Research Themes of USC-INET Institute at the Economics Department of USC Dornsife

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Introduction

Recent global financial crises have reminded us once again of the economic risks and challenges that lie ahead. Economies and markets have become more inter-connected than ever before, with fewer possibilities for risk diversification. A seemingly local crisis can rapidly acquire global dimensions. A purely individualistic approach to economic analysis is no longer tenable and seems unlikely to provide satisfactory insights or solutions for today’s problems. New economic approaches that take account of the correlated nature of economic behavior are needed. There is an increasing awareness that analysis of economic problems can no longer be based on idealized concepts of representative agents and competitive markets alone. New tools from decision theory under uncertainty and theory of networks are needed if we are to address problems of globalization, unemployment, increased economic inequalities, financial crises, and regulation of financial institutions. How individual actions and interactions evolve and get aggregated to the macro level ought to be the focus of the analyses. But economic theorizing alone cannot succeed and must be augmented with the analysis of disaggregated transaction data, as well as experimental and survey data on individual behavior and their interactions. Economics must face the challenge of becoming more empirical and applied, if it is to be useful in policy discussions and in designs of regulatory environments.

In what follows we identify a number of related research areas where USC economics has comparative advantage. The proposed research themes cover a number of diverse areas, but all consider novel approaches to the analysis of interdependence, networks, and decision making. The proposed themes contribute to the developments of new methodology as well as substantive empirical applications that enhance our understanding of policy issues at different micro and macro levels.

Research Themes

A. Modeling Global Macroeconomic and Financial Interactions

USC: Cheng Hsiao, Robert Dekle and Hashem Pesaran
External: Vanessa Smith (Cambridge and York Universities), Alessandro Rebucci (Inter-American Development Bank)

Many aspects of macroeconomic and financial developments have been significantly influenced by increased globalization and financial market integration, particularly over the past two decades.
One area of interest is the analysis of financial crises and the mechanisms underlying them. Contagion between different markets and countries and herding behavior is based on the idea that economic agents, e.g., investors sometimes have incentives to imitate each other in their decision making and these mass movements result in major fluctuations and crises in speculative markets. Another major research project focuses on the macroeconomic consequences of globalization and openness, which is changing the linkages and transmission mechanisms between different markets, countries and macroeconomic policies. The newly developed global model (known as the GVAR) will be used for these purposes. This is a relatively novel approach to global macroeconomic modeling that combines time series, panel data, and factor analysis techniques to address a wide set of issues and problems. The GVAR approach has so far been used to study the transmission of shocks to US real equity prices, short term interest rates and oil prices on the euro area. It has been employed in forecasting economic and financial variables across a large number of countries in the global economy, in the analysis of the impact of the credit crunch in the US on advanced and emerging market economies, and the effects of the emergence of China in the global economy on Latin America. The newly published book, The GVAR Handbook: Structure and Applications of a Macro Model of the Global Economy for Policy Analysis (by Filippo di Mauro and Hashem Pesaran) provides further applications of the GVAR model to the global economy.

B. Emergence of China, Financial Market Integration and the Global Economy

USC: Hashem Pesaran and Guofu Tan
External: Baizhu Chen (USC Marshall), and Eric Heikkila (USC Price)

There is currently a clear imbalance between real and financial developments in China’s economy and their implications for the development of world economy and financial market integration. Over the past 15 years China’s importance in the world economy has increased dramatically. While world trade has grown by about 40 per cent from mid-1990s, China’s trade has more than doubled over the same period. China today represents about 15 per cent of total world trade; about triple its share in the mid-1990s. Real output in China has been rising at around 10% per annum, as compared to 2.5% in the developed world and 4% in the rest of world. These real economic developments have not, however, been matched by financial and capital market developments in China. Renminbi remains non-convertible internationally. The Chinese stock market remains underdeveloped and is not integrated to the rest of world economy. There are no long term bond markets in China, and money markets are largely regulated. The large imbalance in the pace of developments of real and financial sectors of the Chinese economy, and their relationships to the rest of world economy, have placed further strains on financial markets in the developed world, mainly in the US and the euro area. The surplus funds from China have been a major source of cheap liquidity in the world economy, fuelling the lax credit conditions that prevailed in these markets in the years leading to the 2008 credit crunch and the ensuing Great Recession. As a result we have seen trade diversification associated with financial market integration in the global economy, and raising the risk of financial crises. There is a clear need to consider the development of financial markets in China and other emerging markets as a top priority. More regulations and better monitoring of financial markets in the developed economies, whilst clearly needed, will not be sufficient in an integrated world economy where 50% of world output is produced.
by economies without any developed financial markets. We shall empirically investigate the implications of imbalances in real and financial sectors of the Chinese economy for China and the rest of the world and consider institutional issues involved in reducing and mitigating the adverse effects of such imbalances.

C. Forecasting Financial Variables using Pooling and Panel Techniques
USC: Cheng Hsiao and Hashem Pesaran
External: Andreas Pick (Rotterdam University) and Allan Timmermann (UCSD)

The recent crisis has been a timely reminder of the perils of forecasting financial markets. The problem is particularly serious when markets and economies are subject to major technological, political and institutional changes.
But anticipating major breaks in economic relations is not easy, particularly if breaks occur close to the point at which forecasts are made. One strategy of dealing with such breaks is to develop forecasting strategies that are reasonably robust to breaks. Examples of such approaches include down-weighting of observations, the use of rolling windows and pooling of forecasts obtained over different estimation windows.
We shall build on these developments and explore the use of panels and pooling techniques to minimize the risks associated with forecasting in presence of structural breaks.

D. Survey Expectations for the Analysis of Correlated Behavior
USC: Hashem Pesaran and Arie Kapteyn
External: Charles Manski (Northwestern) and Jeff Dominitz (Resolution Economics)

It is becoming increasingly recognized that testing for price bubbles requires disaggregated time series information on individual expectations. Analysis of aggregate time series observations can provide historical information about price reversals and some of their proximate causes. But such information is unlikely to provide conclusive evidence of bubble formation and its subsequent collapse. Survey data on traders' individual beliefs combined with suitable market proxies for "fundamentals" are likely to be more effective in empirical analysis of price bubbles.
So far most surveys of price expectations focus on individual expectations of future price movements either qualitatively (whether the prices are expected to rise, fall or stay the same) or quantitatively in the form of predictive densities. The outcomes of such surveys are used in disaggregated or aggregated forms in tests of rationality of expectations and for forecasting of aggregate trends. Typically, such survey questions are not placed in particular decision contexts. However, for the analysis of many economic problems more information about the nature of individual beliefs and expectations is
required. This is particularly the case when individual decisions not only depend on their own expectations of future prices but also their beliefs about the expectations of other market participants. But elicitation of individual expectations of others can be quite difficult. It is also likely to be unreliable since the reference group might be unclear and changeable over time.

An alternative strategy pursued here is to relate individual expectations to a price subjectively held as "fair" or "fundamental". The idea is to present individuals with sets of questions, one that asks about the individual's view of the "fair" value of the asset, and another regarding the individual's expectations of future movement of prices. Responses to these two questions can then be used to measure the extent to which prices are likely to move towards or away from the subjectively perceived fair or fundamental values. These questions do not require that the notation of fair or fundamental price is commonly understood or agreed upon. In situations where the equilibrating process is well established and commonly understood, the second question is redundant. For example, if an individual states that the room temperature is too high, it will be understood that he/she would prefer less heating. The same is not applicable to financial markets and hence responses to both questions are needed for a better understanding of the operations of the markets and their evolution over time.

We have already started fielding “double-question” surveys using the American Life Panel (http://www.rand.org/labor/roybalfd/american_life.html) run by Arie Kapteyn previously at Rand and now at USC. The USC-INET partnership provides an ideal opportunity to build on this initial work and hire post-doctoral researchers to analysis the resultant survey data and field new surveys in US and globally. A number of researchers in Europe and Asia have already indicated their interest to conduct and analyze similar surveys in their regions.

**E. Empirical Analysis of Social Networks**

In this research project we take on the unique challenges that data on social networks pose. Social networks affect the outcomes for their members and this dependence of outcomes complicates the empirical analysis. This project has two subprojects. The first is on economic models for network formation and the second on the causal analysis of interventions that affect the composition of a network.

**E.1 Economic Models of Network Formation**

USC: Yu-Hweie Hsieh, Roger Moon, Geert Ridder
External: Shuyang Sheng (UCLA)

There is a growing empirical literature that analyzes the degree of connectedness in social networks. Much of this literature is outside economics and is not based on an economic model for links in a network as choices of network members. Instead links are formed according to some random process. In the project we take the economic perspective that considers links as choices with preferences over links as the underlying primitives. The goal of the empirical analysis is to learn (aspects of) these preferences. In game theoretic models of network formation, the weakest assumption that we can make is that two members in a social network form a link if it is beneficial for both of them. However a key distinguishing feature of networks is that the benefit that the two members derive from the link
depends on what links both of them form with others. It turns out that if all members make optimal choices on which links to form, this externality creates major issues when the optimal choices have to be consistent with each other, i.e. if the network is in equilibrium. This externality means that the usual concepts of equilibrium, for instance Nash equilibrium, are not useful. Instead a weaker concept of equilibrium is needed. The most popular and obvious one is pairwise stability, i.e. no two members of the networks are better off if they form or sever a link.

Under pairwise stability and for reasonable assumptions on how the benefits from the link depend on the characteristics of the two members involved and on the links that they form with others, there tend to be many pairwise stable equilibria. This is a generic feature of social networks that creates major complications for the empirical analysis of network data. In empirical economics the usual procedure is to assume that some observed outcome is generated by some economic model plus random variation that usually is not part of the economic model. In the case of (many) multiple equilibria there is in addition some selection mechanism that picks one of the many equilibria that are consistent with pairwise stability in the network. Economic theory is however not specific on this selection mechanism. This leads to two types of approaches that will be investigated. The first avoids assumptions on the selection mechanism. Without such assumptions the parameters of the utility function that describes how the benefits of a link depend on the characteristics of the two members involved and on the links that they form with others are only partially identified, i.e. we only know the region in which they are. The computation of these bounds poses major problems, but one member of the research team has made progress in resolving them. Much work still has to be done before this approach can be routinely used.

Current empirical models of network formation make the assumption that all members of a network know the preferences for links of all other members of the network. Under this assumption we have that the number of pairwise stable equilibria is very large. A second feature of such networks with complete information is that there is dependence between the link choices of any two members of the network. This leads us to consider networks with incomplete information, i.e. network members know the preferences of some but not all members. This type of networks have far fewer pairwise stable equilibria and also the dependence between choices of two members depends on their ‘distance’. Hence models for network formation with incomplete information resolve two of the main issues in models with complete information. It should be noted that the theory literature is just starting to analyze such incomplete information network formation games.

Another approach that will be investigated is to assume that links can only be formed with members that have been selected by some random process. This connects the random link formation models that are popular in e.g. sociology and the game-theoretic economic models of link formation. We will also investigate whether this type of models alleviates some of the issues in complete information models. The study of the dependence in networks is also important for other reasons. Data on social networks can be for a collection of networks, e.g. friendship networks in classrooms. In other cases one observes a single large network. One would like to subdivide the latter in weakly dependent subnetworks to be able to use the same methods as for the first type of network data. This will be investigated by our research team that has members with expertise on dealing with dependent data.

A special case of a social network is one-to-one matching as occurs in (monogamous) marriage markets and the assignment of teachers to classrooms. One member of our team
Has developed a method that extends the famous delayed acceptance algorithm developed by Gale and Shapley in 1962 to aggregate matching where partners select on the basis of average characteristics. This method lends itself to the empirical analysis of matching games. However, the econometric methods have only been partially developed and he plans to develop such methods.

E.2 Causal Inference in Networks
USC: Geert Ridder and Gema Zamarro
External: Bryan Graham (Berkeley)

The last ten years have seen a renewed interest in the question of how to establish causality in the social sciences. On the one hand, this renewed interest has led to more social (randomized) experiments. On the other hand, there has been a reevaluation of various non-experimental approaches to estimate the effect of interventions. Little work has been done on interventions in networks. The type of interventions we consider can be best illustrated by two examples in the field of education. The first example is the assignment of teachers of varying quality to classes with students of varying ability. If we are interested in the average outcome, e.g., average test score for some math, then assigning the best teachers to the highest quality classes (positive assortative matching) or the best teachers to the lowest quality classes (negative assortative matching) will in general produce different alternative outcomes. Neither of these assignments may be optimal. The optimal assignment depends on measures of complementarity between teacher and class quality.

Note that we intervene in a one-to-one matching game. The ‘supply’ of teachers and classrooms is given and an intervention is a joint distribution of teacher and class quality consistent with the marginal that specify the supply. Two members of our team have developed econometric methods for the analysis of interventions that reassign teachers to classrooms. The goal of this project is to use the methods that have been developed to analyze data on teacher assignment. We would prefer data from the Los Angeles Unified School District (LAUSD), but that requires permission from the LAUSD. If that permission is not forthcoming, we will use data from the state of North Carolina that are readily available.

The second example is an intervention in the composition of a group. Consider a class with boys and girls. The average test score on math in the class may (and in data does) depend on the fraction girls in the class. Given that about half of the relevant population consists of girls, we can consider a situation of complete integration (coed education) and a situation of complete segregation of boys and girls (single sex education). Again, the ‘supply’ of girls is fixed and we can only increase the fraction girls in a class by reducing the number of girls in other classes. The effect of such a reallocation can be socially beneficial because the average outcome is higher, but at the same time privately harmful because the outcomes for some children will be worse. This tension between social gain and private harm is at the heart of the controversies often associated with this type of redistributional policies. Two members of our team have developed methods to measure the degree of this tension and to obtain
socially optimal redistribution policies. Again we will apply these methods to data on class composition
and outcomes, preferably for the LAUSD, but if that is not feasible, to data from North-Carolina.
The applications will force us to consider alternative identification strategies as random assignment,
unconfounded assignment, identification using panel data and possibly identification using instrumental
variables. The applications should be considered as a demonstration project that will illustrate the
usefulness of our methods in other instances where the policy intervention amounts to a change in the
assignment or in the composition of a group.

F. Open versus Closed Trading Networks with Application to Industrial Organization and Finance
USC: Guofu Tan and Simon Wilkie
External: John Ledyard (Caltech)

The global economy has recently gone through the “Third Industrial Revolution” in which networks have
replaced simple markets as the dominant economic paradigm. Indeed, networks are now the major
drivers of innovations and growth in the developed world and arguably even the global economy.
Economics has made significant advances in understanding networks using game theory and recently
this work has started to have a policy impact, for example the policy debate on “net-neutrality” and the
suggestion that the “separations” approach of regulation used in telecommunications be applied to the
financial sector due to network contagion issues are direct applications of these ideas.
A market can be modeled as a special case of a network- indeed it is an open network where every
trader is connected and information is open. Markets are thus characterized by the properties of
anonymity and price discovery- this gives us the first welfare theorem, that decentralized markets are
efficient. In the world of network structures these assumptions can fail, first, I care who I am partnering
or trading with, e.g., social networks - and second, network barriers can prevent arbitrage. Two
important cases where we have departed from this model are in the financial and telecommunications
sectors. Recently asset markets have become increasing fractured with the development of “black
pools” and proprietary trading platforms- these platforms are often closed to a known subset of traders
and yet interconnected through non-transparent linkages. Second, consider the smart phone market
where we have many competing platforms; Apple, Android, Windows Mobile and Blackberry each
providing competing ecosystems. In the traditional world of telephony inter-connection was mandated,
thus an iPhone user can call and Android phone, or indeed any number independent of the platform the
phone is on. However, new markets are platform specific- App markets, music and entertainment
choices and even social network features are now closed and network dependent. Indeed as most
consumers “single home” choosing a single platform, Apple can extract rents in the aftermarket and
competition is limited.
What are the implications of these emerging network structures in terms of economic efficiency,
innovation and the resilience of the system? Our research will these address the issues examine the
implications for network and financial regulation.

G. Behavioral and Experimental Approaches to Financial Economics
Rational economic theories are an extremely useful benchmark for models of decision-making. However, as evidenced by the recent financial crisis, they cannot help explaining many aspects of individual choices, making their predictive power questionable. The new theories of decision-making face the challenge of incorporating behavioral anomalies while maintaining the discipline of rigorous theoretical models. In this project, we would like to use laboratory experiments in order to improve our understanding of financial decision-making by individuals. By recreating investment conditions in a controlled laboratory experiment, it is possible to test a variety of hypotheses one at a time. In particular, we want to test in the laboratory four behavioral theories of dynamic investment choice under uncertainty. First, even though individuals should be concerned exclusively by how their own decisions affect their absolute wealth levels, anecdotal evidence suggests that relative wealth concerns matter in the decisions of individuals to take risks. Second, it has been documented that losses loom larger than gains in the financial domain. We would like to study whether this gain-loss asymmetry results in a tendency to keep a status-quo allocation of assets. Third, individuals tend to make wrong inferences from outcomes, as in the case of purely random events that do not convey any information. We anticipate that this illusion of control shifts asset allocations away from the optimal decisions. Fourth and last, decisions are likely to be driven by emotions. We expect that by manipulating the emotional states of subjects it is possible to affect choices in systematic and predictable ways.

Our goal is to test these four behavioral anomalies in the Los Angeles Behavioral Economics Laboratory (LABEL), our newly created experimental lab. Once the results of the experiments are analyzed it will be possible to build more comprehensive yet parsimonious theoretical models of decision-making that incorporate these findings, and model the biological underpinnings of choices. These models will have new behavioral predictions that we can test in the laboratory, thus re-starting the cycle “behavioral theory – experimental test”.

Our objective is to put together a team with one or two of our graduate students and one post-doctoral student hired in the job market to work on this specific project. The responsibilities of the doctoral and post-doctoral students would include: (i) perform a literature review, (ii) formulate the hypotheses, (iii) design the game, (iv) help program the experimental software, (v) help integrate the physiological recording equipment in the experimental software, (vi) write the experimental instructions, (vii) run a pilot, (viii) perform a preliminary analysis of results and change some details of the instructions (if necessary), (ix) run all the sessions of the experiment, (x) perform the data analysis and (xi) write the paper. Naturally, all this will be done under our supervision.

H. New Approaches to Modeling Financial Markets and Money
USC: Michael Magill
External: Martine Quinzii (University of California, Davis), Jean-Charles Rochet (Swiss Banking Institute, University of Zurich).

This research project focuses on the new insights that can be obtained by adopting a different approach to the way we embed uncertainty into our economic models. For more than fifty years, economists
studying uncertainty in general equilibrium and macro have modeled uncertainty using the so-called “state of nature” approach, introduced in 1953 by Arrow—an approach which is the analogue for a mathematician of viewing a random variable as map from a probability (state) space to the real line. However, as is well-known, there is an alternative approach, which does not claim to draw on an understanding of the primitive causes (states of nature) which might serve to explain the random outcomes, but rather, like a statistician, directly studies the probability distribution of the random variable on the range space (the “outcomes”). Since Arrow’s contribution in 1953, the profession has essentially been addicted to the “state of nature” approach—and this has had harmful consequences for the more serious development of the theory of markets under uncertainty. The approach we advocate involves directly using probability distributions on the range—i.e. the approach of a statistician. But how could this possibly matter? Well—it turns out that this shift in perspective has radical consequences.

Let me explain how this change in approach leads essentially to a new approach with new predictions and new policy recommendations, when applied to the theory of production and monetary theory. The conventional theory of market equilibrium for an economy with production which is based on Arrow’s state of nature approach, asserts that the socially optimal objective of a corporation is to act in the best interests of its shareholders and to maximize the market value of the firm. When uncertainty is modeled using the more realistic probability approach, firms’ actions have more far-reaching consequences—for they influence the probability distribution of their outcomes and this affects not only the profits received by their shareholders, but also the welfare of consumers of their products and their employees who produce their goods. As a result it can be shown that the socially optimal objective of a corporation is to maximize not just the conventional criterion consisting of the market value of the firm (which measures the benefits accruing to its shareholders) but that it should in addition include the gains or losses accruing from its actions to consumers (the so-called consumers’ surplus) as well as its employees (the so-called employee surplus). Interestingly over the last ten years many corporations have gone to great lengths to publicly announce that they pursue such objectives, not confining themselves to the traditional and much narrower objective of market value maximization. What is remarkable is that the widespread consensus among economists and finance experts that CEOs should indeed focus on maximizing the market value of their corporations can be shown to be the inevitable by-product of the unfortunate habit of using an analysis based on the state of nature approach. The new probability approach thus leads to a radical change in the role that we expect corporations to play in a modern society. They must not just serve the narrow interests of their shareholders (their sole role in the traditional theory), but must also understand the consequences of their production decisions for the consumers they serve and the workers that they employ.

A second important approach of our analysis is to monetary theory. The natural point of departure for monetary theory is a general equilibrium model with a private sector consisting of many individual agents trading on financial markets and a government, the latter consisting of a Central Bank and a fiscal authority. If monetary policy is primary and fiscal policy secondary, in that the latter always ensures that the government’s liabilities are paid off (Ricardian policy), then equilibria are typically indeterminate. The indeterminacy is remarkable and comes from the fact that agents’ expectations of inflation in the future cannot be pinned down. Using the probability approach, we view agents as having beliefs that inflation can take on a finite interval of values and let agent beliefs be characterized by a probability distribution on this interval. This leads to a model which formalizes the recently adopted approach of
many Central Banks—notably the Federal Reserve and the Bank of England (BOE)—known as inflation targeting. Periodically, the Fed or the Bank of England issue predictions for the future course of inflation over the next 12 quarters. Our model shows that what a Central Bank should do is to control the price not just of the overnight interest rate (the standard policy), but the entire term-structure of interest rates on different maturities of government bonds so as to control agents’ expectations of inflation. Since investors purchase the government bonds, if the government controls their prices, which it can do through regular open market operations, then it can essentially control agents’ expectations of inflation—the key objective of a Central Bank. Interestingly in March 2009 the Governor of BOE created quite a stir on the UK bond market when he declared that BOE would adopt the “unconventional policy” of quantitative easing which involves controlling the prices of longer term bonds—precisely what our model asserts that a Central Bank should do.

There are many interesting extensions of these ideas to the functioning of financial markets more generally and to the study of the external effects so clearly present on financial markets since the financial crisis of 2007 and in the banking system more generally that we propose to investigate as part of this proposal.

I. Subjective Well-Being and Public Policy

USC: Richard A. Easterlin, Principal Investigator

Measures of subjective well-being (SWB), such as happiness and life satisfaction, are gaining increasing attention in policy-making circles as possible goals of government policy. But research on the way in which specific policy measures affect SWB is very limited. This project contributes to filling this gap by mobilizing cross section and time series evidence to investigate the comparative impact on SWB of various public policy measures and indicators of macroeconomic conditions—GDP per capita and the inflation and unemployment rates. International differences in SWB are typically attributed to GDP per capita. An alternative hypothesis is that SWB differences are due to policy differences that may be undertaken independently of GDP per capita. This study aims to explore this hypothesis.

Three studies are envisaged. The first is an analysis of current evidence on SWB and labor market policies in countries of the European Union. The second extends this cross section inquiry to a range of countries worldwide using broader indicators of policy. The third examines time series evidence since the 1970s-80s on the relation between public policy and SWB in the United States and about 12 European countries.

The first study is a cross section analysis of life satisfaction differences among 21 countries of the European Union for which both policy measures and macroeconomic indicators are available in 2007, just prior to the onset of the Great Recession. Three policy measures developed in recent years by the OECD will be studied. The first is the net replacement rate, an estimate for each country of the percentage of after tax household income that is replaced by unemployment benefits, social assistance, and housing support. The second is the per capita expenditure on active labor market programs—worker training, job rotation, employment incentives, supported employment, and direct job creation. The third is a benefit strictness indicator that measures eligibility for benefits. It covers entitlement conditions such as employment or contribution requirements to gain access to benefits, job search
requirements, monitoring of job search effort, and sanctions for refusing a job offer. One would expect that, holding macroeconomic conditions fixed, life satisfaction would vary directly with the measures of benefit replacement rates and active labor market programs, and inversely with the strictness indicator.

The second study extends the approach of the previous cross section analysis to countries worldwide. The issue at stake can be illustrated by reference to Costa Rica. As was noted, GDP per capita is typically taken as the chief cause of international differences in SWB. In 2007-10, the Gallup World Poll began collecting data on life satisfaction. (Prior to that its principal SWB measure was the so-called "ladder of life".) As reported in the United Nations' World Happiness Report (2012), Costa Rica is the country (out of about 130) with the world's highest life satisfaction. Yet its GDP per capita is one-fourth of that in the United States. Historian James Riley in a study of world health notes that Costa Rica has essentially had a welfare state since the 1940s, and significant health and educational programs that go back as far as the 1890s. The aim of the present study is to mobilize indicators of government social transfers for countries worldwide in order to explore as an alternative to GDP per capita the possible explanatory role of social transfers in accounting for differences in SWB. Peter Lindert's encyclopedic Growing Public (2004) provides considerable historical data on social transfers in countries throughout the world, and the World Bank has assembled contemporary international data on such transfers. These data and indicators of macroeconomic conditions, including GDP per capita, will be used to investigate the sources of life satisfaction differences in recent years as reported in the Gallup World Poll.

The third study is a time series analysis of life satisfaction in in fourteen European countries surveyed twice a year in the Euro-barometer since the 1970s or 1980s and of happiness in the United States as reported in the General Social Survey since 1972. For this set of countries there are available annual data on SWB, macroeconomic conditions, and measures of the generosity of various entitlement policies. The generosity indexes were constructed by political scientist Lyle Scruggs based on the work of Danish scholar G. Esping-Andersen. Scruggs' indexes take into account income replacement rates and the scope and duration of benefit coverage in three policy areas -- unemployment, sickness and pensions. The critical issue is whether over time life satisfaction varies directly with each of these three indicators of policy generosity, and the comparative importance in influencing SWB of benefit generosity and macroeconomic conditions.