

The Effects of Spiritual Capital on Altruistic Economic Behavior

By Dean R. Lillard and Masao Ogaki
Cornell University and the Ohio State University

September 2005

1. Introduction

In this paper, we outline a research project to investigate whether and how spiritual capital affects the economic behavior of individuals. We define spiritual capital as a set of intangible objects in the form of rules for interacting with people, nature, and spiritual beings (God, gods, buddhas, angels, evil spirits as believed to exist by individuals and in different religions) and believed knowledge about tangible and spiritual worlds. These rules and knowledge govern and direct behavior between individuals or between an individual and the natural world (hereafter we use the phrase “natural and spiritual realm” to refer to both nature and the spiritual beings that many doctrines believe to exist).¹ Under our definition (detailed below), spiritual capital is conceptually distinct from physical, human, or social capital because the payoff to spiritual capital includes returns that accrue in both the near term and in the long term – possibly even after death. In this sense our definition of spiritual capital is related to some interpretations of Weber’s (1905) work.² For example, our definition is related to the idea given in Cavalcanti, Parante, and Zhao (2003), who propose that individuals may believe that utility in the afterlife depends on the economic achievement of this life. Our definition is different from the approach adopted by Zou (1994) and Bakshi and Chen (1996) because they include the level of capital as an argument in the utility function in addition to a consumption stream. In these formulations of Weber’s idea, the Christian doctrines as practiced by Protestants constitute human capital that affects

¹ Our definition differs from Fogel’s (2000) use of the word “spiritual.” He uses the word in the sense of “immaterial” and uses the phrases spiritual assets and spiritual capital. On page 4, he lists a sense of purpose, self-esteem, a sense of discipline, a vision of opportunity, and a thirst of knowledge as examples of spiritual assets. Under our definition none of these things are spiritual capital because they do not possess the characteristics we use to define capital.

² See Hamilton (1996) for a survey of criticism on Weber’s work.

preferences of consumers and thus may affect economic outcomes such as a consumer's propensity to save or engage in altruistic behavior. In Weber's work, religions affect the level of spiritual capital, which in turn may affect economic growth. A recent work by Barro and McCleary (2003) uses cross-country regressions to show that countries with a higher proportion of religious adherents in the population have higher rates of economic growth – a result that is consistent with the view that religions affect economic growth.

We argue below that these formulations of the concept of spiritual capital are limited in two important ways. First, they are not consistent with the logic used to define physical, human, and (to a lesser extent) social capital. Second, these formulations are too narrowly defined in the sense that they focus mostly on organized religions. Below we sketch the outline of an alternative concept of spiritual capital, which we propose to develop as part of our project, that is both consistent with the logic used for other types of capital and that is more general – encompassing aspects of organized religions as a special case of the more general concept.³

Our project has five specific aims. **Aim 1:** Develop, describe, and defend a formal definition of spiritual capital that fits into the logic used to define other types of capital and that is general enough to accommodate notions of spirituality associated with both organized and less organized religions and with other bodies of spiritual thought. **Aim 2:** Develop a formal characterization of the range of spiritual capital available to individuals. This characterization will be grounded on our definition and will be informed by existing religions and spiritual thought. **Aim 3:** Formally model individual decisions to produce spiritual capital – that is to inculcate in oneself some combination of the spiritual capital that is available. This model will yield standard predictions that individuals will acquire spiritual capital until the marginal benefit just equals the marginal cost. However, our model will produce new insights because it will clarify and focus attention on the factors that serve as costs and the nature of the

³ Our definition of spiritual capital also encompasses, as a special case, Becker and Mulligan's (1997) future-oriented capital, which affects time preference by changing the propinquity of future pleasures.

benefits individuals get from spiritual capital. **Aim 4:** Empirically test the predictions of our model to see if observed variation in costs and benefits predicts who produces spiritual capital and how much they produce. **Aim 5:** Use predicted levels of spiritual capital in models of economic models of risk sharing and altruistic behavior. To achieve this aim we will 1) document baseline altruistic behavior of individuals and 2) test whether altruistic behavior varies systematically with a person's (predicted) religious preference. This aim will be the test of whether spiritual capital affects economic behavior in meaningful and important ways.

As is evident from the above, we will use the tools of neo-classical economics. We believe the economic approach is a useful way to think about spiritual capital. Models of economic exchange and economic behavior can not only accommodate spiritual capital, they provide testable hypothesis that can, in principle be rejected by data. We want to emphasize up front, however, that although we use the economic way of thinking to frame our analysis, we will draw heavily on the vast literature in sociology, theology, psychology, and religious studies that treat various aspects of spirituality related to our conceptualization of spiritual capital.

2. Motivation and Significance

In economics, research on spirituality and religion is relatively sparse. Iannaccone (1998) reviews the relative paucity of economic studies but also notes the burgeoning interest in the economics of religion. That religion and spirituality play an important part in the economic functioning modern societies is beyond doubt. For example, Iannaccone (1998) cites numerous data that amply document the importance of religiosity in economic life. He notes, for example, that more than 60 percent of the US population reports membership in an organized religion (p. 1468), that almost all Americans (95 percent) report they believe "God or a universal spirit" exists (p. 1469), that half of charitable giving in the United States is associated with religious giving (p. 1469), and that among all types of volunteer work, religious volunteer work is most common (p. 1469).⁴ Iannaccone (1998) also reviews a number of studies that directly

⁴ Iannaccone (1998) draws these statistics from various sources he cites.

investigate the economic consequences of religion. Our proposed research fits most directly into this literature. These studies investigate the statistical association between many aspects of economic life and different aspects of religiosity ranging from the association between churchgoing behavior and human capital investment (Freeman 1986), membership in religious organizations and crime (Lipford et al 1993; Hull and Bold 1995), to religion and deviant social behavior (numerous studies cited by Iannaccone 1998 p. 1476). In discussing that church attendance helps children grow up with morals and habits that foster good social behavior, Iannaccone (1998, footnote 18 p. 1476) notes that "...I know of no attempts to formally model these (*sic*) effects, ..." and then proceeds to subsequently lay out a religious household production function approach that he says is a "... natural place to start." (ibid)

We take this footnote seriously and propose to use his recommended approach to model the production of spiritual capital. Our aim in doing so is to set the stage to overcome one of the limitations noted by Iannaccone in his review – that self-selection of individuals into religious activities complicates the empirical analysis of how religion (more broadly of how spiritual capital) affects economic outcomes. While we believe our project offers better strategies to identify the causal effects of spiritual capital on economic activity, our analysis will be limited in ways that are shared generally by all attempts to empirically study the relationship between spiritual capital and economic outcomes.

Recognizing those limits does not lessen the potential contribution of such research. The rich set of associations already identified in the literature by Iannaccone and others and the evidence they present on the prevalence of continuing devotion to (organized) religions suggests that spiritual capital may causally determine (at least partly) many types of economic behavior. At the very least, it is clear that spiritual capital is correlated with economic behavior that affects national saving and income distributions, economic growth, the level and distribution of human capital, crime, and other important behaviors. We propose to study a narrow slice of these economic behaviors by focusing on how the level and type of spiritual capital affects whether and the extent to which people engage in altruistic behavior. We will use individual level

data to examine whether altruistic behavior varies systematically with a person's self-reported religious preferences, with the intensity of those religious preferences, and with the level of support for religion in a person's community. This project is part of our larger research program in which we will eventually use the results of our micro-level analysis to study whether cross-sectional and inter-temporal differences in measures of spiritual capital affect observed differences in macroeconomic growth and observed differences in degrees of income and wealth inequality across countries.

More immediately, we will investigate effects of spiritual capital on (a) altruistic behavior of parents toward their children in terms of inter-vivos transfers and bequests, (b) altruistic behavior of individuals toward people outside their households, and (c) the relationship between (a) and (b).

3. Spiritual capital defined

We define "spiritual" capital to be logically consistent with the approach used by Yoram Ben-Porath (1967), Gary Becker (1972), Jacob Mincer (1958) and Theodore Schultz (1961) to define the concept of "human capital." Those authors implicitly define capital to have two key characteristics. First, its use adds value (in monetary or utility terms) to more basic raw materials. Second, it depreciates slowly.

Before we discuss spiritual capital it is useful to review how the above two characteristics apply to the conceptual definition of both physical and human capital and to explicitly discuss what distinguishes these two types of capital. In developing the concept of human capital, the above scholars made use of the common recognition that a physical object can be categorized according to whether or not its use adds value to (raw) materials and to the recognition that physical objects tend to have useful lives over many periods.

Physical capital adds value when the object is an inherent part of a process that transforms the material in some way valued by others. For example, a hammer is physical capital because it facilitates the process of joining two pieces of wood with nails. In addition, an object is considered physical capital if it does not depreciate after a single use. When the physical object depreciates slowly, its continuing use generates a flow of income in future periods. Thus, the physical object represents capital because it represents a flow of income.

The above scholars recognized that these two characteristics – adding value through use and slow depreciation – also apply very neatly to less tangible but nonetheless very real objects that are embodied in human beings. They noted that human beings are embodied with (natural) ability, learned skills, and acquired knowledge that, when used with other raw materials, adds value (in terms of either money or utility). For example, when an individual knows the history of a particular type of art, he may get more utility when looking at art of that type because he or she understands what makes it unique. Similarly, an individual who is able to program computers can sell his time and expertise to earn money. Typically ability, skills and knowledge also depreciate slowly. The ability, skills, and knowledge embodied in people thus satisfy both criterion and may thus be considered as capital in the above sense.

Physical capital is distinct from human capital because one is embodied inside of human beings and one is a physical object that exists separate from human beings.

In our proposal and the research that will flow from it, we will first show that the above two characteristics apply to another set of intangible objects that is distinct from human capital. We label this set of intangible objects as “spiritual” capital.⁵ To be labeled as a separate type of capital it must be conceptually distinct from both physical and human capital. To take a specific example, consider the rule that one person shall not murder another person. This rule is not a physical object. It is also not embodied in any human being. When people follow it they add value (or avoid costs). To the extent that this rule has successfully been established as a norm in a society (i.e. that it is shared), it depreciates slowly. Finally, it is distinct from human capital because its application involves two or more people.

Because this last example clearly invokes a rule laid down in many of the world’s major religions we want to address whether and how the concept of spiritual capital differs from similar rules adopted as secular rules to govern social behavior. The set of rules that we label as spiritual capital differ from secular rules because a greater reward is conferred on a person who adheres to (and believes in) spiritual capital. Although the rule “Thou shalt not murder” is part of both secular and spiritual capital bundles, following this rule (among others) confers rewards in the afterlife to members of religious groups whose teachings include this rule. Thus, an additional defining

⁵ One might also define spiritual capital in terms of the rules that govern how man relates to the natural world. Such rules help people confront and live with immensity of the natural world because those rules often reduce the complexity of the universe into simpler representations. As such, they may help people avoid uncertainty. These rules meet the definition of spiritual capital but we do not focus on them because we can conceive of no empirical measure for them or their effects.

characteristic of spiritual capital is that adherence to the rules yields an extra return above and beyond what another person would receive who has no spiritual capital but who follows the same rules.

Our concept of spiritual capital also distinguishes between the objects themselves (the rules) and the production of those objects. Thus, our concept of spiritual capital does not include churches, synagogues, mosques, temples, schools, courtrooms, or any other physical capital that is used in the production of spiritual capital. Instead, our concept of spiritual capital is most closely analogous to human capital or to the growing literature on “soft skills” (e.g. the capacity to show up to work on time) that is a subset of human capital (need reference to Heckman’s work on “soft skills”).

As we have defined spiritual capital, it is produced in families, in schools, and in the institutions most closely linked to religion – churches, synagogues, mosques, and temples. Societies and groups differ in the type and character of the spiritual capital that is present. In principle one can document and classify the rules adopted by each society or by smaller groups within a given society.

At this point we should distinguish our construct of spiritual capital from the concept of social capital used by sociologists. Here we draw heavily on the excellent review article of Alejandro Portes (1998) who reviews the conception and development of the term social capital, including how the definition has, in recent literature, been stretched until “... excessive extensions of the concept may jeopardize its heuristic value” (p. 1). Portes (1998) notes that the term social capital was first defined by

Pierre Bourdieu (1985) who identified it as consisting of social relationships (in and of themselves) plus the amount and quality of resources flowing to individuals from those social relationships. Inherent in this notion of resources flowing from social relationships is some idea that transfers from one person to another will be reciprocated at a later date (and thus requires that the relationship not deteriorate too rapidly). Glenn Loury (1977, 1981) similarly discussed the idea that social connections represented an object of value because individuals can use those connections to get resources (or access to resources). Loury's work was used by James Coleman (1988) in his conceptualization of social capital. He identified social capital as an aspect (or aspects) of a social structure that facilitates "certain actions of actors" within the social structure (p. S98). He later equated social capital to strong norms. Portes (1998) concludes that "... the consensus is growing in the [sociological] literature that social capital stands for the ability of actors to secure benefits by virtue of membership in social networks or other social structures." As noted by Alejandro Portes in his comprehensive 1998 review of social capital, modern scholars have stretched the definition of social capital quite broadly so it sometimes include institutions such as schools and churches but the term is also applied to some notion of social cohesion that is measured empirically by how much contact a person has with his or her neighbors.

We define spiritual capital more narrowly as a set of intangible objects in the form of rules that govern how an individual interacts with other people and with the natural and spiritual realm. In addition, spiritual capital yields (perceived) benefits in both the short and long term (possibly after death).

4. Characterizing Spiritual Capital of Denominations and Religions

Our second specific aim is to characterize levels of spiritual capital associated with various organized religion. To do so, we will survey and study doctrines and practices of the major religions of the world and of denominations within the major religions. We will rely heavily on surveys of the practices and beliefs of those groups to gain deeper understandings of similarities and differences in each religion's rules and doctrines. Note that we will start with major (organized) religions with clearly defined bodies of thought but we will not ignore other groups that produce spiritual capital.

It is premature for us to name the religions or denominations on which we will focus but an important aspect of this part of our project will be comparison of our findings with what Weber (2001) predicted in his original work in 1905. One purpose of our studying altruistic behavior is to investigate effects of spiritual capital on saving through altruistic behavior. The most prominent theory of how religion affects saving was proposed by Weber. Weber argued that the Protestant ethic promoted saving and economic growth compared with the traditional European ethic based on Roman Catholicism. Therefore, it is important for us to evaluate this aspect of Weber's theory for the purpose of understanding effects of spiritual capital on saving.

Hamilton (1996) summarizes Weber's argument in 12 steps, and the following first 8 steps are related to comparison of doctrines of denominations:

1. The expounding of a new and distinctive religious doctrine: Luther's concept of the calling.
2. The expounding of a doctrine: Calvinism and predestination.
3. Transmission to followers: the calling.
4. Transmission of followers: predestination.

5. Among Calvinists, the predestination produced extreme salvation anxieties, which were experienced in profound inner isolation.
6. Calvinists were told that intense worldly activity may be taken as a sign of salvation.
7. To gain that assurance, Calvinists engaged in exceptionally disciplined economic activity.
8. Calvinists accumulated large amounts of capital which, following religious strictures, were reinvested.

Hamilton criticizes each of these steps.

For example, on the second step, Hamilton (p.67) points out that Weber signals some controversy about where predestination was “the most essential dogma” or “only an appendage” to the Calvinist movement, and that Weber reports that the doctrine of predestination “had evolved” since Calvin’s time. Hamilton writes that these are problems that require attention, but Weber only mentioned these and passed over.

Kendall (1979) addressed some of the important issues of these problems by tracing the doctrine of faith from John Calvin to the Westminster Assembly. In reviewing Kendall’s work, Inoue (2001, pp.32-33) suggests that the kind of asceticism Weber argued may have been born through the process of Experimental Predestinarians practicing the doctrine of *sylogismus practicus*.

In characterizing the spiritual capital (potentially) available from each group, we start by focusing on major religions and their denominations.

5. Data

Panel Study of Income Dynamics

We will use the University of Michigan’s Panel Study of Income Dynamics (PSID). The PSID is a household based survey that began in 1968 with a survey of about 5,000

households. Each member of the 1968 household and all offspring of any member of those households has been followed and interviewed. These people are labeled "sample members." Data are also collected during each survey from all people who co-reside with a sample member. Annual interviews were conducted from 1968 through 1997. Since 1997 surveys are conducted biennially. We use data from 1968 through 2003. As of 2003, data have been collected from more than 60,000 individuals.

Data on religious preference: From 1970-1976 and from 1981-2003 the PSID collected data on the religious preference of the head of each household in the sample. In addition, the religious preference of wives of household heads was asked from 1985-2003. These data are available for more than 30,000 individuals over 21 survey years. In addition PSID respondents to the Child Development Supplement in 1997 and 2002 are asked a number of questions on religion and spirituality. For example respondents are asked to indicate "Apart from attending religious services, how important would you say religion is to you?" In the 2002 Child Development Supplement respondents also answered the following questions: "Aside from conventional religion, how important would you say spirituality or faith is to you?"; "How much comfort do you get from your religion?"; and "Some people aren't members of a particular religion or don't go to church or other religious services. Some of these people still feel spiritual. Are you a spiritual person?" This information is provided by between 2,000 and 3,000 PSID members (the primary and other child care givers) and it can be linked to the main files of the PSID. We will use these data to try to separately distinguish religiosity from

spirituality and to identify individuals who may not frequently attend formal religious services but who nonetheless identify spirituality as an important to their lives.

Data on charitable giving/receipt: data have been collected annually on whether individuals give money or time to people outside their own household. The data include whether those donations were made to another family member (an inter-vivos transfer). In 2001 and 2003 respondents were asked to distinguish donations made to religious organizations, charitable organizations and other types of giving. Finally, data are collected on whether individuals received an inheritance over the past year (and the amount of the inheritance).

Intergenerational aspects of data: With the PSID one can track economic behavior across up to three generations. This longitudinal aspect of the data allows us to control for the religion of both parents and (to a lesser extent) grandparents.

Measures of community level spiritual capital: The PSID data are also well suited for our study because a special file is available by special arrangement that identifies the place each PSID respondent lived at the time of each survey. Using variables that identify each respondent's county of residence, we can match characteristics of each respondent's county to each PSID household. The community level measures of spiritual capital are taken from censuses of religious congregations and membership in the US done in 1952, 1971, 1980, 1990, and 2000. All but the 2000 census were conducted by the US Census Bureau. The 2000 compilation was conducted by the Glenmary Research Center in Nashville, Tennessee. These data measure, at the county level, the number of churches, synagogues, mosques or temples, number of confirmed

(full) members, and the number of people who attend services. Using the geocode variables we will match measures of church attendance/membership to the county of residence of all PSID respondents.

Relationships between individual-specific spiritual capital, social capital, and altruistic behavior. We investigate the relationships between individual-specific capital and altruistic behavior with data on individual religious preference. We will exploit two aspects of the PSID to investigate the relationship between social spiritual capital and altruistic behavior. First, we will use the longitudinal nature of the data to examine how changes in spiritual capital in a given location alter altruistic behavior. Second, we will use the geocode data to examine whether and how individuals alter their altruistic behavior when they move to a location with a different level of spiritual capital.

5. Research Design

The empirical part of our proposed research project will make use of Our strategy is to first document how inter-vivos transfers, bequests, and charitable gifts are correlated with individuals' stated religious preferences and the religious preference of their community after controlling for demographic, income, and wealth variables.

The next step is to use economic models to identify altruistic behavior. For example, we will study whether and how parents treat their children differently when they have or are exposed to more spiritual capital. To do so we study inter-vivos transfers from parents to children. We approach this problem within the frameworks laid out in Altonji, Hayashi, and Kotlikoff (1992,1997) and Hayashi, Altonji, and Kotlikoff (1996). Those authors develop methods to test whether parents behave altruistically

toward their children. Their empirical results suggest that parents and children do not behave altruistically. They even find evidence against complete sharing that is predicted in models without altruism. We seek to test whether or not their results are affected when we take into account of individuals' religions. When we test for risk sharing, we will take into account the possibility that the degree of relative risk aversion is higher for poorer consumers as pointed out by Ogaki and Zhang (2001). The formal statistical tests will be conducted by taking the null hypothesis of no altruism. We will use possible effects of spiritual capital to guide our choices of alternative hypotheses.

One can interpret the above relationship between social capital and behavior as causal if one assumes that, when individuals choose the county to which they move, their choice is not determined by the amount of spiritual capital in that community. We must invoke a similar assumption to identify causal effects of changes in social spiritual capital for people who do not move. For these people we will document whether their behavior changes when community level spiritual capital changes over time. To interpret the changes as causal, we must assume that their decision to stay is not (primarily) determined by changes in community level spiritual capital.

Risk sharing and altruistic behavior. The standard economic theory predicts that non-altruistic economic agents will conduct full risk-sharing if there is no problem caused by incomplete information among the agents. Hayashi, Altonji, and Kotlikoff (1996) used the PSID data and rejected intra-family full risk-sharing. Gokhale, Kotlikoff, Sefton, and Weale (2001) cite this paper as part of evidence against altruism within families that motivates them to use a model that ignores intended bequests for the

purpose of simulating the intergenerational transmission of U.S. wealth inequality via bequests.

However, before we interpret evidence against intra-family full risk-sharing as evidence against altruism, it seems necessary to investigate effects of altruism on risk-sharing because full risk-sharing models have been studied under the assumption that the economic agents involved in risk-sharing are not altruistic to each other in the literature.

For example, imagine that a son of loving parents is lazy, and gets fired. Even when the parents fully know what the son is doing and do not face the moral hazard problem, they may decide not to support to maintain the son's consumption at the previous level, so that the son learns a valuable lesson from this experience. If the son learns to be more diligent to avoid low consumption in the future, he may be better off in the long-run. On the other hand, if the son gets sick and suffers a loss of income, the parents may decide to support the son.

In the PSID, we have data on unemployment and sickness. Therefore, we can investigate whether or not some parents are risk-sharing with children in this manner. We can also investigate if this type of behavior is correlated with variables that are related to spiritual capital held by parents and their neighborhood.

We plan to construct a formal model of risk-sharing with altruism with a feature described above along the line of Becker and Mulligan's (1997) model in which discount factors are endogenously determined the propinquity of future pleasures. Consider a model in which a child's discount factors for different states of the world depend on the

propinquity of the future states of the world. The probability of getting fired depends on how hard the child works. If a child experiences low consumption, the propinquity of the future low income states of the world increases and the child discounts such states of the world less heavily. This makes the child work harder. Given these, parents with altruism toward the child would write different risk-sharing contracts with the child than would parents with no altruism.

Another aspect of risk-sharing that is ignored in Hayashi, Altonji, and Kotlikoff (1996) is the hypothesis that the degree of relative risk aversion is higher for poorer consumers. Ogaki and Zhang (2001) found empirical evidence for this hypothesis in risk-sharing behavior in data for villages in India and Pakistan. They show that tests for full risk-sharing may be misleading when this hypothesis is ignored. We will take into account of this hypothesis when we test for risk-sharing by subtracting a fixed number from consumption in examining the consumption factor structure. Generalized Method of Moments can be used to conduct statistical inferences as Ogaki and Zhang (2001) did.

6. Potential Limitations

Our project suffers potential limitations but the limitations it faces are mostly the difficulties researchers generally face in this area of research, not limitations due to our research design. For example, we use data to proxy for each individual's level of spiritual capital and for community level spiritual capital that only imperfectly measure the underlying theoretical construct. We recognize that these measures are imperfect but the advantages of the PSID data – longitudinal data on individuals over multiple

generations – promise insights that we think outweigh the imperfect measures of spirituality. Our identification strategy for social spiritual capital is also limited to the extent that people do consider the level of spiritual capital in a community when they decide whether or not to live there. This latter limitation will mean that we will identify associations rather than causal effects of spiritual capital. We believe, however, that the proposed project will yield interesting results because we will provide evidence about whether the results of Altonji et al (1992, 1997) vary when one accounts for differences across individuals and communities in levels of spiritual capital. We think that accounting for these differences in levels of individual and community spiritual capital may reveal more subtle patterns and insights on whether parents behave altruistically.

References

- Altonji, J., F. Hayashi, and L.J. Kotlikoff (1992), "Is the Extended Family Altruistically Linked? Direct Tests Using Micro Data," *American Economic Review*, 82, 1177-1198.
- Altonji, J.G., Hayashi, F. and L.J. Kotlikoff (1997). "Parental Altruism and Inter Vivos Transfers: Theory and Evidence" *Journal of Political Economy* 105 (6): 1121-1166.
- Bakshi, Z.G. and Z. Chen (1996), "The Spirit of Capitalism and Stock-Market Prices," *American Economic Review* 86: 133-157.
- Barro, R.J. and R.M. McCleary (2003), "Religion and Economic Growth Across Countries." *American Sociologic Review* 68: 760-781.
- Becker, G. (1972). *Woytinski Lecture*. University of Michigan.
- Becker G. (1983). *Human Capital*. 2nd ed. Chicago: University of Chicago Press.
- Becker, G. S. and C.B. Mulligan (1997), "The Endogenous Determination of Time Preference," *Quarterly Journal of Economics* 112: 729-758.

Ben-Porath, Y. (1967). "The Production of Human Capital and the Life-cycle of Earnings." *Journal of Political Economy* 75(4): 352-65.

Bourdieu, P. (1985). "The forms of capital." In *Handbook of Theory and Research for the Sociology of Education*. Ed. J.G. Richardson. Pp. 241-58.

Cavalcanti, T. S. Parente, and R. Zhao (2003), "Religion in Macroeconomics: A Quantitative Analysis of Weber's Hypothesis." Manuscript, University of Illinois.

Coleman, J.S. (1988). "Social Capital in the Creation of Human Capital." *American Journal of Sociology* Vol 94: S95-S121.

Fogel, R.W. (2000), *The Fourth Great Awakening & the Future of Egalitarianism*, Chicago: University of Chicago Press.

Gokhale, J., L.J. Kotlikoff, J. Sefton, and M. Weale (2001), "Simulating the Transmission of Wealth Inequality via Bequests," *Journal of Public Economics* 79, 93-128.

Hamilton, R. (1996), *The Social Misconstruction of Reality: Validation and Verification in the Scholarly Community*.

Hayashi, F., J. Altonji, and L. Kotlikoff (1996), "Risk-Sharing Between and Within Families," *Econometrica*, 64, 261-294.

Iannaccone, L. R. (1992), "Sacrifice and Stigma: Reducing Free-Riding in Cults, Communes, and other Collectives." *Journal of Political Economy* 100, 271-292.

Iannaccone, L. R. (1998). "Introduction to the Economics of Religion." *Journal of Economic Literature* Vol 36, No. 3 (September), 1465-95.

Inoue, R. (2001), *Karuvan Kara Amiroh He*, Tokyo: Shin-Kyou Shuppansha.

Kendall, R.T. (1979), *Calvin and English Calvinism to 1649*, Oxford: Oxford University Press.

Loury, G.C. (1977). "A Dynamic Theory of Racial Income Differences." In *Women, Minorities, and Employment Discrimination*. Ed. P.A. Wallace, A.M. La Mond. Pp. 153-186. Lexington, MA: Heath.

Loury, G.C. (1981). "Intergenerational Transfers and the Distribution of Earnings." *Econometrica*. Vol. 49: 843-867.

Mincer, J. (1958). "Investment in Human Capital and Personal Income" *Journal of Political Economy* 66(4): 281-302

Ogaki, M. and Q. Zhang (2001), "Decreasing Relative Risk Aversion and Tests of Risk Sharing," *Econometrica*, 69, 515-526.

Schultz, T. W. (1961). "Investment in Human Capital." *American Economic Review* 51(1) : 1-17.

Weber, M. (2002), *The Protestant Ethic and the Spirit of Capitalism*. New York: Penguin Books. Translated by Peter Baehr and Gordon C. Wells.

Zou, H. (1994), "The Spirit of Capitalism and Long-Run Growth," *European Journal of Political Economy* 10, 279-293.