) reports lower levels of well-being for women than for men. One explanation noted in prior studies is the female gender role encourages greater emotional responsiveness (Wood et

al. 1989), and that women have stronger and more frequent emotional experiences than men (Oishi et al. 1999).

Age

Prior studies suggest a U-shaped relationship between well-being and age, with age being negatively related to well-being and age-squared demonstrating a positive relationship with well-being (Di Tella et al. 2003; Blanchflower and Oswald 2004; Blanchflower and Oswald 1999). Dolan et al. (2008) report that the lowest level of life satisfaction occurs between the ages of 32 and 50 years. Carstensen et al. (2003) explain this finding by arguing that older people have an increased ability to self-regulate their emotions and view their situations positively. Charles and Carstensen (2008) suggest that older people recall fewer negative memories than younger people. Consistent with existing work, both age and age-squared are included with the expectation of a U-shaped relationship between age and well-being.

Marital Status

Marriage is often found to be positively associated with well-being with married people reporting greater well-being than unmarried, divorced, separated, or widowed people (Diener et al. 1999). Married people report higher levels of well-being than those who have never been married and those who are separated/divorced report the lowest levels of well-being (Helliwell 2003). One of the reasons for the positive effect of being married is a continuing and intimate relationship and social and emotional support from marriage (Cohen and Wills 1985; Williams 1988).

Type of Job

An individual's type of work can affect both job satisfaction and overall well-being. London et al. (1977) find evidence that white-collar workers have a strong association between job satisfaction and life satisfaction. Blanchflower and Oswald (2004) find that individuals report higher well-being when their employment requires little manual labor. They posit that mental strain is related to factors common in low-level jobs such as hazardous work environments, excessive long or irregular working hours, skill underutilization, and lack of participation in decision making. Another explanation of the relationship between work and well-being is that the nature of employment is closely related to social class, which is associated with well-being (Murrell and Norris 1991; Argyle 1993).

Religious Belief

Marx described religion as the "opiate of the masses", suggesting that it leads to greater feelings of well-being (cited by Diner et al., 1999). A large number of studies show that well-being is correlated with religion (Ellison 1991; Pollner 1989; Leikes 2006) even after controlling for demographic variables such as age, income, and marital status. Religion can affect well-being by providing social and emotional support and a sense of meaning in daily life (Pollner 1989) as well as during major life crises (McIntosh et al. 1993). Ellison (1991) reports that religion accounts for approximately 5-7% of life satisfaction variance.

Political Belief

An individual's interest in politics can affect his/her behavior with respect to activity expressing thoughts and preferences and attempts to share their beliefs with society, resulting in greater well-being.

3.3 Research Design and Data Description

3.3.1 Research Design

A two-stage analysis is adopted to investigate preliminary cause-and-effect relations among the measures suggested in the governmental scorecard. The first stage investigates the relationship between subjective well-being and human development and how human development affects subjective well-being by controlling for individual characteristics. Since the respondents are located in different countries, a two-level analysis that allows a random intercept across countries was adopted. The model has subjective well-being as the dependent variable and human development (HDI Income, Health, and Education Index) as the independent variables. Individual characteristics are used as the control variables.

$$Well-Being_{ijt} = \alpha + \beta * Human_Development_{jt} + \gamma * Individual_Characteristics_{ijt} + \varepsilon_{ijt}$$

--- Model (1)

where

Well-being: a factor score based on survey questions on happiness, life satisfaction, and control over life;

Human_Development: Human Development Income, Health, and Education Index;

Individual_Characteristics: financial satisfaction, subjective health, educational attainment, gender, age, age-squared, marital status, type of job, religious belief, and political belief.

Well-being, individual characteristics and HDI Income Index are measured at time t . To check whether education and health have a lagged effect on well-being and to control the causality among income, education, and health, HDI Health and Education Index are measured as a three-year average. Since the residuals are correlated within a country and year, the coefficient estimates of the models are based on the standard errors clustered by countries and year. By using HDI sub-indices as proxy for human development, Model (1) also tests proponents' claims that the HDI is a good proxy for well-being.

The second stage of the study tests the link between the human development and government performance drivers (economic factors, governmental factors, national resources, and national systems). In testing the effect of human development on government performance drivers, the focus is on the HDI Income Index and its determinants. Focusing on the income measure makes it possible for me to link to the broad economics literature on the determinants of GDP. Based on the economic literature's use of lagged GDP to control for initial wealth, the three-year lag of GDP is included as a control variable. HDI Income Index is measured at time t . The independent variables are measured by recent three-year average to check whether government performance drivers have a lagged effect on national income. The standard errors are clustered by countries and year.

$$\begin{aligned} HDI_Income_Index_{jt} = & \alpha + \beta * HDI_Health_Index_{jt} + \gamma * HDI_Education_Index_{jt} \\ & + \delta * Economic_Factors_{jt} + \eta * Governmental_Factors_{jt} \\ & + \theta * National_Resources_{jt} + \lambda * National_Systems_{jt} \\ & + \nu * Lag3_ln(GDP)_{jt} + \varepsilon_{jt} \end{aligned}$$

--- Model (2)

where

Economic_Factors: unemployment growth, inflation, and investment per capita;

Governmental_Factors: tax burden per capita, military expenditure per capita, public health and education expenditure per capita;

National_Resources: natural resources, working age population ratio, and information and communication technology;

National_Systems: economic freedom and democracy.

3.3.2 Data

The data used in the analyses are obtained from various sources. The data for well-being and individual characteristics are drawn from the World Values Survey (WVS) by World Value Survey Association (WVSA). WVSA, a non-profit organization located in Stockholm, Sweden, has an international network of social scientists and carries out representative national surveys (WVSA 2008). WVSA has conducted five waves of surveys from 1981 to 2008 using a standard questionnaire that measures what people want out of life and what they believe. Inglehart (2000) believes that the WVS is the best source for international comparisons of life satisfaction. This study uses the fourth (1999-2004) and fifth wave (2004-2008), which have 144,054 respondents from 77 countries. The survey uses a four-point scale to measure happiness, with 1 representing “not at all happy” and 4 “very happy.” The questions about life satisfaction and control over life are measured on a 10-point scale, with 1 representing “completely dissatisfied (no choice at all)” and 10 “completely satisfied (a great deal of choice).” So that each variable has equal weight for a factor score, the happiness, life satisfaction, and control over life questions are scaled to have a value between 0 and 1.

For individual characteristics, this study uses the fourteen questions from the WVS that look at financial satisfaction, subjective health, educational attainment, gender, age, marital status, job, and religious and political beliefs. Some adjustments are made to the possible answers in order to simplify the questions. Following prior literature on a U-shaped relationship between well-being and age, age-squared is also used as an independent variable. A factor score is developed for religious and political beliefs. The factors show construct validity with a Cronbach's alpha of 0.744 for religious belief and 0.753 for political belief both above the lowest acceptable limit (0.6) suggested by Hair et al. (1998).²⁴

The data for national-level variables are collected from several sources. The HDI Income based on GNI per capita, Health based on life expectancy, and Education Index based on mean years of schooling and expected years of schooling are from the Human Development Report. Democracy data is drawn from the Polity IV database, a collection and analysis of democratic and autocratic authority in governing institutions. "Polity Score" is used in this study to capture a regime's authority spectrum on a 21-point scale ranging from -10 (hereditary monarchy) to +10 (consolidated democracy). The economic freedom variable is drawn from the Heritage Foundation's Economic Freedom Index. It assesses ten specific categories of freedom (e.g., trade freedom, business freedom, investment freedom), and makes an index from the results. The other variables for government performance drivers are collected from the World Development Indicators (WDI) by the World Bank, United Nations Educational, Scientific and Cultural Organization (UNESCO), and International Monetary Fund (IMF).

²⁴ Refer to Appendix B for explanation.

3.4 Results

3.4.1 Sample and Descriptive Statistics

The final sample represents 35,574 individuals from 45 countries. Table 1 shows the development status classified by IMF, year, and the number of observations of the 45 country-year in the final sample. 11,062 individuals are from 14 developed countries and 24,512 individuals from 31 developing countries. On average, each country-year has about 790 individuals. Mali is the smallest with 274 individuals and South Africa is the largest with 1,749 individuals. In terms of continents, the sample contains one country in Oceania, two in North America, six in South America, eight in Africa, ten in Asia, and eighteen in Europe.

Table 1*Country, Year, Number of Respondents, and Development Status*

Country	Year	No. of Respondents	Percent	Development
Australia	2005	1,223	3.44	Developed
Brazil	2006	1,285	3.61	Developing
Bulgaria	2006	297	0.83	Developing
Burkina Faso	2007	383	1.08	Developing
Canada	2006	1,023	2.88	Developed
Chile	2005	717	2.02	Developing
China	2007	953	2.68	Developing
Cyprus	2006	578	1.62	Developed
Egypt	2008	1,040	2.92	Developing
Ethiopia	2007	527	1.48	Developing
Finland	2005	476	1.34	Developed
France	2006	882	2.48	Developed
Georgia	2008	1,243	3.49	Developing
Ghana	2007	840	2.36	Developing
India	2006	817	2.3	Developing
Indonesia	2006	841	2.36	Developing
Iran	2000	778	2.19	Developing
Iraq	2006	1,646	4.63	Developing
Italy	2005	641	1.8	Developed
Japan	2005	617	1.73	Developed
Jordan	2007	432	1.21	Developing
Malaysia	2006	789	2.22	Developing
Mali	2007	274	0.77	Developing
Mexico	2005	775	2.18	Developing
Moldova	2006	926	2.6	Developing
Morocco	2007	880	2.47	Developing
Netherlands	2006	676	1.9	Developed
Norway	2008	934	2.63	Developed
Poland	2005	358	1.01	Developing
Romania	2005	596	1.68	Developing
Russian Federation	2006	1,181	3.32	Developing
Rwanda	2007	704	1.98	Developing
Serbia	2006	424	1.19	Developing
Slovenia	2005	712	2	Developed
South Africa	2007	1,749	4.92	Developing

Table 1

(Continued)

Spain	2000	1,033	2.9	Developed
Sweden	2006	860	2.42	Developed
Trinidad and Tobago	2006	503	1.41	Developing
Turkey	2007	1,259	3.54	Developing
Ukraine	2006	378	1.06	Developing
United Kingdom	2006	857	2.41	Developed
United States	2006	550	1.55	Developed
Uruguay	2006	330	0.93	Developing
Vietnam	2006	1,250	3.51	Developing
Zambia	2007	337	0.95	Developing
Total		35,574		

Table 2 shows the descriptive statistics. Since well-being is a factor, it is not meaningful to check descriptive statistics. However, it needed to mention that the well-being factor has big standard deviation (0.95) relative to its mean (0.11). This validates my dissertation to explain the variation using governmental characteristics and individual characteristics. The national-level variables also have large standard deviation relative to the mean of each variable, implying the different position of nations.

Table 2*Descriptive Statistics: International Comparisons*

	N	Mean	S.D.	Min	P25	Median	P75	Max
Well-being	35,574	0.11	0.95	-3.15	-0.45	0.21	0.8	1.72
HDI: Income Index	373	0.72	0.14	0.28	0.62	0.75	0.85	0.93
HDI: Health Index	373	0.85	0.1	0.46	0.81	0.85	0.94	0.99
HDI: Education Index	373	0.77	0.16	0.16	0.68	0.81	0.88	1
Unemployment Growth	373	0.01	0.17	-0.26	-0.07	-0.02	0.05	2.15
Inflation	373	5.05	4.03	-0.67	2.27	3.42	6.91	27.7
Investment per capita	373	4.21	2.97	0.15	1.42	3.73	6.58	12.09
Tax burden per capita	373	3.65	3.23	0.06	0.91	2.52	6.34	14.01
Military Exp per capita	373	3.71	4.21	0.09	1.06	2.74	4.39	25.18
Pub Health & Edu Exp per capita	373	0.2	0.18	0.01	0.04	0.14	0.33	0.69
Natural Resources	373	5.73	10.45	0	0.34	1.67	5.68	59.7
Working Age Population Ratio	373	0.66	0.04	0.49	0.65	0.67	0.69	0.73
ICT	373	0.6	0.98	-1.07	-0.22	0.46	1.49	2.71
Economic Freedom	373	65.33	8.79	45	58.95	63.9	70.97	87.47
Democracy	373	7.3	4.38	-7	7	9	10	10

These indices are calculated by the Human Development Report.

HDI: Income Index is based on GNI per capita.

HDI: Health Index is based on life expectancy.

HDI: Education Index is based on mean years of schooling and expected years of schooling.

Refer to Appendix A for calculation of the HDI sub-indices and Appendix B for variable definitions.

Table 3 reports the correlation between the well-being measure (factor score) and the three well-being dimensions. The well-being measure is positively correlated with each of the three dimensions. The highest correlation is with life satisfaction, 0.842,, and the lowest is 0.684 with control over life. The moderate correlation between well-being measure and happiness/life satisfaction implies that well-being is not a redundant measure of happiness or life satisfaction, both of which were used in the past to measure well-being. In other words, the well-being measure captures different aspects of well-being than the happiness or life satisfaction measures.

Table 3

Correlation between Well-being and Three Well-being Dimensions

	Well-being	Happiness	Life Satisfaction	Control over Life
Well-being	1.000	0.785	0.842	0.684
		<.0001	<.0001	<.0001
Happiness		1.000	0.525	0.261
			<.0001	<.0001
Life Satisfaction			1.000	0.389
				<.0001
Control over Life				1.000

This table shows the Pearson correlation among well-being and the three well-being dimensions.

The correlation between happiness and life satisfaction is only 0.525. Earlier studies on well-being arbitrarily used either happiness or life satisfaction measures implying that they measured the same things. However, the relatively low correlation between happiness and life satisfaction shows that they do not measure well-being in the same way. It implies that arbitrarily selecting one measure of well-being can lead to different empirical results. This justifies the use of other variables, which measure

different aspects of well-being, in order to construct a more reliable indicator for well-being. The lowest correlation is 0.261 between control over life and happiness. The Cronbach's alpha is 0.659, which is above 0.6, showing construct validity.

3.4.2 Well-being Regression

To determine how human development (HDI sub-indices or objective measure of well-being) affects citizens' well-being (subjective measure of well-being) after controlling for individual characteristics, a two-level analysis was used. Table 4 shows the results. In Column (1), the HDI Income Index has a significant and positive effect on citizens' well-being. HDI Health and Education Index has no significant effect on well-being, while financial satisfaction, subjective health, and educational attainment of individual have a positive effect. The possible reason for the insignificant HDI Health and Education Index is that the HDI does not represent what people experience in their lives (Stiglitz et al. 2009b). Since the variable used in the HDI is aggregated at the national level, it only captures human development for an average citizen. Thus, the HDI does not represent an accurate evaluation of how people in a nation actually feel about their lives and their own well-being. The results contradict the argument that the HDI improves the level of well-being. There are also papers suggesting that the HDI is not related to well-being. For instance, Blanchflower and Oswald (2005) argue that HDI alone does not capture well-being adequately by showing that Australia ranks high in HDI but performs poorly on a range of happiness indicators at the same time.

Table 4*Citizens' Well-being and Human Development: International Comparisons*

			Well-being	
		Period	Col(1)	Col(2)
Human Development	HDI: Income Index	t	1.029**	2.058***
	HDI: Health Index	Ave (t, t-1, t-2)	-0.360	-0.393
	HDI: Education Index	Ave (t, t-1, t-2)	0.153	-0.209
Self-reported Finance, Health & Education	Financial Satisfaction	t	1.367***	
	Subjective Health	t	1.098***	
	Education: Secondary	t	0.039***	
	Education: University	t	0.042***	
Individual Personal Characteristics	Gender: Female	t	0.034***	0.004
	Age	t	-0.806***	-2.258***
	Age squared	t	0.848***	1.924***
	Divorced/Separated/Widowed	t	-0.034**	-0.108***
	Married/Live Together	t	0.127***	0.185***
	Job: White-collar	t	0.038***	0.195***
	Religious Belief	t	0.046***	0.060***
	Political Belief	t	0.026***	0.058***
	No of Respondents		35,574	35,574
	No of Countries		45	45

*= significant at the 10% level; **= significant at 5% level; ***=significant at the 1% percent level

$$Well-Being_{ijt} = \alpha + \beta * Human_Development_{jt} + \gamma * Individual_Characteristics_{ijt} + \varepsilon_{ijt}$$

Another explanation for the insignificant effects of HDI Health and Education Index on well-being is that they are highly correlated with HDI Income Index. One criticism of the HDI is the redundancy of the three critical factors (income, health, and education). Numerous papers show the strong association among income, education, and health (Cutler and Lleras-Muney 2006). It has been shown that a higher income level leads to a higher level of education healthier behavior choices. Although the HDI argues that all three factors are essential for human development (or well-being), it may be redundant to include all of them. Cahill (2005) believes that it is possible to exclude any one of the HDI components and still achieve a correlation of 0.95 (or higher) to the

original HDI. That might be a reason that the HDI Health and Education Index cannot explain well-being after controlling for the HDI Income Index.

Such results imply that, contrary to its central assertions, the HDI does not measure well-being. Income is the most representative variable among the three factors. It can be evidence so that the HDI rethinks and provides convincing arguments on how the HDI is connected to well-being and on why education and health are as important as income for well-being.

Since subjective health and education attainment of the individual are significantly positive, this study looks at the relationship between national health and education when the subjects' evaluations of their financial situation, health and educational attainment are not controlled for. Col(2) shows that national health and education are not significant even without the variables on individual finance, health, and education.

For individual characteristics, all variables are significant and exhibit the expected relationships. People who experience financial satisfaction, feel healthier, and have attained higher education show a higher sense well-being. Interestingly, females show mixed results. Well-being and age have a U-shaped relationship with the lowest level of well-being at around 48 years old for Col(1) and 59 years old for Col(2). Subjects who are married or living together report higher levels of well-being. Holding white-collar jobs is associated with higher levels of well-being. Religious and political beliefs are related to higher levels of well-being.

3.4.3 HDI Income Index Regression

In this section, the relationship between human development and government performance drivers is shown. As mentioned, this study seeks to develop a conceptual framework of government outcomes and performance drivers. The empirical analysis looks at the cause-effect relationship. Since only national income has a positive effect on well-being, see Table 4, the focus is on how national income (HDI Income Index) is driven by other human development factors (HDI Health and Education Index) and related to economic factors, governmental factors, national resources, and national systems. As stated, the contemporary dependent variable (HDI Income Index) and a three-year average for the independent variables are used to check cause-and-effect.

Table 5 shows how the HDI Income Index is driven by health, education, and other performance drivers. The HDI Health and Education Index has a significant and positive effect on HDI Income Index. It is consistent with the economics literature which states that people with higher levels of education and who live longer have higher incomes. Among the economic factors, unemployment growth has a negative effect on the HDI Income Index. This is consistent with the prior literature's claims that unemployment reduces current output and aggregate income (Nickell 1990). Unemployment (inactivity and skill loss) have an adverse effect on economic growth. Another reason is that high unemployment reduces the pool of savings available for investment in physical/human capital and in knowledge-creating activities (Bean and Pissarides 1993). The effect of unemployment on investment in human capital such as health and income also has an indirect effect through income. Inflation has a negative effect on the HDI Income Index because income is measured as purchasing power parity.

Investment per capita leads to higher national income by increasing the stock of capital per worker thereby increasing workers' productivity.

Table 5

HDI Income Index and Its Drivers: International Comparisons

		Period	HDI: Income Index
Human Development	HDI: Health Index	AVE (t, t-1, t-2)	0.255***
	HDI: Education Index	AVE (t, t-1, t-2)	0.050*
Economic Factors	Unemployment Growth	AVE (t, t-1, t-2)	-0.033***
	Inflation	AVE (t, t-1, t-2)	-0.003***
	Investment per capita	AVE (t, t-1, t-2)	0.012***
Governmental Factors	Tax Burden per capita	AVE (t, t-1, t-2)	0.005***
	Military Exp per capita	AVE (t, t-1, t-2)	0.003***
	Pub Health & Edu Exp per capita	AVE (t, t-1, t-2)	0.040
National Resources	Natural Resources	AVE (t, t-1, t-2)	0.002***
	Working Age Population Ratio	AVE (t, t-1, t-2)	0.532***
	ICT	AVE (t, t-1, t-2)	0.015***
National Systems	Economic Freedom	AVE (t, t-1, t-2)	0.001***
	Democracy	AVE (t, t-1, t-2)	0.002***
Control Variable	GDP	3YR Lag	0.009***
	N of Country-year		372
	adj. R-sq		0.922

*= significant at the 10% level; **= significant at 5% level; ***=significant at the 1% percent level

$$\begin{aligned}
 HDI_Income_Index_{jt} = & \alpha + \beta * HDI_Health_Index_{jt} + \gamma * HDI_Education_Index_{jt} \\
 & + \delta * Economic_Factors_{jt} + \eta * Governmental_Factors_{jt} \\
 & + \theta * National_Resources_{jt} + \lambda * National_Systems_{jt} \\
 & + \nu * Lag3_ln(GDP)_{jt} + \varepsilon_{jt}
 \end{aligned}$$

Among the governmental factors, tax burden per capita has a positive effect, implying that the government's role is critical in the process of economic development (Ram 1986). Government is one of the producers of goods and services and, therefore, contributes to economic growth (Grier and Tullock 1989). The government also plays a role in increasing productive investments and providing socially optimal direction for growth and development (Ram 1986). Military expenditure per capita has a positive

effect on national income. Securing property rights provides incentive to people to produce more, and it then increases output. Military expenditure also leads to by-products such as technological progress and increases in research and development that, in turn, lead to economic growth (Deger and Sen 1983). Public health and education per capital is not significant. The possible explanation is that education and health expenditure only have an indirect effect on income through national education and health. Natural resources are positively associated with income since they make it possible for the nation to have cheaper input due to no transportation costs (Stijns 2005). ICT also has a positive effect on income because information and knowledge sharing leads to improved skills for individuals and improved efficiency for firms. Consistent with prior literature, economic freedom has a positive effect on income. Democracy also has a positive effect on income perhaps because it creates competitive market force conditions that lead to economic growth (Nelson and Singh 1998).

3.4.4 Additional Test

Table 4 shows that individual subjective health and educational attainment influence well-being, while national health and education do not. Further analyses are conducted to determine the indirect effects of national income, health and education.²⁵ The effects of financial satisfaction, subjective health, and educational attainment on national income, health, and education, respectively, are regressed after controlling for the other individual characteristics mentioned in the literature. Table 6 shows the results. Panel A shows the effect of national income on financial satisfaction, after controlling for gender, age, and marital status. National income is positively associated with financial

²⁵ Since financial satisfaction, subjective health, and education attained are scored to have discrete values (e.g., 1 for poor health, 5 for very healthy), a two-level ordered logit regression is used for Table 6.

satisfaction. In the results, national income also has both an indirect and a direct effect via financial satisfaction on well-being (Table 4).

Panel B shows the national health effect on subjective health, after controlling for gender, age, marital status, educational attainment, and religious belief. National health increases subjective health, implying that national health indirectly affects well-being through subjective health.

Panel C shows the relationship between educational attainment of individual and national education. After controlling for gender and age, the level of individual education is positively associated with the national educational level, implying that national education has only an indirect effect on well-being through educational attainment of the individual.

Table 6*Human Development and Individual Financial Satisfaction, Subjective Health, and Educational Attainment*

Panel A. Effect of national income on financial satisfaction of individual

	Period	Financial Satisfaction	
HDI: Income Index	AVE (t, t-1, t-2)	2.496	***
Gender: Female	t	0.033	*
Age	t	0.136	*
Divorced/Separated/Widowed	t	-0.414	***
Married/Live Together	t	0.093	***
N of Respondents		35,574	
N of Countries		45	

*= significant at the 10% level; **= significant at the 5% level;

***=significant at the 1% percent level

$$Financial_Satisfaction_{ijt} = \alpha + \beta * HDI_Income_Index_{jt} + \gamma * Control_Var_{ijt} + \varepsilon_{ijt}$$

Panel B. Effect of national health on subjective health of individual

	Period	Subjective Health	
HDI: Health Index	AVE (t, t-1, t-2)	0.678	***
Gender: Female	t	-0.223	***
Age	t	-3.386	***
Divorced/Separated/Widowed	t	-0.052	
Married/Live Together	t	0.200	***
Education: Secondary	t	0.385	***
Education: University	t	0.762	***
Religious Belief	t	0.039	***
N of Respondents		35,574	
N of Countries		45	

*= significant at the 10% level; **= significant at the 5% level;

***=significant at the 1% percent level

$$Subjective_Health_{ijt} = \alpha + \beta * HDI_Health_Index_{jt} + \gamma * Control_Var_{ijt} + \varepsilon_{ijt}$$

Panel C. Effect of national Education on Educational Attainment

	Period	Educational Attainment	
HDI: Education Index	AVE (t, t-1, t-2)	3.854	***
Gender: Female	t	-0.078	***
Age	t	-3.320	***
N of Respondents		35,574	
N of Countries		45	

*= significant at the 10% level; **= significant at the 5% level;

***=significant at the 1% percent level

$$Educational_Attainment_{ijt} = \alpha + \beta * HDI_Education_Index_{jt} + \gamma * Control_Var_{ijt} + \varepsilon_{ijt}$$

3.5 Conclusions

The early accounting research in the 1950s and 1960s focused on socio-economic accounting that sought to measure outcomes of government activity. However, since the late 1970s, fewer studies were conducted on accounting for government due to problems of applying accounting in the government setting, in part due to the unavailability of sufficient data for analysis (Birnberg and Gandhi 1976). Thanks to rapid progress in the evolution of data collection by countries and international authorities (e.g., the World Bank, the United Nations) government data is now available on consistent and comparable bases across countries. The improved availability of data has been leveraged and used to investigate the effect of government policy.

In the previous chapter, a conceptual framework for a governmental scorecard was developed. It identifies the overarching outcome (citizens' well-being) and intermediate outcome of government (human development), and provides performance drivers (economic factors, governmental factors, national resources, and national systems). This chapter examines the governmental scorecard and provides empirical evidence of its validity. The results show that well-being of citizens is driven by national income, while it is not clearly associated with national health and education. This result indicates some check points for the existing outcome measures for governments. Many of the existing performance measures for government, such as the HDI, incorporate health and education as a dimension of national performance. However, the results of this study show that education and health are not related to citizens' well-being. There should be more discussion on the reason that education and health are considered important aspects of government performance. Education and health are positively associated with national

income, as economists have argued. By and large, the governmental performance drivers have the expected effects on national income. Figure 3 shows the governmental scorecard and the cause-and-effect relationships between government outcomes and performance drivers as determined in this study.

Figure 3. Scorecard for Governments with Measurements: Empirical Results.

CHAPTER 4

GOVERNMENTAL SCORECARD FOR U.S. REGIONAL COMPARISONS

4.1 Introduction

The purpose of this chapter is to evaluate the governmental scorecard in another setting. Specifically, U.S. regional data is used to evaluate the validity of the governmental scorecard. While using international data evaluates whether the scorecard is applicable across countries in general, it has several limitations.

First, there is not enough data across countries despite recent improvements in data availability. For instance, well-being data is available for only 5 years within the period of 1981 and 2008. To examine the possible long lagged effect of governmental performance drivers, it is necessary to have a relatively long time-series data. Data is limited not only over time but also across countries. For instance, the WVS has only 166 country-year observations in the original database. Moreover, the sample size reduces to 55 country-years for the well-being regression after well-being data is merged with human development data (HDI sub-indices).²⁶ Maas and Hox (2005) document that a sample of 50 or less at level two (country-level) leads to biased estimates of the second-level standard errors, while the estimates of the regression coefficients, the variance components, and the standard errors are unbiased and accurate. Thus the international study might not be a powerful evaluation of the scorecard.

Another limitation is the problem of measurement errors and omitted variables. Estimated numbers for economic freedom, taken from the Heritage Foundation, and

²⁶ Ten country-years are additionally deleted to include only one country in the sample. Thus 45 country-years are used for the well-being regression in Chapter 3.

democracy, taken from the Polity IV database, are used in the international analyses. These analyses could have measurement error problems. For instance, Dutt and Mitra (2008) state that political instability measures such as Polity IV are too broad in scope and can be subject to measurement errors. Peláez (2009) state that economic freedom is imperfectly measured due to subjective factors, bias, and measurement errors. Moreover, there may be omitted variables such as government institutional quality and culture so that the model cannot capture heterogeneity across countries. For instance, Di Tella and MacCulloch (2008) show that omitted variables can change the empirical results of the relationship between happiness and income.

To overcome the limitations and provide additional support for the governmental scorecard, this chapter uses U.S. regional data. U.S. regional data has two advantages over international data. One is that the data is rich in terms of scope and time-series. For example, the U.S. has extensive, detailed data on insurance coverage, government activities, and crime rates that is not available in international data sets. In addition, U.S. data is available for a longer period than international data. Well-being data is available for 26 years, from 1972 to 2010, from nine regions giving a total of 234 (=26 surveys for nine regions) region-year observations, over four times as many observations as those available for international evaluation. This makes it possible to evaluate the scorecard with relatively long time-series data. The larger scope of available data over a longer time period is a significant advantage when studying the lagged-effect of various governmental performance drivers on the outcomes. It also allows for the tracking of the well-being trend. The problem of omitted variables and measurement errors is less severe in U.S. data than in international data. Since it is a within-country analysis, time-invariant

omitted variables such as culture cause less bias. Thus, measurement errors related to democracy and economic freedom are less severe since the U.S. regions share the same values.

Evaluation using U.S. regional data provides an additional validity check of the scorecard.

4.2 Measurements

Measures for each dimension of the governmental scorecard are determined as in Chapter 3. Since the available data for U.S. regions is different from the international data, the measures used in this part of the study are different from those used in the international analysis.

Appendix C reports the definition and source of the measures used for the U.S. regional comparisons.

4.2.1 *Citizens' Well-being*

In the international analysis, citizens' well-being is measured by a factor score constructed using happiness, life satisfaction, and control over life. However, the U.S. data drawn from the General Social Survey only looks at happiness. Thus, happiness is used to measure citizens' well-being.

4.2.2 *Human Development*

Income, health, and education are used to measure human development in the U.S. regional analysis, the same as in the international analysis. Income is measured by personal income per capita provided by the U.S. Bureau of Economic Analysis. Life expectancy is used to measure health. The mean and expected years of schooling are not

available for U.S. regions therefore percent of high school diploma recipients compared to total population of the region is used to measure education level.

4.2.3 Economic Factors

Among the economic factors used in Chapter 3 (unemployment rate, inflation, and investment per capita), only the unemployment rate is included in this analysis. Data on investment is not available at a state-level to be aggregated at the regional level. Even though regional level inflation data is available, it is not used since inflation is determined primarily by the federal government's monetary policy and thus is not much different across U.S. regions.

4.2.4 Governmental Factors

To be comparable to Chapter 3, tax burden per capita, government public protection expenditure per capita, and public health and education expenditure per capita are used.

4.2.5 National Resources

A measure for natural resources is not available at the regional level. For labor input, ratio of labor force to total population in the region is used. The measures related to infrastructure are government expenditure on infrastructure. Infrastructure is measured by combining two variables on highway and air transportation expenditure by government. Labor force and government expenditure on infrastructure is scaled by total population of the region.

4.2.6 National Systems

National systems are affected by local, state and federal governments. Since there are few differences in economic freedom and democracy among regions, the measures for national systems are not included.

4.2.7 Individual Characteristics

Individual characteristics are drawn from the General Social Survey (GSS). Except for the political belief and type of job, most of the measures for individual characteristics in international data are available in the GSS, even though they may have different scales. Additional variables available in the GSS are working status, race and respondent's income. Working status makes it possible to test the personal unemployment effect on happiness. Since the U.S. consists of a variety of ethnic groups, it is interesting to see whether race affects well-being. Respondents' income is measured by a six-digit number measured in the year 2000 dollar. The use of the respondent's income provides direct evidence that income matters for well-being. Frequency of attending religious service replaces religious belief in the international analysis. Individual characteristics included are financial satisfaction, respondent's constant income, subjective health, degree attained, gender, age and age-squared, race, marital status, and frequency of attending religious service.

4.3 Research Design and Data Description

Following the international analysis, a two-stage analysis is used. The first stage tests whether human development increases well-being after controlling for individual characteristics. Individuals are nested in nine U.S. regions, New England, Mid-Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South

Central, Mountain, and Pacific (See Appendix D). Thus, a two-level analysis was used to allow a random intercept across regions.

U.S. regional data has one happiness question measured on a three-point scale, with 1 representing not too happy and 3 very happy. Since the dependent variable is ordinal response categories, I use ordered logit regression. Income, health, and education are used as the human development variables. The individual characteristics controlled for are financial satisfaction, respondent's income in constant dollar, subjective health, degree attained, gender, age and age-squared, race, marital status, degree, working status, and frequency of attending religious service,

$$\begin{aligned} \text{Happiness}_{ijt} = & \alpha + \beta * \text{Personal_Income}_{jt} + \gamma * \text{Time} + \tau * \text{Time} * \text{Personal_Income}_{jt} \\ & + \omega * \text{Life_Expectancy}_{jt} + \eta * \text{Growth_Life_Expectancy}_{jt} \\ & + \pi * \text{PCT_Diploma}_{jt} + \delta * \text{Growth_PCT_Diploma}_{jt} \\ & + \nu * \text{Individual_Characteristics}_{ijt} + \varepsilon_{ijt} \end{aligned}$$

--- Model (3)

where

Happiness: a score of a survey question of happiness;

Personal_Income: log (personal income per capita);

Time: t-1972;

Time*Personal_Income: interaction between time and log (personal income per capita);

Life_Expectancy: life expectancy;

Growth_Life_Expectancy: life expectancy growth;

PCT_Diploma: percent of diploma recipients;

Growth_PCT_Diploma: percent of diploma recipients growth;

Individual_Characteristics: financial satisfaction, respondent's income in constant dollar, subjective health, degree attained, gender, age, age-squared, race, marital status, working status, and frequency of attending religious service.

For Model (3), happiness, personal income per capita, and individual characteristics are measured at time t . Leveraging the long time-series data of the U.S. region, time and interaction with time and personal income variable are added to investigate the income effect on well-being over time. An 8-year period is used to determine whether education and health have a long lagged effect on well-being and to control for causality among income, education, and health. Compared to the international analysis, which relies on a 3-year average for health and education, contemporary level and growth from year $t-7$ to year $t-1$ are used for education and health in the U.S. study. Deaton (2008) argues that since life expectancy changes slowly over time in response to social changes, growth of life expectancy as well as level of life expectancy must be used to capture the long-term effect of life expectancy. His argument can be expanded to education. Thus, level and increase of percentage of diploma recipients are also included. The coefficient estimates of the models are based on the standard errors clustered by region and year. Unlike the WVS, the GSS has a measure of individual income in the 2000 dollar so that it can be directly tested whether regional income has a greater positive effect on happiness than individual income.

The second stage of the analysis looks at the link between human development in a region and government performance drivers. As in the international analysis, the analysis focuses on personal income per capita and its determinants, which allows linking to the broad economics literature on the determinants of GDP. Personal income per capita

is also measured at time t . The independent variables are measured based on a recent 8-year data to determine if performance drivers have a lagged effect on human development within each region. The standard errors are clustered by regions and year.

$$\begin{aligned}
 & \textit{Persona_Income_per_Capita}_{jt} \\
 &= \alpha + \beta * \textit{Life_Expectancy}_{jt} + \gamma * \textit{Growth_Life_Expectancy}_{jt} \\
 &+ \delta * \textit{PCT_Diploma}_{jt} + \eta * \textit{Growth_PCT_Diploma}_{jt} \\
 &+ \theta * \textit{Economic_Factors}_{jt} + \lambda * \textit{Governmental_Factors}_{jt} \\
 &+ \nu * \textit{National_Resources}_{jt} + \varepsilon_{jt}
 \end{aligned}$$

--- Model (4)

where

Life_Expectancy: life expectancy;

Growth_Life_Expectancy: life expectancy growth;

PCT_Diploma: percent of diploma recipients;

Growth_PCT_Diploma: percent of diploma recipients growth;

Economic_Factor: employment rate;

Governmental_Factor: tax burden per capita, government expenditure on public protection per capita, and government expenditure on health and education per capita.

National_Resources: percent of labor force to total population at region and government expenditure on infrastructure per capita.

The data for well-being and individual characteristics are drawn from the GSS conducted by the National Opinion Research Center (NORC), which is headquartered on the University of Chicago's campus. The GSS is the NORC's longest running project, started in 1972 and completed its 28th round in 2010.²⁷ It is the largest national public opinion survey in the U.S. (Caplan and Miller 2010). Unlike the WVS, the GSS has only

²⁷ <http://www3.norc.uchicago.edu/GSS+Website/About+GSS/About+NORC/>

one happiness question and does not have questions about life satisfaction and control over life. Regional data is collected from several sources. Personal income per capita is drawn from the Bureau of Economic Analysis. Employment rate and labor force are taken from Bureau of Labor Statistics. Life expectancy is obtained from Institute for Health Metrics and Evaluation. Government expenditure data is obtained from U.S. Census Bureau. Data on diploma recipients is taken from the National Center for Education Statistics. All data are derived at the state-level and aggregated at the regional level for this study. The standard errors are clustered by region and year.

4.4 Results

4.4.1 Sample and Descriptive Statistics

The final sample includes 9,316 respondents from 72 region-years. The sample period is 1994-2008. Since regional variables are calculated from a recent 8-year period ($t-t-7$) and matched with contemporary happiness and individual characteristic data, the sample period starts in 1994 even though the first GSS was done in 1972. Table 7 shows the number of respondents by year and region. Among the nine regions, the number of respondents in New England is the smallest probably due to the smaller population, while the number of respondents in South Atlantic is the largest. The number of respondents fluctuates over time with the smallest number of respondents in 2004.

Table 8 shows the descriptive statistics for human development and other variables at the regional level. Personal income per capita is scaled by 1000 with the mean and median at \$31,270 and \$30,610. Considering that the minimum and maximum value, personal income per capita is quite different across regions. Life expectancy is

77.27 years old and is similar across regions. The mean of percent of diploma recipients is 0.92%. Health and education expenditures are the largest government expenditure variables.

Table 7*Number of Respondents by Region and Year*

	New England	Mid-Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Moun- tain	Pacific	Total
1994	57	173	221	114	253	69	135	101	190	1,313
1996	87	218	282	129	291	102	150	125	248	1,632
1998	78	258	310	141	346	117	188	123	266	1,827
2000	64	209	243	114	278	97	161	102	204	1,472
2002	32	88	99	49	109	44	63	36	81	601
2004	16	69	78	47	115	36	52	44	74	531
2006	37	133	207	69	262	62	122	98	174	1,164
2008	31	99	124	46	184	43	77	54	118	776
Total	402	1,247	1,564	709	1,838	570	948	683	1,355	9,316

Table 8*Descriptive Statistics: U.S. Regional Comparisons*

	Period	N	Mean	S.D.	Min	P25	Median	P75	Max
Personal Income per Capita	t	144	31.27	6.87	18.74	25.88	30.61	36.05	49.73
Life Expectancy	t	144	77.26	1.42	74.06	76.23	77.42	78.33	80.26
PCT of Diploma Recipients	t	144	0.92	0.1	0.52	0.83	0.93	0.99	1.12
AVE of Employment Rate	(t~t-7)	144	0.95	0.01	0.93	0.94	0.95	0.95	0.96
AVE of Tax Burden	(t~t-7)	144	2.85	0.73	1.63	2.29	2.75	3.3	5.17
AVE of GOV Protection Exp	(t~t-7)	144	0.18	0.05	0.09	0.14	0.18	0.21	0.32
AVE of GOV Health & Edu Exp	(t~t-7)	144	1.88	0.43	1.15	1.54	1.76	2.18	3.04
AVE of Labor Force Ratio	(t~t-7)	144	0.51	0.02	0.47	0.49	0.5	0.52	0.54
AVE of GOV Infrastructure Exp	(t~t-7)	144	0.39	0.09	0.27	0.32	0.38	0.45	0.63

4.4.2 Happiness Regression

Table 9 shows the results of the happiness regression. For Co (1), respondent income and working status are excluded in order to correspond to the well-being regression in the international analysis. Consistent with the international analysis, the U.S. results show that among the human development variables, only personal income per capita at the regional level is significantly positive. Neither level nor growth of health and education contribute to happiness even though a long lagged measure is used. One possible explanation is that health and education have only indirect effects on happiness through income. The time variable has a positive effect on happiness, meaning happiness increases over time. The significant negative coefficient of the interaction term between time and personal income implies that the effect of income on happiness decreases over time. Thus the same level of income provides less happiness than it did 20 years ago. Financial satisfaction and subjective health have a positive effect on happiness. Unlike the results of the international survey, the degree obtained is not significant. Additional analyses reported in a later section to discuss the reason for the insignificant effect of degree. Among the individual personal characteristics, age, race, marital status, and frequency of attending religious service have a significant effect on happiness. Age has a U-shaped relationship with happiness. Caucasians are the happiest and African-Americans are the least happy. Individuals who are married are happier than those who are not married. Attending religious services more than five times per year also increases level of happiness.

Table 9*Citizens' Well-being and Human Development: U.S. Regional Comparisons*

			Happiness			
			Period	Col(1)	Col(2)	
Human Development	Personal Income per Capita	t	2.459	***	2.474	***
	Time	t	0.326	***	0.325	***
	Time*Personal Income per Capita	t	-0.089	***	-0.089	***
	Life Expectancy	t	-0.022		-0.020	
	Life Expectancy Growth	(t-1~t-7)	-10.097		-10.655	
	Pct of High School Diploma	t	-11.830		-10.544	
	Pct of High School Diploma Growth	(t-1~t-7)	-0.399		-0.385	
Self-reported Finance, Health & Education	Financial Satisfaction: More or less Satisfied	t	0.762	***	0.747	***
	Financial Satisfaction: Satisfied	t	1.398	***	1.383	***
	Respondent Constant Income	t			0.026	
	Working: Full-time	t			0.101	*
	Subjective Health: Fair	t	0.479	***	0.454	**
	Subjective Health: Good	t	1.067	***	1.033	***
	Subjective Health: Excellent	t	1.725	***	1.687	***
	Degree: High School	t	0.025		0.007	
	Degree: Associate	t	0.118		0.090	
	Degree: Bachelor's	t	0.138		0.104	
	Degree: Graduate	t	0.084		0.042	
Individual	Female	t	0.061		0.088	*
Personal	Age	t	-2.938	***	-3.771	***
Characteristics	Age_sq	t	3.554	***	4.490	***
	Race: Black	t	-0.324	***	-0.327	***
	Race: Other	t	-0.088		-0.091	

Table 9

(Continued)

Marital Status: Widowed	t	-1.108	***	-1.111	***
Marital Status: Divorced	t	-0.916	***	-0.923	***
Marital Status: Separated	t	-1.114	***	-1.113	***
Marital Status: Never Married	t	-0.893	***	-0.889	***
Attending Religious service: 5+ / Year	t	0.273	***	0.277	***
N of Respondents		9,316		9,316	
N of Region-year		72		72	

*= significant at the 10% level; **= significant at the 5% level; ***=significant at the 1% percent level

$$\begin{aligned}
 Happiness_{ijt} = & \alpha + \beta * Time + \gamma * Personal_Income_{jt} + \tau * Time * Personal_Income_{jt} \\
 & + \omega * Life_Expectancy_{jt} + \eta * Growth_Life_Expectancy_{jt} \\
 & + \pi * PCT_Diploma_{jt} + \delta * Growth_PCT_Diploma_{jt} \\
 & + \nu * Individual_Characteristics_{ijt} + \varepsilon_{ijt}
 \end{aligned}$$

Col(2) shows the effect of respondent's income and working status. The results are quite robust. Only income at the regional level contributes to happiness. Interestingly, the individual respondent's level of income is not significant. The possible reason is that respondent's income increases happiness through financial satisfaction. Happiness increases over time. Income brings less happiness now than it used to. Financial satisfaction and subjective health are significantly positive indicators of happiness. Working full-time brings happiness. Among the personal characteristics, females become significant which shows that females are happier than males. Age, race, marital status, and frequency of attending religious service have the predicted effect on well-being.

4.4.3 Personal Income Regression

Table 10 reports the personal income regression model. Current life expectancy and life expectancy growth has a positive effect on personal income per capita, which is consistent with prior literature such as Barro (1996) and with the international analysis. For education, only growth in percentage of diploma recipients has a significantly positive effect on personal income per capita. Consistent with traditional arguments in economics, human capital (health and education) contributes to income.

Employment rate has a positive effect on personal income per capita. Stable employment prevents loss of skills and provides the means for continuing investments in physical and human capital (Bean and Pissarides 1993).

Table 10*Personal Income per Capita and Its Drivers: U.S. Regional Comparisons*

		Period	Personal Income per Capita
Human	Life Expectancy	t	0.082***
Development	Life Expectancy Growth	(t-1~t-7)	4.340***
	PCT of Diploma Recipients	t	-0.559
	PCT of Diploma Recipients Growth	(t-1~t-7)	0.108**
Economic Factor	AVE of Employment Rate	(t~t-7)	7.766***
Governmental Factor	AVE of Tax Burden	(t~t-7)	-0.176***
	AVE of GOV Protection Exp	(t~t-7)	0.038
	AVE of GOV Health & Edu Exp	(t~t-7)	0.246***
National	AVE of Labor Force Ratio	(t~t-7)	1.235
Resources	AVE of GOV Infrastructure Exp	(t~t-7)	1.107***
Intercept			-11.348***
No of Region-year			144
adj. R-sq			0.961

*= significant at the 10% level; **= significant at the 5% level; ***=significant at the 1% percent level

$$\begin{aligned}
\text{Persona_Income_per_Capita}_{jt} = & \alpha + \beta * \text{Life_Expectancy}_{jt} + \gamma * \text{Growth_Life_Expectancy}_{jt} \\
& + \delta * \text{PCT_Diploma}_{jt} + \eta * \text{Growth_PCT_Diploma}_{jt} \\
& + \theta * \text{Economic_Factors}_{jt} + \lambda * \text{Governmenal_Factors}_{jt} \\
& + \nu * \text{National_Resources}_{jt} + \varepsilon_{jt}
\end{aligned}$$

Among the governmental factors, tax burden per capita has a negative effect, which is the opposite result of the international analysis. It may be due to the different samples: cross-sectional data consisting of both developed and developing countries in the international analysis and panel data for one developed country, the U.S. Fölster and Henrekson (2001) explain the inverse-U shaped relationship between government activity and economic growth by arguing that government activity has a negative effect on growth when government size exceeds a certain threshold. Since the U.S. has a large public sector, the tax burden per capita can have a negative effect. Government expenditure on public protection is positive, but not significant. Government expenditure on health and education has a positive effect on income, even after controlling for life

expectancy and percent of diploma recipients. It implies that government expenditure on health and education increases income through factors other than health and education or that life expectancy and percent of diploma recipients is not a perfect measure to capture public expenditure on health and education. Labor force ratio has a positive effect on income which is consistent with literature (Topel 1999). However, it is not significant. Government expenditure on infrastructure has a positive and significant effect on income.

4.4.4 Additional Test

Table 9 shows that the degree effect on happiness is not significant. To explain the result, an additional test is conducted. Table 11 reports the results when financial satisfaction is excluded. By and large, the results are consistent with Col(2) of Table 9. However, without financial satisfaction, bachelor degree has a positive and significant effect on happiness. It seems that financial satisfaction partially overshadows the degree effect. Respondent's income becomes significant, implying that the respondent's income effect is fully captured by financial satisfaction. Working status becomes insignificant.

Table 11*Test for Self-reported Finance, Health, and Education*

			Happiness	
Human	Personal Income per Capita	t	3.127	***
Development	Time	t	0.410	***
	Time* Personal Income per Capita	t	-0.113	***
	Life Expectancy	t	-0.028	
	Life Expectancy Growth	(t-1~t-7)	-12.912	
	Pct of High School Diploma	t	-11.414	
	Pct of High School Diploma Growth	(t-1~t-7)	-0.387	
Self-reported Finance, Health & Education	Financial Satisfaction: More or less Satisfied	t		
	Financial Satisfaction: Satisfied	t		
	Log of Respondent Constant Income	t	0.107	***
	Working: Full-time	t	0.081	
	Subjective Health: Fair	t	0.562	***
	Subjective Health: Good	t	1.208	***
	Subjective Health: Excellent	t	1.944	***
	Degree: High School	t	-0.027	
	Degree: Associate	t	0.056	
	Degree: Bachelor's	t	0.156	*
	Degree: Graduate	t	0.124	
Individual Personal Characteristics	Female	t	0.082	*
	Age	t	-5.719	***
	Age_sq	t	7.072	***
	Race: Black	t	-0.412	***
	Race: Other	t	-0.120	
	Marital Status: Widowed	t	-1.141	***
	Marital Status: Divorced	t	-1.050	***
	Marital Status: Separated	t	-1.257	***
	Marital Status: Never Married	t	-0.916	
	Attending Religious service: 5+ / Year	t	0.300	
	N of Respondents		9,316	
	N of Region-year		72	

*= significant at the 10% level; **= significant at the 5% level; ***=significant at the 1% percent level

$$\begin{aligned}
Happiness_{ijt} = & \alpha + \beta * Time + \gamma * Personal_Income_{jt} + \tau * Time * Personal_Income_{jt} \\
& + \omega * Life_Expectancy_{jt} + \eta * Growth_Life_Expectancy_{jt} \\
& + \pi * PCT_Diploma_{jt} + \delta * Growth_PCT_Diploma_{jt} \\
& + \nu * Individual_Characteristics_{ijt} + \varepsilon_{ijt}
\end{aligned}$$

4.5 Conclusions

Chapter 4 evaluates the government scorecard by using U.S. regional data. This strategy has two advantages. First, more variables are available for longer periods of time. Second, the problems of measurement errors and omitted variables are less severe since it is a within-country analysis.

Happiness and individual characteristic data is drawn from the GSS. Data for human development, economic factor, governmental factor, and national resources at the regional level are obtained from several sources such as U.S. Census Bureau.

The results are quite consistent with those in the international survey in Chapter 3. For the happiness regression, only aggregated income contributes to the happiness of the individual. Health and education is not associated with happiness even with an 8-year data period. For personal income regression, so-called human capital (health and education) is positively associated with aggregated income. Employment rate and government expenditure on health, education, and infrastructure have a positive effect on income, while tax burden per capita has a negative effect.

The results from the analysis of U.S. regions are consistent with the results of the international survey thereby providing an additional validity check for the governmental scorecard.

CHAPTER 5

SCORECARD ANALYSIS TO COMPARE INDIVIDUAL DIFFERENCES: ROLE OF GENDER

5.1 Introduction

Chapters 3 and 4 evaluated well-being, national/regional human development and its drivers: economic factors, governmental factors, national resources, and national systems. Chapter 5 examines an individual factor which influences well-being specifically gender, and whether female's well-being is the same as males. The study also determines the cause of the difference if one exists. Gender effect on well-being is interesting to investigate for three reasons. First, as discussed in Chapter 3, psychology and economics literature show mixed results for the gender effect on well-being. The results of Chapter 3 and 4 also show mixed results depending on the model specification. Second, in cases where women report higher well-being than men, the results are intriguing. Women are more likely than men to hold positions of lower status and authority and less likely to be employed in the paid work force (Eagly and Steffen 1984). Because women are disadvantaged in income, status, and power, it is expected that women will report lower levels of well-being than men. One could ask why women report higher well-being despite their relative disadvantaged economic and social status. Last, women's educational attainment, participation in the labor market, and wages have increased (Graham and Chattopadhyay 2012; Critzer 1998; Stevenson and Wolfers 2008). Taken into account the improvement of female's status over time, females' well-

being should also increase over time. However, it is reported that female's happiness has actually decreased (Stevenson and Wolfers 2009).

Chapter 5 studies the gender differences in well-being and how gender affects the relationship between well-being and personal, social, and economic characteristics of the individual. It also looks at whether gender difference in well-being and the moderating effect of gender on level of well-being change over time. Chapter 5 contributes to the understanding of women's well-being and identifies its determinants. Chapter 5 provides answers to the question as to why the gender differences in a subjective measure are the opposite of those in objective measures such as inequality in income and education and participation in the labor market (Haring et al. 1984).

5.2 Literature Review

5.2.1. Theories on Gender Differences in Well-being

Psychology and sociology literature supplies the reasons for gender differences in well-being. Nolen-Hoeksema and Rusting (2003) review the literature and provide three explanations: biological, social role, and access to resources. The biological explanation argues that due to estrogen and progesterone production, women are more likely to have greater vulnerability to depression and anxiety which lead to lower well-being (Tesch-Römer et al. 2008). While the biological explanation fits well for negative well-being such as depression, it does not explain the results that show women having higher levels of well-being.

Social role theory suggests that level of well-being is affected by the social roles that men and women occupy (Broman 1991). Traditionally, men and women have

different types of jobs. Eagly (1987) argues that historically women often take on the responsibilities at home and men assume responsibilities outside the home. This division of labor causes different gender socialization and expectations that, in turn, affect the way males and females express, respond, and react to their life experiences. Due to different social roles and socialization processes, women are more likely to be trained to be sensitive to emotional expressions and assume caretaker roles, while men tend to take on roles that do not emphasize emotional experience (Wood et al. 1989). Thus men and women show differences in their emotional expressiveness (Aldous and Ganey 1999). As a result, it is anticipated that women will report more extreme levels of well-being than men no matter whether it is a negative (e.g., depression) or positive (e.g., happiness) feeling (Wood et al. 1989; Diener et al. 1999).

The access to resource explanation states that people are similarly affected by their constraints and opportunities (Kanter 1977). Equal access to resources would generate similar levels of well-being among all men and women (Hatch 1999). It argues that gender differences in well-being come from opportunity structures (e.g., employment opportunities) and action resources which are unequally distributed between genders (United Nations Development Programme 2002).

5.2.2. Well-being and Gender

There have been many studies on the existence of gender differences in well-being and the causes of these differences. The literature shows mixed results. Fujita et al. (1991) survey of 135 students at the University of Illinois finds that women experience the same level of well-being as men. Fugl-Meyer et al. (2002) study of Swedish subjects reports that life satisfaction is not different across gender. Madden

(2010) studies subjects from Ireland using the General Health Questionnaire and reports lower levels of well-being for women than men. The opposite result is also found in the literature. Blanchflower and Oswald (2004), using GSS data, show that females report higher levels of well-being than males in the U.S. and Great Britain. Stevenson and Wolfers (2008) find that, the 1970s, U.S. women experienced higher levels of well-being than men. Graham and Chattopadhyay (2012) show that women are happier than men worldwide.

The mixed results are possibly due to two reasons. First, gender explains only a small portion of well-being differences. Haring et al. (1984) suggest that gender accounts for less than 1% of people's global well-being. Yang (2008) mentions that gender differences are relatively small even at the initial period (in the early 1970s) and that they are not statistically significant when other factors are controlled for. Another explanation is that other variables such as age may be more important than gender in explaining well-being (Dolan et al. 2008). Thus the gender effect on well-being depends on other variables used in the models. For example, Inglehart (2002) reports that once interaction between age, gender and well-being are included in the research model, the gender effect disappears. Specifically, he shows that women under age 45 are more likely to report higher levels of well-being than men, while older women are more likely to score lower than men.

Chapter 5 examines the variables affecting gender differences in well-being in greater detail. Since personal, social, and economic characteristics and its meaning are different across gender, the study focuses on how females' personal, social and economic characteristics affect well-being. Based on prior literature, the factors which are related to

well-being are identified and examined to determine whether their effect on well-being differs by gender. The factors considered in Chapter 5 are time, age, race, marital status, degree attained, working status, frequency of attending religious service, and individual income.

5.2.2. Time, Well-being, and Gender

Early well-being studies, including Easterlin (1974), argue that over the last decades income has increased significantly, while well-being has remained stable over time. Studies to determine if well-being changes over time show mixed results. For example, Blanchflower and Oswald (2004) use a regression-adjusted time trend to show that well-being has declined in the U.S. while life satisfaction in Great Britain has not risen significantly. Using the U.S. data, Yang (2008) show only small changes in level of well-being from 1972 to 2004. Hagerty and Veenhoven (2003) use international data to show the upward trend of well-being in 21 countries from 1972 to 1994.

Veenhoven and Hagerty (2006) provide two possible explanations for the mixed results. First, changes in well-being are typically small due to the small number of scales that surveys use to measure well-being. Second, the trend fluctuates in the short-term, possibly not in the long-term. There is a lack of longitudinal data to investigate the well-being trend over time.

What effect does time have on male and female well-being? Does time have a different impact on female well-being than male well-being? In the U.S., females experience a decrease in well-being, while males experience a stable level of well-being over time (Blanchflower and Oswald 2004). Yang (2008) also show decrease in women's well-being and a flat trend in men's well-being. Stevenson and Wolfers (2008) also report

that women's levels of well-being have fallen, while male's well-being have risen, even though women have gained more autonomy over family life as a result legislative changes and constitutional cases in the 1960s and 1970s.

The increase in female's well-being is counter-intuitive, considering discrimination against women and improvement of objective measures for women's life. One of the possible reasons suggested in the literature is that women's expectation levels are higher than their possible levels of achievement.

5.2.3. Age, Well-being, and Gender

It is established that age has a U-shaped relation with well-being: those who are in the middle age range experience the lowest levels of well-being. Blanchflower and Oswald (2008) show that a U-shaped effect of age on well-being is robust even after controlling for different birth cohort effects and that the concave relation is similar for males and females.²⁸

However, the minimum ages for optimal well-being are different for females and males. After controlling for the birth cohort effect, Blanchflower and Oswald (2008) report that the turning point of well-being function is age 38.6 years for females and 52.9 years for males. Age is also related to gender differences in well-being over life cycle. Most studies document that older females are less happy than men at the same age (Wood et al. 1989). For example, Inglehart (2002) reports that women under age 45 tend to be happier than men while older women are less happy. The gap between male and female well-being is greater in older (over age 40) than in younger cohorts (Graham and Chattopadhyay 2012). Pinquart and Sörensen (2001) also find that older women report

²⁸ Cohort effect means that a particular generation (e.g., early generation, baby boom generation) might have higher or lower levels of well-being than other generations.

significantly lower subjective well-being than men and that gender differences in well-being are smaller in younger than in older groups. Aldous and Ganey (1999) argue that older women report lower levels of well-being because they are more subject to the pressure of appearance norms and less likely to be in positions of authority in the workplace.

5.2.4. Race, Well-being, and Gender

Race is another factor affecting well-being. Race differences in subjective well-being remain even after controlling for different mix of social roles such as marriage and employment (Burton et al. 1993). Minorities face many personal indignities which can cause lower levels of well-being. Due to the historically lower social, economic, and political positions, the literature shows that Blacks generally report lower levels of well-being than Whites (Aldous and Ganey 1999). By using the GSS data covering the period of 1972 to 1985, Thomas and Hughes (1986) test the impact of race on well-being and find that Blacks are consistently less happy than Whites even after controlling after social, class, age, and marital status. They argue that race continues to be a significant factor for well-being despite recent changes in the social and legal status, and economic progress of Black Americans. Clemente and Sauer (1976) also show that Blacks are less satisfied than Whites even after controlling for demographic and socio-economic status variables. Herzog et al. (1982) show that Blacks are significantly less happy than Whites.

Thomas and Hughes (1986) give three reasons for the race differences in well-being and quality of life in spite of the recent improvements of Blacks' status. First, there could be a significant lag between the time that the changes take place in the economic and social position of an ethnic group and the time that such changes are reflected in the

degree of psychological well-being of individuals within the group. Second, social and economic changes could have created unrealistic expectations in the Black community. Third, the impact of the improvement in the status of Blacks might not have been enough to change their levels of well-being.

The race effect on well-being is moderated by gender. Many studies documents different gender effects in well-being across race. Some studies show that Black females have lower levels of well-being than Black males (Thomas and Holmes 1992). Black women experience class, race, and gender exploitation simultaneously (Bonnie Thornton 1983), resulting in lower levels of well-being.

5.2.5 Marital Status, Well-being, and Gender

There are many studies on the relation between marital status and well-being (Chipperfield and Havens 2001; Aldous and Ganey 1999). By and large, they suggest those who are married are happier than those who have never been married and separated for any reason such as divorce and death of spouse (Gove et al. 1983; Gove and Shin 1989).

On average, marriage provides people with a stable and intimate relationship and thus provides social and emotional support (Cohen and Wills 1985; Williams 1988). The support from marriage increases the individual's level of well-being. Costs of being unmarried can also explain the effect of marital status on well-being. Since the majority of people are married in a society, being married is regarded as the social norm. As a result, unmarried people think they do not meet the social role expectations, and experience lower levels of well-being (Haring-Hidore et al. 1985; Diener et al. 2000). Diener et al. (2000) find that remaining single and divorce become more common, the

negative effect of being unmarried has been decreasing over time. Another theory suggests reverse causality; well-being affects marital status (Stutzer and Frey 2006). Mastekaasa (1992) argues that happy people are more likely to be attractive as a spouse and have a higher chance of being married. The paper shows the selection hypothesis that explains the marital status effect on well-being.

The literature shows mixed results on the relationship between marital status and well-being. According to the social support theory, married men are more likely to feel satisfaction than married women because they get more support from their wives than wives get from their husbands (Coombs 1991). Based on the same reasoning, some studies suggest that social support within marriage is more strongly related to the well-being of wives than husbands (Acitelli and Antonucci 1994). According to the socialization theory, women are more relationship-oriented through their socialization, and thus women receive more support in marriage than their husbands (Haring-Hidore et al. 1985). Some studies argue that marriage causes lower levels of well-being for women (e.g., dissatisfaction and frustration) due to their roles as housewives and the power imbalance between husband and wife. There are also studies which report no gender difference in the effect of marital status on well-being (Diener et al. 2000; Stack and Eshleman 1998; Horwitz et al. 1996).

For those who are separated, Gove and Shin (1989) document that widowed males have the lowest levels of well-being while divorced males, divorced females, and widowed females experience roughly the same levels of well-being.

5.4.6 Degree, Well-being, and Gender

Education affects well-being. Helliwell (2003) and Blanchflower and Oswald (2004) find a positive relationship between each additional level of education and well-being whereas Stutzer (2004) finds that mid-level education is related to the highest level of well-being.

Ross and Willigen (1997) provide two mechanisms to explain education's effect on well-being; well-educated people are more likely to access non-alienated paid work that allows a higher degree of self-control. Control in the work place gives people the freedom to develop new skills and learn new things and, thus, increase their level of well-being. Well-educated people are also more likely to have stable social relationships, such as marriage, that increase social support, and lead to higher levels of well-being.

There are a few studies which look at education's effect on well-being across gender. Ross and Van Willigen (1997) show that education has a stronger effect on women's well-being than on men's.

5.4.7 Working Status, Well-being, and Gender

Studies on personal unemployment and general unemployment rate consistently show that unemployment reduces well-being. Frey and Stutzer (2002) find that personal unemployment causes monetary loss and has psychological (e.g., depression and stress) and social costs lower the well-being of the unemployed. General unemployment, such as the national unemployment rate, does not directly affect income loss. It is more likely related to psychological and social factors. With high unemployment rates, people might worry about losing their jobs and income in the future. They can experience the negative effects on the economy and society as a whole such as increased crime rates and increased taxes to support the unemployed (Frey and Stutzer 2002). Some research

suggests a different relationship between well-being and unemployment. People who report lower levels of well-being are less likely to be employed since they would be less productive (Frey and Stutzer 2002; Dolan et al. 2008).

It is often reported that unemployment has more negative effects on men than women (Frey and Stutzer 2002; Clark et al. 2008). One explanation is that women participate less in the labor market and work less hours than men. Hence, unemployment has less of an impact on women than men (e.g., less income loss) (van der Meer 2012).

How about the well-being of female and males who are employed? Some studies show that women with paid work report lower levels of well-being. Back to the social role theory to explain the gender differences, women are more likely to assume more responsibilities at home. When a woman has a job, the role of paid worker is added to the roles of wife, mother, and homemaker and women feel increased stress (Baruch and Barnett 1986). Women also experience greater stress when their family roles conflict with work roles (Broman 1991; Coverman 1989). The different effect of working status on well-being across gender is also due to different job distribution between female and males. Social role theory suggests that division of labor differs by gender. For instance, jobs related to caretaking (e.g., teachers, nurses) more often held by female than males. Such a different job distribution by gender causes the different well-being effect.

There are studies that show female employment leads to higher levels of well-being because being a paid worker increases self-esteem and efficacy which increases well-being (Baruch and Barnett 1986; Manis 1982).

5.4.8 Region, Well-being, and Gender

A large number of studies show that well-being is correlated with religion (Lelkes 2006; Pollner 1989), even after controlling for demographic variables such as age, income, and marital status. Ellison (1991) reports that the religion variable accounts for approximately 5-7% of life satisfaction variance.

Religion enhances well-being through social integration support (Ellison 1991). By participating in religious communities people can interact with others who are similar with respect to values, beliefs, and attitudes (Levin et al. 1994). They create friendships and social ties and receive support. Religion also provides divine interactions for seeking solace and guidance and finding meaning in daily life as well as during major personal crises.

It should be considered, however, who is more likely to attend a religious service. Ellison (1991) argues that when people have negative feelings, such as stress, they are more willing to rely on religion. Religion provides comfort in the form of social and divine relationships leading to higher levels of well-being.

Prior studies show that religion has different effects on well-being across gender. This could be explained by the social role theory, woman are more communal and relation-oriented (Eagly and Steffen 1984; Acitelli and Antonucci 1994). Females are more likely to participate in religious service, and, therefore, have higher levels of well-being than males (Thomas and Holmes 1992; Aldous and Ganey 1999).

5.4.9 Income, Well-being, and Gender

There is a considerable research on income effect on well-being (Stutzer 2004). In economics, aggregated income measures such as GDP are used to check the relation between income and well-being (Easterlin 1995; Di Tella et al. 2010; Frijters et al. 2004).

However, the use of individual income data obtained through survey techniques gives more direct results. It is documented that individual income has a positive effect on well-being even after controlling for relative income in a reference group (Ferrer-i-Carbonell 2005; Blanchflower and Oswald 2008).

Income allows people to meet their needs and desires for things such as food and health (Veenhoven 1991). It also allows individuals to select courses of action that improve well-being (Schwartz 2009).

There are few studies that look at income's effect on well-being across gender. Some studies show that income has a significant effect on both male's and females' well-being (Frijters et al. 2004). Another study on gender differences finds that income earned through a job increases the well-being of women more than that of men (Ross and Mirowsky 1996).

5.3 Research Design and Data Description

First, this study determines if gender differences in well-being exist after controlling for other individual characteristics. As mentioned in Chapter 4, the GSS has only one happiness question, not a life satisfaction nor a control over life question. Thus happiness by itself measures well-being and is used as a dependent variable. Based on the literature, this study uses personal, social, economic characteristics of individuals: age and age-squared, race, marital status, working status, frequency of attending religious service, and respondent's constant income as independent variables. To check whether the level of female's well-being is different from that of males, Model (5) is used.

$$Happiness_{ijt} = \alpha + \beta * Female_{ijt} + \gamma * Time + \tau * Individual_Characteristics_{ijt} + \omega * Region_{jt} + \varepsilon_{ijt}$$

where

Happiness: self-reported happiness;

Female: dummy variable taking 1 for female and 0 as otherwise;

Time: $t-1972$;

Individual_Characteristics: gender, age, age-squared, race, marital status, working status, frequency of attending religious service, and respondent's constant income;

Region: region of respondent

The happiness question is measured on a 3-point scale. Scale 1 represents not too happy, and scale 3 represents very happy.²⁹ Since it is scored to have a discrete value, an ordered logit model is adopted. The time variable is measured by subtracting 1972, the year of the first GSS, from t . Age is scaled by 100. To capture the non-linear relationship between age and well-being, age and age-squared are included in Model (5). Race is another factor which has an impact on well-being. White is used as base-case. For marital status, have never been married is the base-case. Dummy variables are created for those who are separated (divorced or widowed) and married. Working status is a dummy variable taking 1 for having a full-time job and 0 as otherwise. Frequency of attending religious service is also a dummy variable which takes 1 for attending more than 5 times a year and 0 otherwise. Respondents' constant income (RCI) is inflation-adjusted income coded in six-digit numbers and converted to 2000 dollars. Three dummy variables are included to test the fixed-effect of the regions. They capture how time-invariant characteristics of the region influence the well-being of individuals. As mentioned in

²⁹ The score of happiness survey question is reversed in order to interpret the results intuitively.

Chapter 4, the region variable is the originally coded nine regions from the GSS. For this part of the study, the nine regions were collapsed into four regions, Northeast, Midwest, South, and West, for simplicity of results interpretation. Northeast is the base-case. Appendix E shows a map of the regions and states in each region.

Secondly, it is investigated whether gender has a moderating effect of individual personal, social, and economic characteristics on well-being and whether time changes the effect of individual characteristics on well-being. The moderating effect of gender and time are tested by using the interactions between gender and individual characteristics and the interactions between time and individual characteristics. Model (6) is used to test the moderating effect of gender and time.

$$\begin{aligned}
 \text{Happiness}_{ijt} = & \alpha + \beta * \text{Female}_{ijt} + \gamma * \text{Time} + \tau * \text{Female}_{ijt} * \text{Time} \\
 & + \eta * \text{Female}_{ijt} * \text{Individual_Characteristics}_{ijt} + \pi * \text{Time} * \text{Individual_Characteristics}_{ijt} \\
 & + \omega * \text{Region}_{jt} + \theta * \text{Female}_{ijt} * \text{Region}_{jt} + \chi * \text{Time} * \text{Region}_{jt} + \varepsilon_{ijt}
 \end{aligned}$$

--- Model (6)

Lastly, the study looks at whether the moderating role of gender in the effect of personal, social, and economic characteristics of individual on well-being changes over time. Three-way interaction terms among gender, time, and personal, social and economic status of individuals are added to Model (6). The full model, Model (7), is as follows.

$$\begin{aligned}
 \text{Happiness}_{ijt} = & \alpha + \beta * \text{Female}_{ijt} + \gamma * \text{Time} + \tau * \text{Female}_{ijt} * \text{Time} \\
 & + \eta * \text{Female}_{ijt} * \text{Individual_Characteristics}_{ijt} + \pi * \text{Time} * \text{Individual_Characteristics}_{ijt} \\
 & + \nu * \text{Female}_{ijt} * \text{Time} * \text{Individual_Characteristics}_{ijt} \\
 & + \omega * \text{Region}_{jt} + \theta * \text{Female}_{ijt} * \text{Region}_{jt} + \chi * \text{Time} * \text{Region}_{jt} + \varepsilon_{ijt}
 \end{aligned}$$

--- Model (7)

For Model (5), (6), and (7), clustered standard errors by region are used to estimate the standard errors which are robust within the cluster correlation.

All the data is from the GSS by the NORC. The definitions of the variables are the same as those in Chapter 4.

5.4 Results

5.4.1 Sample and Descriptive Statistics

The sample consists of 28,930 respondents for the period of 1972-2010. The long sample period makes it possible to investigate how well-being and gender difference in well-being change over time. Panel A of Table 12 shows the number of respondents by year and region. Panel B shows the number of male and female respondents each year. Males make up about 51%, and females about 49% of the total sample.

Table 12*Region, Year, and Number of Respondents*

Panel A. Number of respondents by year and region

Year	Northeast	Midwest	South	West	Total
1974	200	254	241	142	837
1975	206	257	283	130	876
1976	205	237	248	134	824
1977	183	284	312	172	951
1978	199	269	304	154	926
1980	173	240	304	160	877
1982	254	317	380	174	1,125
1983	212	301	281	183	977
1984	178	251	320	172	921
1985	182	257	331	185	955
1986	178	240	283	189	890
1987	224	310	424	212	1,170
1988	171	253	326	188	938
1989	170	258	321	187	936
1990	159	243	306	162	870
1991	167	234	313	190	904
1993	192	270	334	220	1,016
1994	351	493	674	433	1,951
1996	369	475	646	442	1,932
1998	337	454	653	389	1,833
2000	330	437	644	377	1,788
2002	177	231	307	176	891
2004	126	187	297	179	789
2006	258	417	651	407	1,733
2008	199	259	455	270	1,183
2010	128	198	319	192	837
Total	5,528	7,626	9,957	5,819	28,930

Table 12

(Continued)

Panel B. Number of male and female respondents by year

Year	Male	Female	Total
1974	496	341	837
1975	495	381	876
1976	493	331	824
1977	518	433	951
1978	503	423	926
1980	486	391	877
1982	561	564	1,125
1983	508	469	977
1984	448	473	921
1985	512	443	955
1986	463	427	890
1987	583	587	1,170
1988	475	463	938
1989	473	463	936
1990	438	432	870
1991	449	455	904
1993	496	520	1,016
1994	942	1,009	1,951
1996	965	967	1,932
1998	871	962	1,833
2000	875	913	1,788
2002	454	437	891
2004	421	368	789
2006	835	898	1,733
2008	611	572	1,183
2010	396	441	837
Total	14,767	14,163	28,930
Percent	51.04%	48.96%	100%

Table 13 reports the descriptive statistics. The mean of happiness is 2.2 out of 3. More than 75% of the sample reported that they are pretty happy. The mean age of the respondents is 40. White, Black, and other make up 82%, 13%, and 5% respectively. 55% are married, 23% have never been married and 21% are separated (divorced or widowed). 25% of the sample has post-secondary degrees (bachelor or graduate degree). 72% of the respondents have a full-time job. 61% attend religious services more than 5 times a year. The mean/median of respondent's constant income is \$31,159/\$24,731 measured in 2000 dollars. Considering that the median personal income per capita from Census Bureau for the period of 1972-2010 is \$18,373, measured in 2000 dollar, the sample consists of people with slightly higher income than the U.S. population.

Table 13*Descriptive Statistics: Role of Gender*

	N	Mean	S.D.	Min	P25	Median	P75	Max
Happiness	28,930	2.2	0.61	1	2	2	3	3
Time	28,930	19.28	10.12	2	11	19	26	38
Female	28,930	0.49	0.5	0	0	0	1	1
Age	28,930	40	13	18	29	38	50	88
Race: White	28,930	0.82	0.38	0	1	1	1	1
Race: Black	28,930	0.13	0.34	0	0	0	0	1
Race: Other	28,930	0.05	0.21	0	0	0	0	1
Marital: Never Married	28,930	0.23	0.42	0	0	0	0	1
Marital: Separated	28,930	0.21	0.41	0	0	0	0	1
Marital: Married	28,930	0.55	0.5	0	0	1	1	1
Degree: Up to Secondary	28,930	0.75	0.43	0	0	1	1	1
Degree: Post-Secondary	28,930	0.25	0.43	0	0	0	1	1
Working: Full-time	28,930	0.72	0.45	0	0	1	1	1
Attending Religious Service: 5+ / Year	28,930	0.61	0.49	0	0	1	1	1
Respondent's Constant Income	28,930	31,159	30,512	402	12,129	24,731	40,124	430,000

Table 14 shows the distribution of happiness. 10.75 %, 58.31%, and 30.95 % of the sample report that they are not too happy, pretty happy, and very happy respectively.

Table 14

Distribution of Happiness

Happiness	Male		Female		Total	PCT Of Total
Not Too Happy	1,581	(50.85%)	1,528	(49.15%)	3,109	10.75%
Pretty Happy	8,647	(51.26%)	8,221	(48.74%)	16,868	58.31%
Very Happy	4,539	(50.70%)	4,414	(49.30%)	8,953	30.95%
Total	14,767		14,163		28,930	100%

Figure 4 shows that, for each category, the parentage of females is very close to that of males.

Figure 4. Percent of Female and Male to Each Category of Happiness.

Figure 5 compares the proportion of females and males who describe themselves as “very happy” or “not too happy” to the total respondents of each survey over time. The female trend is not as volatile as male both for “very happy” and “not too happy”. The average happiness difference by gender is not clear in Figure 5. One interesting thing is the trend around 2008 to 2010, when the U.S. economy was in financial crisis. There is a noticeable decrease in the percentage of males that answer “very happy”, while the number of females who answer “very happy” increases slightly. On the other hand, for the period of 2008 to 2010, the proportion of “not too happy” males does not increase while the proportion of females decreases for the same period.

Figure 5. Proportion of Female and Male to Total Respondents Each Survey.

5.4.2 Results

Table 15 shows the results of fixed-effect ordered logit model. Col(1) is a baseline model. Similar to the results seen in the international and regional analyses, females

report themselves happier than males. It is counter-intuitive considering females' relatively lower social and economic status than males. Since the coefficient of time variable is not significant, overall happiness of the people in the U.S is stable over the last 40 years from 1974 to 2010. It also links to the early happiness research by Easterlin (1974) showing that happiness does not increase even while income increases over time. Consistent with prior literature, age has a U-shaped relation with happiness. People are the least happy around age 42.4. Whites are the happiest, while Blacks are least happy. Marital status follows the predicted trend. People who are married experience the highest levels of well-being; those who are separated (divorced or widowed) show the lowest levels of well-being, implying that support from a spouse contributes to well-being. The higher the level of education people attain, the happier they are. Since an individual's income is controlled in the model, higher education provides higher well-being over income. Working full-time also increases well-being over income. That means that work increases individual well-being by providing self-esteem and a sense of efficacy (Baruch and Barnett 1986; Manis 1982). Those who frequently attend religious services gain higher levels of well-being because of social support and divine interaction. Income is positively associated with happiness. People in Northeast region are the least happy since the coefficients of the region variables for Midwest, South, and West are positive.

Col(2) shows whether personal, social, and economic characteristics affect happiness differently across gender and over time. To test the moderating effect of gender and time, the interaction terms between gender/ time and individual characteristics are included. First, since the base-case is white males and females have a positive effect on well-being, white females report higher levels of well-being than white males. The

positive coefficient of time variable implies that males' happiness has increased. Females' happiness has decreased for the same period because the coefficient of Female*Time is negative. The results indicate that the gender difference in well-being has decreased over the last 40 years. It is interesting that the improvement in women's status has not contributed to the females' levels of well-being (Stevenson and Wolfers 2009). The joint-test of gender effect shows that despite the decrease in happiness, females are still happier than males. The age effect on well-being does not differ by gender. The minimum level of well-being for males and females is reached around 37 years old. The U-shaped relationship between age and well-being does not change over time. Black females report higher levels of well-being than Black females. Again, females from other races also have lower levels of well-being than males from the same ethnic groups. The results imply that non-white females have a dual disadvantage as a minority and female. The well-being of Black people increases over time possibly due to social and political changes in discrimination over the decades (Blanchflower and Oswald 2004). Marital status effect on well-being does not differ by gender, but does by time. The well-being of those who are separated increases over time which might reflect changes in social norms as different types of relationships have become more common over time (e.g., increase in divorce). Education improves female's well-being. Based on the social role theory, women are motivated to be connected with others and education increases a female's opportunities to build a social network and receive social and emotional support. Consistent with prior literature, working increases a male's level of well-being. However, females participating in the labor market report lower levels of well-being. The might be due to the conflict between work, social and family roles which

increase stress or because the types of job which women are more likely to occupy are more stressful than jobs held by men. Compared to males, females attending religious services frequently have lower levels of well-being than its counterpart. The results may be due to selection bias; women with serious problems and lower well-being are more likely to go to religious services to receive support from religious communities. Religion's effect on well-being has decreased over time. Income has the same effect on females' well-being as males over time. The Northeast reports the lowest level of well-being with males in Northeast having lower levels of well-being than females. For all four regions, females enjoy higher well-being relative to males in the same region. While the Northeast has had increased levels of well-being over time (positive coefficient of time Variable), the other three regions have shown decreased levels over time. The result implies that the well-being difference over the four regions has decreased.

Col(3) tests gender's effect on the relationship between personal, social, and economic factors changes over time. To test changes in the moderating effect of gender over time, the three-way interactions among time, gender, and individual characteristics are included. By and large, the results are consistent with Col(2) except for the following differences. After including the interaction term Black*Female*Time , the positive coefficient of Black*Time becomes insignificant, which implies that the positive effect of Black*Time in Col(2) comes mainly from Black female (positive coefficient of Black*Female*Time). In other words, Black female's level of well-being increases over time, while that of Black males does not. The significant negative effect of Other*Female disappears, implying that other races are as happy as White. The interaction between Separate*Female becomes significantly positive, showing that separated females have

higher levels of well-being than separated males. Females with higher degrees have higher levels of well-being than males. The joint-test for the females' effect on the relationship between degree and well-being (not reported) shows that females with higher degrees have higher levels of well-being than males with equivalent degrees. Working increases a male's level of well-being. However, females participating in the labor market report lower levels of well-being over time. Females who frequently attend religious services have levels of well-being equal to those of males. The coefficient of the interaction between income and females is significantly negative, while the coefficient of $RCI*Female*Time$ is significantly positive. The results indicate that there the difference in income effect on well-being by gender and the gap has decreased over time. For the region dummies, the interactions between female and dummies for each region are significantly positive, and the three-way interactions among females, time and dummies for each region are significantly negative. The results show that females report higher levels of well-being than males living in the same region, and that females' levels of well-being has decreased over time. Considering that male well-being increases over time (positive coefficient of Time for males in Northeast and negative coefficient of Time interaction with region dummies), the gender gap in well-being across regions has decreased over time.

Table 15*Gender Effect on Well-being*

	Happiness		
	Col(1)	Col(2)	Col(3)
Female	0.212***	0.998***	2.049***
Time	0.001	0.009	0.036**
Female*Time		-0.008***	-0.061***
Age	-6.533***	-5.295***	-4.429**
Age*Female		-0.197	-2.014
Age*Time		-0.081**	-0.127
Age*Female*Time			0.091
Age_sq	7.696***	7.170***	6.068**
Age_sq*Female		0.035	2.321
Age_sq*Time		0.051	0.110
Age_sq*Female*Time			-0.114
Race: Black	-0.545***	-0.720***	-0.519***
Race: Black*Female		-0.180***	-0.549***
Race: Black*Time		0.015***	0.005
Race: Black*Female*Time			0.019***
Race: Other	-0.215**	0.205	0.289
Race: Other*Female		-0.208***	-0.387
Race: Other*Time		-0.012*	-0.016
Race: Other*Female*Time			0.008
Marital: Separated	-0.253***	-0.551***	-0.662***
Marital: Separated*Female		0.082	0.250**
Marital: Separated*Time		0.013***	0.018***
Marital: Separated*Female*Time			-0.008
Marital: Married	0.743***	0.402***	0.398***
Marital: Married*Female		0.104	0.097
Marital: Married*Time		0.014***	0.014***
Marital: Married*Female*Time			0.001
Degree: Post-secondary	0.238***	0.143**	0.100
Degree*Female		0.163**	0.266*
Degree*Time		0.001	0.003
Degree*Female*Time			-0.005

Table 15

(Continued)

Working: Full-Time	0.106*	0.293***	0.196*
Working: Full-Time*Female		-0.325***	-0.148
Working: Full-Time*Time		0.000	0.005
Working: Full-Time*Female*Time			-0.009*
Attending Religious service: 5+ / Year	0.365***	0.452***	0.445***
Attending Religious service* Female		-0.119***	-0.101
Attending Religious service* Time		-0.002*	-0.002
Attending Religious service* Female*Time			-0.001
ln(Respondent Constant Income)	0.139***	0.147***	0.198***
ln(RCI)*Female		-0.040	-0.142**
ln(RCI)*Time		0.001	-0.001
ln(RCI)*Female*Time			0.005*
Region: Midwest	0.087***	0.125***	0.079***
Region: Midwest*Female		0.165***	0.260***
Region: Midwest*Time		-0.006***	-0.004***
Region: Midwest*Female*Time			-0.005***
Region: South	0.167***	0.222***	0.151***
Region: South*Female		0.038**	0.186***
Region: South*Time		-0.004***	0.000
Region: South*Female*Time			-0.008***
Region: West	0.089***	0.157***	-0.006
Region: West*Female		0.096***	0.446***
Region: West*Time		-0.006***	0.003**
Region: West*Female*Time			-0.018***
N of Respondents	28,930	28,930	28,930

*= significant at the 10% level; **= significant at the 5% level; ***=significant at the 1% percent level

Col(1): $Happiness_{ijt} = \alpha + \beta * Female_{ijt} + \gamma * Time + \tau * Individual_Characteristics_{ijt}$

$+ \omega * Region_{jt} + \varepsilon_{ijt}$

Col(2): $Happiness_{ijt} = \alpha + \beta * Female_{ijt} + \gamma * Time + \tau * Female_{ijt} * Time$

$+ \eta * Female_{ijt} * Individual_Characteristics_{ijt} + \pi * Time * Individual_Characteristics_{ijt}$

$+ \omega * Region_{jt} + \theta * Female_{ijt} * Region_{jt} + \chi * Time * Region_{jt} + \varepsilon_{ijt}$

Col(3): $Happiness_{ijt} = \alpha + \beta * Female_{ijt} + \gamma * Time + \tau * Female_{ijt} * Time$

$+ \eta * Female_{ijt} * Individual_Characteristics_{ijt} + \pi * Time * Individual_Characteristics_{ijt}$

$+ \nu * Female_{ijt} * Time * Individual_Characteristics_{ijt}$

$+ \omega * Region_{jt} + \theta * Female_{ijt} * Region_{jt} + \chi * Time * Region_{jt} + \varepsilon_{ijt}$

5.5 Conclusions

Chapter 5 investigates whether there are gender differences in well-being, whether gender has an impact on the effect of individual's personal, social, and economic characteristics on well-being, and whether the moderating role of gender changes over time. It is an interesting question because females report higher well-being than males in spite of female's relatively low status compared to males. Another interesting point is that female's well-being decreases over time despite recent improvements in the social, economic, and political status of women. Three explanations are provided for gender differences in well-being.

Time, age, race, marital status, degree attained, working status, religion, and respondent income are then used to explain well-being and gender effect on well-being over time. A fixed-effect ordered logit model is adopted and used on data drawn from the GSS for the period of 1974-2010. The results show that gender has different effects on the relationship between well-being and individual characteristics. White females have higher levels of well-being than White males. Black females have lower levels of well-being than Black males but Black females levels are increasing over time. Separated females have higher levels of well-being than separated males. Females with post-secondary degree have higher levels of well-being than males with equivalent degrees. Females' well-being who are working full-time has decreased over time. Income is a less important factor in female's well-being than in male's. However, the impact of income on female's well-being has increased over time.

CHAPTER 6

CONCLUSIONS

This study uses socio-economic accounting theories in early accounting literature and the work of William W. Cooper to develop a government scorecard. The scorecard includes the overarching outcomes (well-being), intermediate outcome (human development) of government, and provides government performance drivers (economic factor, governmental factors, national resources, and national system). The scorecard is evaluated in the international and U.S. regional settings. One characteristic of the population, gender, is analyzed in depth to determine its effect on well-being and to gain a deeper understand of well-being.

The international comparisons of the governmental scorecard show that well-being of citizens is driven by national income, while it is not clearly associated with national health and education. This result indicates some check points for the existing outcome measures for governments. The results are robust for the U.S region comparisons. The results suggest the need for more discussion in the development literature about the claims that education and health are important aspects of government performance. Education and health are positively associated with income in both the international and U.S. region comparisons, supporting economists' arguments. By and large, the government performance drivers - economic factor, governmental factor, national resources, and national systems have the expected effects on the income. These results indicate the validity of the governmental scorecard.

The gender effect on well-being is interesting. The empirical results show that gender affects the relationship between well-being and individual characteristics

differently. White females have higher levels of well-being than White males and White female's well-being has reduced over time. In contrast, Black females have lower levels of well-being than Black males but their levels are increasing over time. Females with post-secondary degree have higher levels of well-being than males with equivalent degrees. Well-being of female who is working full-time has decreased over time. Income is a less important factor to females' well-being than to males'. However, the impact of income on females' well-being has increased over time.

This study makes a number of contributions. The governmental scorecard is the first attempt to measure government performance in the form of a scorecard. It not only specifies the outcomes and government performance drivers but also shows the cause-and-effect that may have a lagged effect. Thus it can help politicians understand how their policy decisions lead to specific outcomes. Even though further research is required to develop a more rigorous governmental scorecard, this study provides a significant contribution towards the performance measurement of government. Second, the measures that are introduced could have been used for government performance. There has been a dramatic increase in available governmental-level data over the past 30 years. This study selects data organizes it in an accounting framework. The measures introduced here can help answer research questions in accounting. Third, the evaluation of the human development effect on well-being results has an implication for existing human development measures (e.g., the HDI) since the analyses show that these measures are not fully linked to well-being. Fourth, the field of accounting is expanded into the national government where it can provide information to help with national level

decision-making. By using accounting in different settings, this research contributes to better decision-making and a better society.

Ideas for future research include exploration of the effect of information and communication technology (ICT) on well-being and human development. ICT has been increasing in importance since the late 1990s with its ability to enhance knowledge and skills and improve efficiency and productivity (Kramer et al. 2007). Hence ICT is important not only for firms but for governments as well. It would be interesting to test the role of ICT-related policy in well-being and human development after controlling for the determinants of ICT adoption.

Another research area is determining whether development status (developed and developing countries) affects the relationship between outcomes and performance drivers of government. Future studies can create subsamples based on development status and evaluate whether government performance drivers have a different impact on development and citizens' well-being according to human development of a nation. It would be interesting to check whether the scorecard can be modified according to the position of nations and the strategy of nations (e.g., welfare enhancing).

REFERENCES

- Acemoglu, D., and S. Johnson. 2006. Disease and development: the effect of life expectancy on economic growth: National Bureau of Economic Research.
- Acitelli, L. K., and T. C. Antonucci. 1994. Gender differences in the link between marital support and satisfaction in older couples. *Journal of personality and social psychology* 67 (4):688.
- Afsa, C., D. Blanchet, V. Marcus, P. A. Pinonnier, L. Rioux, d. E. M. M., G. Ranuzzi, and P. Schreyer. 2009. Survey of existing approaches to measuring socio-economic progress.
- Aldous, J., and R. F. Ganey. 1999. Family life and the pursuit of happiness: The influence of gender and race. *Journal of Family Issues* 20 (2):155-180.
- Alesina, A., R. Di Tella, and R. MacCulloch. 2004. Inequality and happiness: are Europeans and Americans different? *Journal of Public Economics* 88 (9-10):2009-2042.
- Alesina, A., and E. L. Ferrara. 2005. Ethnic diversity and economic performance. *Journal of Economic Literature* 43 (3):762-800.
- Allin, P. 2007. Measuring societal wellbeing. *Economic and Labour Market Review* 1 (10):46-52.
- Angang, H. 2011. Making people happy *China Daily* March 2, 2011.
- Ansari, S., and K. J. Euske. 1987. Rational, rationalizing, and reifying uses of accounting data in organizations. *Accounting, Organizations and Society* 12 (6):549-570.
- Argyle, M. 1993. *The psychology of social class*: Taylor & Francis.
- Ayres, R. U., and B. Warr. 2005. Accounting for growth: the role of physical work. *Structural Change and Economic Dynamics* 16 (2):181-209.
- Banister, J. 2009. Health, mortality, and longevity in China today.
- Banker, R. D., H. Chang, S. N. Janakiraman, and C. Konstans. 2004. A balanced scorecard analysis of performance metrics. *European Journal of Operational Research* 154 (2):423-436.
- Barro, R. J. 1991. Economic growth in a cross section of countries. *The Quarterly Journal of Economics* 106 (2):407-443.
- . 1996. Democracy and growth. *Journal of Economic Growth* 1 (1):1-27.
- Barro, R. J., and J.-W. Lee. 1994. Sources of economic growth. *Carnegie-Rochester Conference Series on Public Policy* 40 (0):1-46.
- Baruch, G. K., and R. C. Barnett. 1986. Role quality, multiple role involvement, and psychological well-being in midlife women. *Journal of personality and social psychology* 51 (3):578.
- BBC. 2010. Plan to measure happiness 'Not Wolly'-Cameron.

- Bean, C., and C. Pissarides. 1993. Unemployment, consumption and growth. *European Economic Review* 37 (4):837-854.
- Belkaoui, A. 1980. The impact of socio-economic accounting statements on the investment decision: An empirical study. *Accounting, Organizations and Society* 5 (3):263-283.
- Bentham, J. 2008. *An Introduction to the principles of morals and legislation*: Plaat Press.
- Birnberg, J. G., and N. M. Gandhi. 1976. Toward defining the accountant's role in the evaluation of social programs. *Accounting, Organizations and Society* 1 (1):5-10.
- Blanchflower, D. G., and A. J. Oswald. 1999. Well-being, insecurity and the decline of American job satisfaction. *NBER Working Paper*.
- Blanchflower, D. G., and A. J. Oswald. 2004. Well-being over time in Britain and the USA. *Journal of Public Economics* 88 (7-8):1359-1386.
- Blanchflower, D. G., and A. J. Oswald. 2005. Happiness and the Human development index: the paradox of Australia. *Australian Economic Review* 38 (3):307-318.
- Blanchflower, D. G., and A. J. Oswald. 2008. Is well-being U-shaped over the life cycle? *Social Science & Medicine* 66 (8):1733-1749.
- Bloom, D., and D. Canning. 2003. The health and poverty of nations: from theory to practice. *Journal of Human Development* 4 (1):47-71.
- Bloom, D. E., J. D. Sachs, P. Collier, and C. Udry. 1998. Geography, demography, and economic growth in Africa. *Brookings Papers on Economic Activity* 1998 (2):207-295.
- Bonnie Thornton, D. 1983. Race, class, and gender: Prospects for an all-Inclusive sisterhood. *Feminist Studies* 9 (1):131-150.
- Bos, F. 2008. Uses of national accounts: History, international standardization and applications in the Netherlands. In *World Conference on national accounting and performance measures across nations*. Washington DC, USA.
- Brander, J. A., and S. Dowrick. 1994. The role of fertility and population in economic growth. *Journal of Population Economics* 7 (1):1-25.
- Brignall, S., and S. Modell. 2000. An institutional perspective on performance measurement and management in the 'new public sector'. *Management Accounting Research* 11 (3):281-306.
- Brock, D. W. 1993. Quality of life measures in health care and medical ethics. In *The Quality of Life*, edited by M. Nussbaum and A. Sen. Oxford: Claredon Press, 95-132.
- Brockett, P., A. Charnes, W. W. Cooper, and H.-C. Shin. 1984. A Chance-Constrained Programming Approach to Cost-Volume-Profit Analysis. *The Accounting Review* 59 (3):474-487.

- Brockmann, H., J. Delhey, C. Welzel, and H. Yuan. 2008. The China puzzle: Falling happiness in a rising economy. *Journal of Happiness Studies* 10 (4):387-405.
- Broman, C. L. 1991. Gender, work-family roles, and psychological well-being of Blacks. *Journal of Marriage and the Family*:509-520.
- Burton, E. J. 1977. Toward a theory of corporate social accounting: A comment. *The Accounting Review* 52 (4):971-976.
- Burton, R. P. D., D. A. Armstrong, and B. Rushing. 1993. Social roles and subjective well-being: A decomposition of race differences. *Sociological Spectrum* 13 (4):415-431.
- Cahill, M. B. 2005. Is the human development index redundant? *Eastern Economic Journal* 31 (1):1-5.
- Caplan, B., and S. C. Miller. 2010. Intelligence makes people think like economists: Evidence from the General Social Survey. *Intelligence* 38 (6):636-647.
- Carstensen, L. L., H. H. Fung, and S. T. Charles. 2003. Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation and emotion* 27 (2):103-123.
- Chakravarty, S. R. 2003. A generalized human development index. *Review of development economics* 7 (1):99-114.
- Chamberlain, K. 1988. On the structure of subjective well-Being. *Social Indicators Research* 20 (6):581-604.
- Charles, S. T., and L. L. Carstensen. 2008. Unpleasant situations elicit different emotional responses in younger and older adults. *Psychology and Aging* 23 (3):495.
- Charnes, A., C. Colantoni, and W. W. Cooper. 1976. A Futurological Justification for Historical Cost and Multi-Dimensional Accounting. *Accounting, Organizations and Society* 1 (4):315-337.
- Charnes, A., C. Colantoni, W. W. Cooper, and K. O. Kortanek. 1972. Economic Social and Enterprise Accounting and Mathematical Models. *The Accounting Review* 47 (1):85-108.
- Charnes, A., and W. W. Cooper. 1980. Auditing and Accounting for Program Efficiency and Management Efficiency in Not-for-profit Entities. *Accounting, Organizations and Society* 5 (1):87-107.
- Charnes, A., W. W. Cooper, and Y. Ijiri. 1963. Breakeven Budgeting and Programming to Goals. *Journal of Accounting Research* 1 (1):16-43.
- Charnes, A., W. W. Cooper, and G. Kozmetsky. 1973. Measuring, Monitoring and Modeling Quality of Life. *Management Science* 19 (10):1172-1188.
- Charnes, A., W. W. Cooper, and E. Rhodes. 1981. Evaluating Program and Managerial Efficiency: An Application of Data Envelopment Analysis to Program Follow Through. *Management Science* 27 (6):668-697.

- Chen, J. 2010. Inflation, prices top list of public concerns. *China Daily*, December 16, 2010.
- Chipperfield, J. G., and B. Havens. 2001. Gender differences in the relationship between marital status transitions and life satisfaction in later life. *The Journals of Gerontology Series B: Psychological sciences and social sciences* 56 (3):P176-P186.
- Churchill, N. C., and W. W. Cooper. 1979. Auditing and accounting-Past, present, and future. In *Eric Louis Kohler, Accounting's Man of Principles*, edited by W. W. Cooper and Y. Ijiri. Reston, Virginia: Reston Publishing Company.
- Clark, A. E., E. Diener, Y. Georgellis, and R. E. Lucas. 2008. Lags And leads in life satisfaction: A test of the baseline hypothesis*. *The Economic Journal* 118 (529):F222-F243.
- Clark, A. E., and A. J. Oswald. 1994. Unhappiness and unemployment. *The Economic Journal* 104 (424):648-659.
- Clemente, F., and W. J. Sauer. 1976. Life satisfaction in the United States. *Social Forces* 54 (3):621-631.
- Cohen, S., and T. A. Wills. 1985. Stress, social support, and the buffering hypothesis. *Psychological Bulletin* 98 (2):310.
- Colantoni, C. S., W. W. Cooper, and H. J. Dietzer. 1974. Accounting and social reporting. In *Objectives of financial statements. Vol. 2: selected papers*, edited by J. J. Cramer and G. H. Sorter: American Institute of Certified Public Accountants. AICPA.
- Conceição, P., and R. Bandura. 2008. Measuring subjective wellbeing: A summary review of the literature., edited by U. N. D. Program.: United Nations Development Program.
- Constanza, R., M. Hart, S. Posner, and J. Talberth. 2009. Beyond GDP: The need for new measures of progress. *The Pardee Papers* 4.
- Coombs, R. H. 1991. Marital status and personal well-being: A literature review. *Family Relations*:97-102.
- Cooper, W. W. 1948. Statistical Use of Accounting Information in Federal Economic Policy Formation. *The Accounting Review* 23 (3):244-250.
- Cooper, W. W. 1949. Social accounting: An invitation to the accounting profession. *The Accounting Review* 24 (3):233-239.
- Cooper, W. W., and J. M. Crawford. 1953. The status of social accounting and national income statistics in countries other than the United States. *The Accounting Review* 28 (2):221-238.
- Cooper, W. W., N. Dopuch, and T. F. Keller. 1968. Budgetary Disclosure and Other Suggestions for Improving Accounting Reports. *The Accounting Review* 43 (4):640-648.
- Cooper, W. W., and Y. Ijiri. 1977. From accounting to accountability: Step to a corporate social reporting. In *Accountancy in the 1980's: Some Issues : Proceedings of the Arthur Young*

Professors Roundtable, edited by N. M. Bedford, A. Y. P. o. Accounting and D. o. A. Head, University of Illinois: Council of Arthur Young Professors.

- Costantini, V., and S. Monni. 2005. Sustainable human development for European countries. *Journal of Human Development* 6 (3):329-351.
- Coverman, S. 1989. Role overload, role conflict, and stress: Addressing consequences of multiple role demands. *Social Forces* 67 (4):965-982.
- Criss, R. R. 1971. Socio-economic accounting applied to water resource planning 1. *JAWRA Journal of the American Water Resources Association* 7 (4):639-643.
- Critzer, J. W. 1998. Racial and gender income inequality in the American states. *Race and Society* 1 (2):159-176.
- Cue, K. 1995. Unproductive public expenditures: A pragmatic approach to policy analysis: International Monetary Fund.
- Cutler, D. M., and A. Lleras-Muney. 2006. Education and health: evaluating theories and evidence: National Bureau of Economic Research.
- Davies, L. 2009. Sarkozy attacks focus on economic growth. *The Guardian*, September 14, 2009.
- De Long, J. B., and L. H. Summers. 1991. Equipment investment and economic growth. *The Quarterly Journal of Economics* 106 (2):445-502.
- Deaton, A. 2008. Income, health and wellbeing around the world: Evidence from the Gallup World Poll. *The journal of economic perspectives: a journal of the American Economic Association* 22 (2):53.
- Deger, S., and S. Sen. 1983. Military expenditure, spin-off and economic development. *Journal of Development Economics* 13 (1-2):67-83.
- Deneulin, S., and J. A. McGregor. 2009. The capability approach and the politics of a social conception of wellbeing. In *Department of Economics Working Papers*: University of Nath.
- Denison, E. F. 1947. Report on tripartite discussions of national income measurement. In *Studies in Income and Wealth*: UMI, 3-22.
- Dhaliwal, D. S., L. Oliver Zhen, A. Tsang, and Y. Yong George. 2011. Voluntary nonfinancial disclosure and the cost of equity capital: The initiation of corporate social responsibility reporting. *Accounting Review* 86 (1):59-100.
- Dhaliwal, D. S., S. Radhakrishnan, A. Tsang, and Y. Yong George. 2012. Nonfinancial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure. *Accounting Review* 87 (3):723-759.
- Di Tella, R., J. Haisken-De New, and R. MacCulloch. 2010. Happiness adaptation to income and to status in an individual panel. *Journal of Economic Behavior & Organization* 76 (3):834-852.

- Di Tella, R., and R. MacCulloch. 2008. Gross national happiness as an answer to the Easterlin Paradox? *Journal of Development Economics* 86 (1):22-42.
- Di Tella, R., R. J. MacCulloch, and A. J. Oswald. 2001. Preferences over inflation and unemployment: Evidence from surveys of happiness. *The American Economic Review* 91 (1):335-341.
- . 2003. The macroeconomics of happiness. *Review of Economics and Statistics* 85 (4):809-827.
- Diener, E. 1984. Subjective well-being. *Psychological Bulletin* 95 (3):542-575.
- Diener, E., C. L. Gohm, E. Suh, and S. Oishi. 2000. Similarity of the relations between marital status and subjective well-being across cultures. *Journal of cross-cultural psychology* 31 (4):419-436.
- Diener, E., and E. Suh. 1997. Measuring quality of life: Economic, social, and subjective indicators. *Social Indicators Research* 40 (1):189-216.
- Diener, E., E. M. Suh, R. E. Lucas, and H. L. Smith. 1999. Subjective well-being: Three decades of progress. *Psychological Bulletin* 125 (2).
- Dolan, P., T. Peasgood, and M. White. 2008. Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology* 29 (1):94-122.
- Dorn, D., J. Fischer, G. Kirchgässner, and A. Sousa-Poza. 2007. Is it culture or democracy? The impact of democracy and culture on happiness. *Social Indicators Research* 82 (3):505-526.
- Duan, X.-R. 2003. Chinese Higher Education Enters a New Era. *Academe* 89 (6):22-27.
- Duncan, G. 2010. Should happiness-maximization be the goal of government? *Journal of Happiness Studies* 11 (2):163-178.
- Dutt, P., and D. Mitra. 2008. Inequality and the instability of polity and policy*. *The Economic Journal* 118 (531):1285-1314.
- Dynan, K. E., and E. Ravina. 2007. Increasing income inequality, External habits, and self-reported happiness. *American Economic Review* 97 (2):226-231.
- Eagly, A. H. 1987. Sex differences in social behavior: A social-role interpretation.
- Eagly, A. H., and V. J. Steffen. 1984. Gender stereotypes stem from the distribution of women and men into social roles. *Journal of personality and social psychology* 46 (4):735-754.
- Easterlin, R. A. 1974. Does economic growth improve the human lot? Some empirical evidence. *Nations and households in economic growth* 125.

- Easterlin, R. A. 1995. Will raising the incomes of all increase the happiness of all? *Journal of Economic Behavior & Organization* 27 (1):35-47.
- Easton, G. 2007. Liberating the markets for journal publications: Some specific options. *Journal of Management Studies* 44 (4):628-639.
- Easton, S. T., and M. A. Walker. 1997. Income, growth, and economic freedom. *The American Economic Review* 87 (2):328-332.
- Economist, T. 2011. Don't Worry, Be Happy. *The Economist*, March 17, 2011.
- Ellison, C. G. 1991. Religious involvement and subjective well-being. *Journal of Health and Social Behavior* 32 (1):80-99.
- England, R. W. 1998. Measurement of social well-being: Alternatives to gross domestic product. *Ecological Economics* 25 (1):89-103.
- Estes, R. W. 1972. Socio-economic accounting and external diseconomies. *The Accounting Review* 47 (2):284-290.
- Ferrer-i-Carbonell, A. 2005. Income and well-being: an empirical analysis of the comparison income effect. *Journal of Public Economics* 89 (5):997-1019.
- Fiorito, R., and T. Kollintzas. 2004. Public goods, merit goods, and the relation between private and government consumption. *European Economic Review* 48 (6):1367-1398.
- Fleurbaey, M. 2009. Beyond GDP: The quest for a measure of social welfare. *Journal of Economic Literature* 47 (4):1029-1075.
- Fölster, S., and M. Henrekson. 2001. Growth effects of government expenditure and taxation in rich countries. *European Economic Review* 45 (8):1501-1520.
- Frey, B., S. Luechinger, and A. Stutzer. 2009. The life satisfaction approach to valuing public goods: The case of terrorism. *Public Choice* 138 (3):317-345.
- Frey, B. S., and A. Stutzer. 2000. Happiness, economy and institutions. *The Economic Journal* 110 (466):918-938.
- . 2002. What can economists learn from happiness research? *Journal of Economic Literature* 40 (2):402-435.
- Frijters, P., J. P. Haisken-DeNew, and M. Shields. 2004. Money does matter! Evidence from increasing real income and life satisfaction in east Germany following reunification. *American Economic Review* 94 (3):730-740.
- Fugl-Meyer, A. R., R. Melin, and K. S. Fugl-Meyer. 2002. Life satisfaction in 18-to 64-year-old Swedes: in relation to gender, age, partner and immigrant status. *Journal of Rehabilitation Medicine* 34 (5):239-246.
- Fujita, F., E. Diener, and E. Sandvik. 1991. Gender differences in negative affect and well-being: the case for emotional intensity. *Journal of personality and social psychology* 61 (3):427.

- Giovannini, E., J. Hall, and M. M. d'Ercole. 2012. Measuring well-being and societal progress.
- Giovannini, E. *Why measuring progress matters* 2007 [cited. Available from http://www.oecdobserver.org/news/fullstory.php/aid/2283/Why_measuring_progress_matters.html].
- Goldsmith, R. W. 1950. Measuring national wealth in a system of social accounting. In *Studies in Income and Wealth*, edited by C. o. R. i. I. a. Wealth.
- Gove, W. R., M. Hughes, and C. B. Style. 1983. Does marriage have positive effects on the psychological well-being of the individual? *Journal of Health and Social Behavior*:122-131.
- Gove, W. R., and H.-C. Shin. 1989. The psychological well-being of divorced and widowed men and women: An empirical analysis. *Journal of Family Issues* 10 (1):122-144.
- Graham, C., and S. Chattopadhyay. 2012. Gender and well-being around the world: Some insights from the economics of happiness.
- Graham, C., and S. Pettinato. 2001. Happiness, markets, and democracy: Latin america in comparative perspective. *Journal of Happiness Studies* 2 (3):237-268.
- Grasso, M., and L. Canova. 2008. An assessment of the quality of life in the European Union based on the social indicators approach. *Social Indicators Research* 87 (1):1-25.
- Grier, K. B., and G. Tullock. 1989. An empirical analysis of cross-national economic growth, 1951–1980. *Journal of Monetary Economics* 24 (2):259-276.
- Gundelach, P., and S. Kreiner. 2004. Happiness and life satisfaction in advanced european countries. *Cross-Cultural Research* 38 (4):359-386.
- Hagerty, M. R., and R. Veenhoven. 2003. Wealth and happiness revisited—growing national income does go with greater happiness. *Social Indicators Research* 64 (1):1-27.
- Haring-Hidore, M., W. A. Stock, M. A. Okun, and R. A. Witter. 1985. Marital status and subjective well-being: A research synthesis. *Journal of Marriage and the Family*:947-953.
- Haring, M. J., W. A. Stock, and M. A. Okun. 1984. A research synthesis of gender and social class as correlates of subjective well-being. *Human Relations* 37 (8):645-657.
- Hart, A. G. 1950. Uses of national wealth estimates and the structure of claims. In *Studies in Income and Wealth*, edited by C. o. R. i. I. a. Wealth.
- Hatch, L. R. 1999. *Beyond gender differences: Adaptation to aging in life course perspective*: Baywood Publishing Company, Inc.
- Helliwell, J. F. 2003. How's life? Combining individual and national variables to explain subjective well-being. *Economic Modelling* 20 (2):331-360.

- Herzog, A. R., W. L. Rodgers, and J. Woodworth. 1982. *Subjective well-being among different age groups*: Survey Research Center, Institute for Social Research, University of Michigan Ann Arbor, MI.
- Hirata, J. 2001. Happiness and Economics, Master's degree in International Economic Studies, Maastricht University.
- Hofmann, D. A. 1997. An overview of the logic and rationale of hierarchical linear models. *Journal of Management* 23 (6):723-744.
- Holcombe, R. 1997. A theory of the theory of public goods. *The Review of Austrian Economics* 10 (1):1-22.
- Holcombe, R. G. 2004. National income accounting and public policy. *The Review of Austrian Economics* 17 (4):387-405.
- Holmes, J. S., S. Amin Gutiérrez de Piñeres, and L. Douglas Kiel. 2006. Reforming government agencies internationally: Is there a role for the balanced scorecard? *International Journal of Public Administration* 29 (12):1125-1145.
- Horwitz, A. V., H. R. White, and S. Howell-White. 1996. Becoming married and mental health: A longitudinal study of a cohort of young adults. *Journal of Marriage and the Family*:895-907.
- Husband, G. R. 1953. Report of the 1952 Preseident: American Accounting Association, 267.
- Ijiri, Y., and T. Sueyoshi. 2010. Accounting Essays by Professor William W. Cooper: Revisiting in Commemoration of his Ninety-Fifth Birthday. *Abacus* 46 (4):464-505.
- Inglehart, R. 1989. *Culture shift in advanced industrial society*: Princeton University Press.
- . 2000. World Values Surveys, 1981-84, 1990-93, 1995-97, 2000. In *Inter-university Consortium for Political and Social Research*.
- . 2002. Gender, aging, and subjective well-being. *International Journal of Comparative Sociology* 43 (3-5):391-408.
- Ingram, R. W., and K. B. Frazier. 1980. Environmental performance and corporate disclosure. *Journal of Accounting Research* 18 (2):614-622.
- Islam, S. M. N., and M. Clarke. 2002. The relationship between economic development and social welfare: A new adjusted GDP measure of welfare. *Social Indicators Research* 57 (2):201-229.
- Ittner, C. D., and D. F. Larcker. 1998. Innovations in performance measurement: Trends and research implications. *Journal of Management Accounting Research* 10:205-238.
- Ivanova, I., F. J. Arcelus, and G. Srinivasan. 1999. An assessment of the measurement properties of the Human Development Index. *Social Indicators Research* 46 (2):157-179.

- Johnson, W., and R. F. Krueger. 2006. How money buys happiness: Genetic and environmental processes linking finances and life satisfaction. *Journal of Personality and Social Psychology* 90 (4):680-691.
- Kahneman, D., and A. Deaton. 2010. High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences* 107 (38):16489-16493.
- Kahneman, D., and A. B. Krueger. 2006. Developments in the measurement of subjective well-being. *Journal of Economic Perspectives* 20 (1):3-24.
- Kahneman, D., and J. Riis. 2005. Living, and thinking about it: two perspectives on life. In *The science of well-being*, edited by F. A. Huppert, N. Baylis and B. Keverne. New York, NY: Oxford University Press, 285-304.
- Kanter, R. M. 1977. *Men and women of the corporation*. Vol. 5049: Basic books.
- Kaplan, R. S. 1999. *The balanced scorecard for public-sector organizations*: Harvard Business School Publishing.
- Kaplan, R. S., and D. P. Norton. 1992. The balanced scorecard--measures that drive performance. *Harv Bus Rev* 70 (1):71-79.
- Kaplan, R. S., and D. P. Norton. 1996. Using the balance scorecard as a strategic management system. *Harv Bus Rev* Jan-Feb:75-85.
- Kaplan, R. S., and D. P. Norton. 2001. Transforming the balanced scorecard from performance measurement to strategic management: Part I. *Accounting Horizons* 15 (1):87-104.
- Kendrick, J. W. 1970. The Historical Development of National-Income Accounts. *History of political economy* 2 (2).
- Kohler, E. L., and W. W. Cooper. 1945. Costs, Prices and Profits: Accounting in the War Program. *The Accounting Review* 20 (3):267-308.
- Kramer, W. J., B. Jenkins, and R. S. Kats. 2007. The role of the information and communications technology sector in expanding economic opportunity.
- Lanzi, D. 2007. Capabilities, human capital and education. *Journal of Socio-Economics* 36 (3):424-435.
- Lelkes, O. 2006. Tasting freedom: Happiness, religion and economic transition. *Journal of Economic Behavior & Organization* 59 (2):173-194.
- Leung, J. C. 1994. Dismantling the 'iron rice bowl': welfare reforms in the People's Republic of China. *Journal of Social Policy* 23 (3):341-361.
- Levin, J. S., R. J. Taylor, and L. M. Chatters. 1994. Race and Gender Differences in Religiosity Among Older Adults: Findings From Four National Surveys. *Journal of Gerontology* 49 (3):S137-S145.

- Lind, N. C. 1992. Some thoughts on the human development index. *Social Indicators Research* 27 (1):89-101.
- Linowes, D. F. 1968. Socio-economic accounting. *Journal of Accountancy* 126 (5):37-42.
- London, M., R. Crandall, and G. W. Seals. 1977. The contribution of job and leisure satisfaction to quality of life. *Journal of Applied Psychology* 62 (3):328-334.
- Louis, V. V., and S. Zhao. 2002. Effects of family structure, family SES, and adulthood experiences on life satisfaction. *Journal of Family Issues* 23 (8):986-1005.
- Lund, S., J. Manyika, S. Nyquist, L. Mendonca, and S. Ramaswamy. 2013. Game changers: Five opportunities for US growth and renewal: McKinsey Global Institute.
- Maas, C. J., and J. J. Hox. 2005. Sufficient sample sizes for multilevel modeling. *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences* 1 (3):86-92.
- Madden, D. 2010. Gender differences in mental well-being: A decomposition analysis. *Social Indicators Research* 99 (1):101-114.
- Manis, J. D. 1982. Relationships among career orientation, employment status, self-esteem, and life satisfaction of women: An analysis of age differences.
- Marcoen, A. 1994. Spirituality and personal well-being in old age. *Ageing & Society* 14 (04):521-536.
- Marcuss, R. D., and R. E. Kane. 2007. U.S. national income and product statistics born of the Great Depression and World War II, edited by U. D. o. Commerce.
- Mastekaasa, A. 1992. Marriage and psychological well-being: Some evidence on selection into marriage. *Journal of Marriage and the Family*:901-911.
- Mathews, M. R. 1984. A suggested classification for social accounting research. *Journal of Accounting and Public Policy* 3 (3).
- Mathews, R. 1960. Business Enterprise Accounts in Relation to Different Kinds of Social Accounting Systems. *Economic Record* 36 (73):95-110.
- Mayston, D. J. 1985. Non-profit performance indicators in the public sector. *Financial Accountability & Management* 1 (1):51-74.
- McCulla, S. H., and S. Smith. 2007. Measuring the economy: A primer on GDP and the national income and product accounts, edited by B. o. E. Analysis and U. d. o. commerce.
- McGillivray, M. 1991. The human development index: Yet another redundant composite development indicator? *World Development* 19 (10):1461-1468.
- McIntosh, D. N., R. C. Silver, and C. B. Wortman. 1993. Religion's role in adjustment to a negative life event: Coping with the loss of a child. *Journal of Personality and Social Psychology* 65 (4).

- Milne, M. J., and C. C. C. Chan. 1999. Narrative corporate social disclosures: How much of a difference do they make to investment decision-making? . *The British Accounting Review* 31 (4):439-457.
- Mobley, S. C. 1970. The challenges of socio-economic accounting. *The Accounting Review* 45 (4):762-768.
- Morrison, W. M. 2009. China's Economic Conditions.
- Morse, S. 2003. For better or for worse, till the human development index do us part? *Ecological Economics* 45 (2):281-296.
- Moser, D. V., and P. R. Martin. 2012. A broader perspective on corporate social responsibility research in accounting. *Accounting Review* 87 (3):797-806.
- Murrell, S. A., and F. H. Norris. 1991. Differential social support and life change as contributors to the social class-distress relationship in older adults. *Psychology and Aging* 62 (5):223-231.
- Mustafa, N. 2005. What about Gross National Happiness? *Time*, Jan 10.
- Nelson, Michael A., and Ram D. Singh. 1998. Democracy, economic freedom, fiscal policy, and growth in LDCs: A fresh look. *Economic Development and Cultural Change* 46 (4):677-696.
- Nickell, S. 1990. Unemployment: A survey. *The Economic Journal* 100 (401):391-439.
- Niven, P. R. 2002. *Balanced scorecard step-by-step: maximizing performance and maintaining results*: Wiley. com.
- Nolen-Hoeksema, S., and C. L. Rusting. 2003. Gender differences in well-being. *Well-being: The foundations of hedonic psychology*:330.
- North, D. C. 1991. Institutions. *The Journal of Economic Perspectives* 5 (1):97-112.
- Nussbaum, M. C. 2001. *Women and human development: The capabilities approach*: Cambridge University Press.
- OECD. 2007. International comparison of GDP. In *Eurostat-OECD methodological manual on purchasing power parities*: Organisation for Economic Co-operation Development.
- OECD, O. E. C. D. 2011. *How's life?: Measuring progress and well-being*: Organization for Economic Cooperation & Development.
- OECD. 2011. *How's life?: Measuring progress and well-being*: Organization for Economic Cooperation & Development.
- Oishi, S., E. F. Diener, R. E. Lucas, and E. M. Suh. 1999. Cross-cultural variations in predictors of life satisfaction: Perspectives from needs and values. *Personality and Social Psychology Bulletin* 25 (8):980-990.

- Osberg, L., and A. Sharpe. 2005. How should we measure the "economic" aspects of well-being? *Review of Income and Wealth* 51 (2):311-336.
- Peláez, R. 2009. Economic freedom: a comparative study. *Journal of Economics and Finance* 33 (3):246-258.
- Pinquart, M., and S. Sörensen. 2001. Gender differences in self-concept and psychological well-being in old age: A meta-analysis. *The Journals of Gerontology Series B: Psychological sciences and social sciences* 56 (4):P195-P213.
- Pollner, M. 1989. Divine relations, social relations, and well-being. *Journal of Health and Social Behavior* 30 (1):92-104.
- Porter, M. E. 1990. *The competitive advantage of nations: with a new introduction*: Free Press.
- Pyatt, G., A. Roe, J. Round, R. Lindley, and R. Stone. 1978. *Social accounting for development planning with special reference to Sri Lanka*: Cambridge University Press.
- Quiggin, J. 1999. Human capital theory and education policy in Australia. *Australian Economic Review* 32 (2):130-144.
- Quinlivan, D. 2000. Rescaling the balanced scorecard for local government. *Australian Journal of Public Administration* 59 (4):36-41.
- Ram, R. 1986. Government size and economic growth: A new framework and some evidence from cross-section and time-series data. *The American Economic Review* 76 (1):191-203.
- Richards, P. 2004. *Pobladoras, indígenas, and the state: Conflicts over women's rights in Chile*: Rutgers University Press.
- Robeyns, I. 2005. The capability approach: A theoretical survey. *Journal of Human Development* 6 (1):93-117.
- Rodrik, D. 2000. Participatory politics, social cooperation, and economic stability. *The American Economic Review* 90 (2):140-144.
- Ross, C. E., and J. Mirowsky. 1996. Economic and interpersonal work rewards: Subjective utilities of men's and women's compensation. *Social Forces* 75 (1):223-245.
- Ross, C. E., and M. Van Willigen. 1997. Education and the subjective quality of life. *Journal of Health and Social Behavior*:275-297.
- Ross, C. E., and M. V. Willigen. 1997. Education and the subjective quality of life. *Journal of Health and Social Behavior* 38 (3):275-297.
- Ruggles, R. 1982. The United States national income accounts, 1947-1977: Their conceptual basis and evolution. In *The U.S. national income and product accounts: selected topics*, edited by M. F. Foss: National Bureau of Economic Research, Inc, 15-106.
- Schwartz, B. 2009. *The paradox of choice*: HarperCollins.

- Scully, G. W. 1988. The institutional framework and economic development. *Journal of Political Economy* 96 (3):652-662.
- Shane, P. B., and B. H. Spicer. 1983. Market response to environmental information produced outside the firm. *The Accounting Review* 58 (3):521-538.
- Sigel, S. 1962. An approach to the integration of income and product and flow-of-funds national accounting systems: A progress report. In *The Flow-of Funds Approach to Social Accounting*, edited by N. B. o. E. Research. New York: Princeton University Press.
- Sirowy, L., and A. Inkeles. 1990. The effects of democracy on economic growth and inequality: A review. *Studies in Comparative International Development (SCID)* 25 (1):126-157.
- Spicer, B. H. 1978. Investors, corporate social performance and information disclosure: An empirical study. *The Accounting Review* 53 (1):94-111.
- Stack, S., and J. R. Eshleman. 1998. Marital status and happiness: A 17-nation study. *Journal of Marriage and the Family*:527-536.
- Stevenson, B., and J. Wolfers. 2008. Happiness inequality in the United States: National Bureau of Economic Research.
- Stevenson, B., and J. Wolfers. 2009. The paradox of declining female happiness: National Bureau of Economic Research.
- Stewart, K. 1974. National income accounting and economic welfare: the concepts of GNP and MEW. *Review*:18-24.
- Stiglitz, J., A. Sen, and J.-P. Fitoussi. 2009a. The measurement of economic performance and social progress revisited. *The Measurement of Economic Performance and Social Progress Revisited. Commission on the Measurement of Economic Performance and Social Progress, Paris*.
- Stiglitz, J. E. 2000. *Economics of the public sector*: W. W. Norton.
- Stiglitz, J. E., A. Sen, and J.-P. Fitoussi. 2009b. Report of the commission on the measurement of Economic performance et social progress: Commission on the Measurement of Economic Performance and Social Progress.
- Stijns, J.-P. C. 2005. Natural resource abundance and economic growth revisited. *Resources Policy* 30 (2):107-130.
- Streeten, P. 1994. Human development: means and ends. *The American Economic Review* 84 (2):232-237.
- Stutzer, A. 2004. The role of income aspirations in individual happiness. *Journal of Economic Behavior & Organization* 54 (1):89-109.
- Stutzer, A., and B. S. Frey. 2006. Does marriage make people happy, or do happy people get married? *The Journal of Socio-Economics* 35 (2):326-347.

- Subramanian, S. V., P. Belli, and I. Kawachi. 2002. The macroeconomic determinants of health. *Annual Review of Public Health* 23 (1):287-302.
- Tanzi, V., and K. Y. Chu. 1997. *Income distribution and high-quality growth*: MIT Press.
- Tesch-Römer, C., A. Motel-Klingebiel, and M. J. Tomasik. 2008. Gender differences in subjective well-being: Comparing societies with respect to gender equality. *Social Indicators Research* 85 (2):329-349.
- Thomas, M. E., and B. J. Holmes. 1992. Determinants of satisfaction for Blacks and Whites. *The Sociological Quarterly* 33 (3):459-472.
- Thomas, M. E., and M. Hughes. 1986. The continuing significance of race: A study of race, class, and quality of life in America, 1972-1985. *American Sociological Review* 51 (6):830-841.
- Topel, R. 1999. Labor markets and economic growth. *Handbook of labor economics* 3:2943-2984.
- UNDP. 1990. *Human development report 1990*: Oxford University Press, USA.
- van der Meer, P. H. 2012. Gender, unemployment and subjective well-being: Why being unemployed is worse for men than for women. *Social Indicators Research*:1-22.
- Veenhoven, R. 1991. Is happiness relative? *Social Indicators Research* 24 (1):1-34.
- . 1999. Quality-of-Life in Individualistic Society. *Social Indicators Research* 48 (2):159-188.
- Veenhoven, R., and M. Hagerty. 2006. Rising happiness in nations 1946–2004: A reply to Easterlin. *Social Indicators Research* 79 (3):421-436.
- Vemuri, A. W., and R. Costanza. 2006. The role of human, social, built, and natural capital in explaining life satisfaction at the country level: Toward a National Well-Being Index (NWI). *Ecological Economics* 58 (1):119-133.
- Waldron, S. 2010. Measuring Subjective Wellbeing in the UK, edited by O. f. N. Statistics.
- Wang, H. 2004. Social Change and its Potential Impacts on Chinese Population Health.
- Williams, D. G. 1988. Gender, marriage, and psychosocial well-being. *Journal of Family Issues* 9 (4):452-468.
- Williamson, C., and R. Mathers. 2011. Economic freedom, culture, and growth. *Public Choice* 148 (3):313-335.
- Wiseman, J. 1982. An evaluation of environmental disclosures made in corporate annual reports. *Accounting, Organizations and Society* 7 (1):53-63.
- Wood, W., N. Rhodes, and M. Whelan. 1989. Sex differences in positive well-being: A consideration of emotional style and marital status. *Psychological Bulletin* 106 (2):249-264.

- WVSA. 2008. Values Change the World, edited by W. V. Survey.
- Xinhua. 2009. China to boost spending on welfare, education, health care. *China Daily* May 5, 2009
- Yang, Y. 2008. Social inequalities in happiness in the United States, 1972 to 2004: An age-period-cohort analysis. *American Sociological Review* 73 (2):204-226.
- Yongtae, K., P. Myung Seok, and B. Wier. 2012. Is earnings quality associated with corporate social responsibility? *Accounting Review* 87 (3):761-796.
- Zhang, X., and R. Kanbur. 2003. Spatial inequality in education and health care in China: Cornell University

APPENDIX A

CALCULATING HUMAN DEVELOPMENT INDEX

The Human Development Report (HDR) explains in detail how to calculate the HDI in its technical note. The summary is as follows. First create the dimension indices (income, health, and education). The maximums are the highest observed values in the time-series (1980–t). The minimum values are set at substance values. For 2011 HDI, the minimum values are set at 20 years for life expectancy, 0 years for mean and expected years of schooling, and \$100 for GNI per capita. The table below shows the maximum and minimum values for each dimension for 2011 HDR.

Dimension	Observed maximum	Minimum
Life expectancy	83.4 (Japan, 2011)	20.0
Mean years of schooling	13.1 (Czech Republic, 2005)	0
Expected years of schooling	18.0 (capped at)	0
Combined education index	0.978 (New Zealand, 2010)	0
Per capita income (PPP \$)	107,721 (Qatar, 2011)	100

- Source: 2011 Human Development Report

Each dimension index is calculated by using the following formula which transforms the raw variables into indices between 0 and 1:

$$\text{Dimension index} = \frac{\text{actual value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}}$$

The HDI is the geometric mean of the three dimension indices.

APPENDIX B

DEFINITION AND SOURCE of VARIABLES FOR INTERNATIONAL COMPARISONS

Panel A. Definition and source of variables

Variable	Definition	Source & Cronbach's Alpha
Citizens' Well-being Perspective		
Well-being	Factor score based on: -Happiness -Life satisfaction -Control over life	-World Values Survey -Cronbach's alpha: 0.659
Human Development		
HDI: Income Index	Based on GNI per capita, PPP (constant 2005 international \$)	HDI
HDI: Health Index	Based on life expectancy -Life expectancy: Number of years a newborn infant could expect to live if prevailing patterns of age-specific mortality rates at the time of birth stay the same throughout the infant's life	HDI
HDI: Education Index	Based on mean and expected years of schooling -Mean years of schooling: Average number of years of education received by people ages 25 and older, converted from education attainment levels using official durations of each level -Expected years of schooling: Number of years of schooling that a child of school entrance age can expect to receive if prevailing patterns of age-specific enrolment rates persist throughout the child's life.	HDI
Economic Factors		
Unemployment Growth	Changes in unemployment (annual %)	World Bank
Inflation	Inflation, consumer prices (annual %)	World Bank
Investment per capita	Investment, divided by total population (\$) -Investment or gross capital formation is measured by the total value of the gross fixed capital formation and changes in inventories and acquisitions less disposals of valuables for a unit or sector	IMF

Governmental Factors		
Tax Burden per capita	Tax revenue, divided by total population (\$)	World Bank
Military Expenditure per capita	Military expenditure, divided by total population (\$)	World Bank
Public Health & Education Expenditure per capita	Public spending on health & education, divided by total population (\$)	-World Bank -UNESCO -WHO
National Resources		
Natural rents	Natural rents (% of GDP) -Sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents	World Bank
Working Age Population Ratio	Population ages 15-64 (% of total population)	World Bank
Information & Communication Technology	Factor score based on -Fixed broadband internet subscribers (per 100 people) -Mobile cellular subscriptions (per 100 people) -Telephone lines (per 100 people)	-World Bank -Cronbach's alpha: 0.822
National Systems		
Economic System	Economic freedom	Heritage Foundation
Political System	Democracy	Polity IV
Control Variable		
GDP	GDP, PPP (constant 2005 international \$)	World Bank

Panel B. World Values Survey questions

Questionnaire		Adjustment
Happiness	<p>Taken all things together, how happy would you say you are?</p> <ol style="list-style-type: none"> 1. Not at all happy 2. Not very happy 3. Quite happy 4. Very happy 	
Life Satisfaction	<p>All things considered, how satisfied are you with your life as whole these days?</p> <ol style="list-style-type: none"> 1. Dissatisfied ⋮ 10. Satisfied 	
Control over Life	<p>Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means “none at all” and 10 means “a great deal” to indicate how much freedom of choice and control you feel you have over the way of your life turns out.</p> <ol style="list-style-type: none"> 1. None at all ⋮ 10. A great deal 	
Satisfaction with Financial Situation	<p>How satisfied are you with the financial situation of your household? If ‘1’ means you are completely dissatisfied on this scale, and ‘10’ means you are completely satisfied, where would you put your satisfaction with your household’s financial situation?</p> <ol style="list-style-type: none"> 1. Dissatisfied ⋮ 10. Satisfied 	Scaled to have a range from 0 to 1
Subjective Health	<p>All in all, how would you describe your state of health these days?</p> <ol style="list-style-type: none"> 1. Very poor 2. Poor 3. Fair 4. Good 5. Very good 	Scaled to have a range from 0 to 1

Educational Attainment	Had Formal Education? 0. No 1. Yes	Two questions are combined as follows. 1. No formal education/incomplete or complete elementary education (0 for formal education question and 1~4 for education level question) 2. Incomplete or complete secondary school (5~6) 3. University education (7~8)
	Highest educational level attained? 1. Inadequately completed elementary education 2. Completed (compulsory) elementary education 3. Incomplete secondary school: technical/vocational type/(compulsory) elementary education and basic vocational qualification 4. Complete secondary school: technical/vocational type/Secondary, intermediate vocational qualification 5. Incomplete secondary: university-preparatory type/Secondary, intermediate general qualification 6. Complete secondary: university-preparatory type/ full secondary, maturity level certificate 7. Some university without degree/Higher education-lower-level tertiary certificate 8. University with degree/Higher education-upper-level tertiary certificate	
Gender	1. Male 2. Female	
Age	Two digit numeric variable	(Age/100) and (Age/100) squared
Marital Status	1. Married 2. Living together as married 3. Divorced 4. Separated 5. Widowed 6. Single/never married	1. Single/Never married (6) 2. Separated (3~5) 3. Married (1~2)

White Collar		1. Employer/manager of establishment with 10 or more employed 2. Employer/manager of establishment with less than 10 employed 3. Professional worker 4. Supervisory non manual-office worker 5. Non-manual-office worker 6. Foreman and supervisor 7. Skilled manual 8. Semi-skilled manual worker 9. Unskilled manual 10. Farmer: has own farm 11. Agricultural worker 12. Member of armed forces 13. Never had a job	. Non-white collar (6~13) 2. White-collar (1~5)
Religious Belief	Religion important in life	Indicate how important it is in your life: Religion 1. Not at all important 2. Not very important 3. Rather important 4. Very important	Four questions are used to make a factor Religious Belief. -Cronbach's Alpha is 0.744.
	Thinking about meaning and purpose of life	How often, if at all, do you think about the meaning and purpose of life? 1. Never 2. Rarely 3. Sometimes 4. Often	
	Religious person	Independently of whether you go to church or not, would you say you are... 1. A convinced atheist 2. Not a religious person 3. A religious person	
	How important is God in your life	How important God in your life? 1. Not at all important ⋮ 10. Very important	

Political Belief	Politics important in life	Indicate how important it is in your life: Politics 1. Not at all important 2. Not very important 3. Rather important 4. Very important	Two questions are used to make a factor Political Belief . -Cronbach's Alpha is 0.753.
	Interest in politics	How interested would you say you are in politics? 1. Not at all interested 2. Not very interested 3. Somewhat interested 4. Very interested	

The questions are drawn from the World Values Survey (WVS) database. Originally, for happiness question in the WVS, scale 1 represents very happy, and scale 4 represents not at all happy. For the subjective health question in the WVS, scale 1 represents very good, and scale 5 very poor. The score of the happiness and subjective health question is reversed in order to interpret the results intuitively. For some of the questions from the WVS, adjustments are made to the possible answers in order to make them simple enough for interpretation.

APPENDIX C

DEFINITION AND SOURCE OF VARIABLES FOR U.S. REGIONAL COMPARISONS

Panel A. Definition and source of variables

Variable	Definition	Source
Time	t- 1972	
Personal Income per Capita	Total personal income divided by total midyear population Log transformation	U.S. Bureau of Economic Analysis
Life Expectancy	Probable number of years remaining in the life of an individual	Institute for Health Metrics and Evaluation http://ghdx.healthmetricsandevaluation.org/record/united-states-adult-life-expectancy-state-and-county-1987-2009
Percent of Diploma Recipients	Number of completers who graduate with a regular high school diploma, divided by total population of region	National Center for Education Statistics
Tax Burden per Capita	Compulsory contributions exacted by a government for public purposes, divided by total population of region	U.S. Census Bureau
Government Expenditure on Public Protection per Capita	Government's spending on preservation of law and order and traffic safety, divided by total population of region Includes police patrols and communications, crime prevention activities, detention and custody of persons awaiting trial, traffic safety, and vehicular inspection	U.S. Census Bureau
Government Expenditure on Education and Health per Capita	Government's spending on Schools, colleges, and other educational institutions and educational programs & outpatient health services, divided by total population of region	U.S. Census Bureau
Percent of Labor Force	Number of people who have jobs or are seeking a job (at least 16 years old), divided by total population of region	Bureau of Labor Statistics
Government Expenditure on Infrastructure per Capita	Government's spending on highways (construction, maintenance, etc.) and Air transportation (construction, maintenance, operation, etc), divided by total population of region	U.S. Census Bureau

Panel B. General Social Survey questions

Questionnaire			Adjustment
Happiness	Taken all together, how would you say things are these days--would you say that you are very happy, pretty happy, or not too happy?	1. Not too happy 2. Pretty happy 3. Very happy	
Sex	Respondent's sex	1. Male 2. Female	
Age	Age of respondent	Two digit number	(Age/100) and (Age/100) squared
Race	Race of respondent	1. White 2. Black 3. Other	
Marital Status	Are you currently--married, widowed, divorced, separated, or have you never been married?	1. Married 2. Widowed 3. Divorced 4. Separated 5. Never married	1. Married (1) 2. Separated (2~4) 3. Never married (5)
Degree	Do you have any college degrees?	1. Less than high school 2. High school 3. Associate/ Junior college 4. Bachelor 5. Graduate	1. Up to high school (1~2) 2. Post-secondary (3~5)
Working Status	Last week were you working full-time, part time, going to school, keeping house, or what?	1. Other 2. Keeping house 3. In school 4. Retired 5. Unemployed, laid off, looking for work 6. With a job, but not at work because of temporary illness, vacation, strike 7. Working part time 8. Working full-time	1. Other (1~7) 2. Working full-time (8)

Frequency of Attending Religious service	How often do you attend religious services?	1. Never 2. Less than once a year 3. Once a year 4. Several times a year 5. One a month 6. 2-3 times a month 7. Nearly every week 8. Every week 9. More than once a week	1. No more than 5 times a year (1~3) 2. More than 5 times a year (4~9)
Respondent Constant Income	Inflation-adjusted personal income	Six-digit number converted to 2000 dollars	Log transformation
Condition of health	Would you say your own health, in general, is excellent, good, fair, or poor?	1. Poor 2. Fair 3. Good 4. Excellent	
Satisfaction with financial situation	So far as you and your family are concerned, would you say that you are pretty well satisfied with your present financial situation, more or less satisfied, or not satisfied at all?	1. Not satisfied at all 2. More or less satisfied 3. Pretty well satisfied	
Region	Region of interview	1. New England 2. Middle Atlantic 3. E. North Central 4. W. North Central 5. South Atlantic 6. E. South Central 7. W. South Central 8. Mountain 9. Pacific	

The happiness question is measured on a 3-point scale with 1 representing not too happy and 3 very happy.

APPENDIX D

NINE REGIONS OF THE U.S.

- New England: Maine, Vermont, New Hampshire, Massachusetts, Connecticut, and Rhode Island
- Middle Atlantic: New York, New Jersey, and Pennsylvania
- East North Central: Wisconsin, Illinois, Indiana, and Michigan and Ohio
- West North Central: Minnesota, Iowa, Missouri, North Dakota, Nebraska, and Kansas
- South Atlantic: Delaware, Maryland, West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida, and District of Columbia
- East South Central: Kentucky, Tennessee, Alabama, and Mississippi
- West South Central: Arkansas, Oklahoma, Louisiana, and Texas
- Mountain: Montana, Idaho, Wyoming, Nevada, Utah, Colorado, Arizona, and New Mexico
- Pacific: Washington, Oregon, California, Alaska, and Hawaii

APPENDIX E

FOUR REGIONS OF THE U.S.

- Northeast: Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania
- Midwest: Wisconsin, Illinois, Indiana, Michigan, Ohio, Minnesota, Iowa, Missouri, North Dakota, Nebraska, and Kansas
- Southern: Delaware, Maryland, West Virginia, Virginia, North Carolina, South Carolina, Georgia, Florida, District of Columbia, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Oklahoma, Louisiana, and Texas.
- West: Montana, Idaho, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico, Washington, Oregon, California, Alaska, and Hawaii.