

JOURNAL OF THE ASSOCIATION OF CHRISTIAN ECONOMISTS

No. 26, August 1999

From the Editor:

In this issue there are three articles. John Stapleford tackles the question of the degree of ethical “engagement” in introductory economics textbooks, and offers food for thought for all of us engaged in economics teaching at undergraduate level. Ian Jones and Michael Pollitt question what biblical material has to highlight about the nature of competition and the extent to which certain empirical regularities about the competitive process accord with those biblical themes. Ben Cooper, in a wide-ranging article, presents a critical, Christian view of recent work on evolutionary game theory and exposes the fundamentally flawed idea that ethics can emerge through the evolution of rational behaviour.

As always submissions to the Journal are invited. Readers are encouraged to submit draft manuscripts or to discuss ideas for papers at a preliminary stage.

A reminder about the ACE web site: it contains listings of the contents of previous issues of the Journal, on-line access to back issues, and other useful information. The web address is <http://www.aber.ac.uk/~arh/ace.html>

Please note that Jonathan Thomas, the Secretary/Treasurer has relocated to the University of St. Andrews, Scotland. His new address is on the back cover. In the spirit of the emerging new British constitution the ACE officers are now resident in each of the countries of the island of Great Britain!

The Spring 1999 issue of the North American ACE Bulletin, published by our colleagues in the North American ACE, contains articles by Douglas Vickers on “Time, Knowledge, and Ignorance, and the Subversion of Economic Reason” and by Christopher B. Barrett on “Pluralist Ethics and the Economics of Compassion” as well as a “viewpoint” on “The Christian Mind and Economic Welfare” by Arnold McKee and a number of book reviews. Further details from the secretary, John Mason (mason@gordon.edu).

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CHRISTIAN ETHICS AND THE TEACHING OF INTRODUCTORY ECONOMICS

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*“It’s not the parts of the Bible I don’t understand that bother me,
but those I do...” Mark Twain*

1. Introduction

Nearly one million introductory economics textbooks are sold annually in the U.S. alone.¹ For most students the introductory course represents their primary exposure to economic theory and thinking. All the best selling texts, using the “positive-normative” disclaimer, purport to be value-free, presenting an intellectual framework which simply describes how self-interested economic agents act. Students are left with the impression that economics and ethics are distinct (Lionel Robbins would be pleased!). In fact, the mainstream economics presented in the leading principle textbooks rests upon very explicit ethical positions and these are frequently antithetic to basic Christian theology and ethics.

As stated by Douglas Vickers, for a “Christian economist” it is appropriate that the adjective is as important as the noun. Is it acceptable to Christian economists that millions of students carry the ethical framework of mainstream economics into their careers in business, journalism, public service and even the ministry? Research has shown that, compared to other students economists, are significantly more likely to disregard the well-being of others, to be unconcerned with fairness in decision making and to ‘look out for number one.’ More disturbing, these attitudes are not simply a result of self-selection by subject. Preliminary evidence indicates that training in economics plays a causal role. Students completing an introductory course in mainstream economics were far more likely to be less honest at the semester’s end than were students completing a course in astronomy.² As Samuelson and Nordhaus say in their best selling principle textbook: “After you have studied and learned a body of economic principles, you comprehend reality in a new and different way.”³ Amen!

If Christ is Lord of all of life, then compartmentalization of economics and Christian thought is not permissible. As economists, Christians are to work to bring societal structures “into closer conformity with the scripturally articulated perceptive will of God.”⁴ We are called by God to stand against injustice, to be concerned for the poor, to preserve the dignity of the individual, to be stewards of God’s creation, to avoid the idolatry of materialism, to commit to community through loving our neighbour.

Dooyeweerd and the neo-Calvinists aside, God’s call does not require the devolution of a separate school of economic thought, a Christian economics. As argued

¹ This is a paper first presented at the 1999 UK ACE Study Group and will be forthcoming in the *Journal of Markets and Morality*.

in the next section of this paper, our current economic theories and models have delivered handsomely in many aspects of economic well being. Moreover, the estimated impact on GDP of a 10 percent cut in personal income taxes is a technical issue that may be handled equivalently by Christians and non-Christians. However, despite claims to the contrary, mainstream economics and its applications are shot through with ethical assumptions and issues. What, for example, will the impact of the personal income tax cut be on the distribution of income? On social services? Does higher GDP equate to increased societal well-being? The third section of the paper presents evidence on the substantial incidence of ethical issues in the leading introductory principles economics textbooks. The opportunities this incidence provides to engage students in the consideration of these issues are discussed.

The job for the Christian economist then is the “application of biblical precepts and insights to the study of economics.”⁵ A starting point is the articulation of a theological framework to be applied to a range of economic concepts and issues. Section 4 of the paper proposes a framework based upon the work of various Christian scholars. The theological framework provides the boundaries within which Christian ethics (Christian social principles⁶) in economics can be expressed. These principles are listed in section 5. Given the foundation of a theological framework and derivative Christian ethics, section 6 hypothesizes that the most effective vehicle for reaching the majority of students is a supplementary textbook on the application of Christian ethics in economics to be used with a standard introductory principles of economics textbook. The structure and format for such a supplementary text are briefly discussed. Alternatively, ample books and journals are currently available from which instructors can extract solid scholarly applications of Christian ethics to captivating economic issues (e.g., Third World debt relief, Biblical views on dealing with poverty).

The article concludes simply. The current mainstream principles textbooks provides ample opportunity for instructors to introduce the discussion of ethics, even in a secular and committed “value-free” institution. Grappling with these many ethical issues will return substance, relevance and excitement to the learning of economics, and perhaps reverse the long decline in the population of economics students. Christians, in particular, must incorporate the consideration of ethics in their teaching of introductory economics. Christians are mandated by God to present His truth to a lost world and should we fail to do so “they shall die for their sin, and their righteous deeds that they have done shall not be remembered: but their blood I (God) will require at your hand.” (Ezek 3:20)

2. Economists: Hold Your Heads Up!

Other than lawyers, no other profession provides more fodder for jokes than economics. There is even a web site dedicated to poking fun at economists; and a very funny web site at that!⁷ Despite all the good humour, however, increasingly over the past decades mainstream market economics on both the macro and the micro levels has substantially improved economic conditions.

Using the U.S. as an example, there has been remarkable improvement in the stability, composition and volatility of the business cycle. As shown in Table 1, the length of the average business cycle has increased steadily from 40 months during the 1885-1912 period to 61 months since World War II. The expansion following the November 1982 trough lasted 100 months and the current expansion has continued over 99 months. The average contraction has fallen from 17 months in the 1885-1912 to 11 months since World War II and the contraction as a percent of the business cycle fell from 42 percent to 18 percent. The most recent contraction was the 8 percent of the 1982-91 business cycle.

Table 1

Duration of the Business Cycle

Period	Number of Cycles	Length of Expansion (Months)	Length of Contraction (Months)	Total	Percent of Contraction
1846-1885	8	32	27	59	45
1885-1912	8	23	17	40	42
1912-1945	8	33	17	51	47
1945-1991	9	50	11	61	18

Source: Victor Zarnowitz and Geoffrey H. Moore, 1986, 524, and the U.S. Department of Commerce, Bureau of Economic Analysis.

The amplitude of the business, as evidenced in Table 2, has changed for the better as well. The swings from peak to trough and trough to peak in total production and total employment have all declined. This reduced volatility dampens the disruptive economic impacts of the business cycle. Since the early 1980's the unemployment rate has also been reduced from a high of 9.7 percent to 4.5 percent in 1998 and inflation (as measured by the GDP deflator) has dropped from a high of 9.6 percent to 1.0 percent in 1998.

Table 2

Amplitude of the Business Cycle

Period	Expansion of Production (%)	Expansion of Employment (%)	Decline in Production (%)	Decline in Employment (%)
1885-1945	53	25	-22	-14
1945-1991	35	16	-10	-3

Source: Victor Zarnowitz and Geoffrey H. Moore, 1986, 524; the U.S. Department of Commerce, Bureau of Economic Analysis; and the U.S. Department of Labor, Bureau of Labor Statistics.

Certainly sound macroeconomic policy cannot account for all of these improvements. The structural shift from manufacturing to services, for example, has been a factor, as have stable oil prices and rapidly changing information technology. Nevertheless, those countries which have adhered to mainstream neoclassical macroeconomic policy have over the long run experienced steady real economic growth, relatively full employment and stable prices. Research shows that higher levels of trade protection in developing nations generally result in slower economic growth.⁸ When the majority of countries are ranked by their degree of economic freedom (encompassing measures of personal choice, protection of private property, and freedom of exchange), the highest growth rates in and levels of per capita GDP are experienced by those countries with high economic freedom ratings. Countries where economic freedom is increasing experience high per capita GDP growth rates and countries where economic freedom is declining experience falling levels of per capita GDP.⁹

There are many successful examples of microeconomic applications as well. In the U.S. the relatively free market economy has dramatically reduced the real cost of living. Since the turn of the century the share of household income spent on food, clothing and shelter has dropped from 76 percent to 38 percent. The income share spent on food went from 46 percent to just 14 percent and clothing from 15 to 5 percent. The share going to shelter rose from 15 to 18 percent, yet between 1920 and 1996 the price per square foot of a new home in terms of the average wage for non-supervisory workers has fallen from 7.8 hours to 5.6 hours. And today over 90 percent of the new homes have two or more bathrooms, cavity wall insulation, a built-in cooker, a dishwasher, and a waste disposal unit. 87 percent have three or more bedrooms, 86 percent have a garage, and 81 percent have central heating and air conditioning.¹⁰

In recent decades the deregulation of the airlines has led to a decline in real prices, an increase in areas served and continued improvements in safety. Following deregulation real trucking and railroad freight rates dropped by about one-half. A drop in real prices accompanied the deregulation of the oil and telecommunications industries. Higher prices and reduced barriers to entry do lead to increased supply, demand for substitutes, and use of complements and technology to make consumption more efficient. Rampant price discrimination has allowed the airlines to increase their penetration across market segments with varying price elasticities of demand, decrease the empty seats per flight and shift passenger demand to non-peak periods. Economies of scale and scope and the learning curve, patent protected technology, together with an international division of labour, have made microcomputers affordable to the average working class household. And telecommunications capabilities have skilled programmers in Bangalore, India writing computer code for U.S. firms.

As companies increasingly try to target the tastes and preferences of individual consumers, there has been an explosion of choice in the U.S. marketplace. Since the early 1970s TV channels have gone from 5 to 185, vehicle models from 140 to 260 and vehicle styles from 654 to 1,212, airports from 11,261 to 18,292, new book titles from 40,530 to 77,446, and over-the-counter pain relievers from 17 to 141. "The U.S. market offers 7,563 prescription drugs, 3,000 beers, 1,174 amusement parks, 340 kinds of

breakfast cereal, 50 brands of bottle water. Whole milk sits on the supermarket shelf beside skim milk, half-percent, 1 percent, 2 percent, lactose-reduced, hormone-free, chocolate, buttermilk and milk with a shelf life of six months.”¹¹

Despite its imperfections, the technical infrastructure of mainstream market economics has proven its worth as a body of knowledge. To ignore or gloss over the existence of serious ethical issues, however, leaves it disabled at the very core.

3. These Textbooks Are Not All Positive!

A simple procedure has been used to test the hypothesis that mainstream economics is riddled with ethical issues. An inventory of the majority of major ethical issues of mainstream economics was compiled from Douglas Vickers’ recent book, *Economics and Ethics*. Ten top selling introductory principles of economics textbooks¹² were then examined and the incidence of Vickers ethical issues recorded. The results are found in Table 3 with the percentage of textbooks citing the particular issue placed in parentheses at the end of each issue listed. Table 4 is a listing of ethical issues not cited by Vickers but found in one or more of the ten textbooks.

Table 3

An Inventory of Vickers’ Ethical Issues in Economics

SELF-INTEREST

- Enlightened self-interest operates in the public interest...resulting in socially responsible or acceptable actions and outcomes (80%)
 - Fallacy of composition (Buchanan – the cumulative result of a series of just actions must itself be just) applied to self-interest (60%)
- Hedonistic criteria of pleasure (*Bentham*) (50%)
- Economic society is subject to all the defects of fallen human nature...selfishness, cruelty, greed, lust, discrimination, and exploitation abound (0%)
- Market system may develop human traits of independence, industriousness, imagination and self-discipline; might also develop avarice, greed, duplicity and insensitivity to others (0%)
 - Gains in output may be accompanied by ethical losses (20%)
- Loss of community in the market system (0%)
 - Allegiance to group or class interest acknowledged (*Becker*) (40%)
 - Tension between individuality and solidarity (10%)
 - Smith’s general goodwill and human sympathy (10%)
- Deontological or axiological rather than just consequential (teleological) (90%)
 - Acknowledgment that some sense of duty or obligation might determine behaviour (100%)

NORMATIVE ASSUMPTIONS OF THE EFFICIENCY OF PERFECTLY COMPETITIVE MARKETS

- Firms always maximize profits (40%)
 - Maximization in the short run or the longer run (70%)
 - Joint stock corporation – separation of ownership from management (70%)
 - Management’s objectives may be maximization of their own life-time incomes, achievement of power, prestige, socio-economic influence (60%)
 - Management’s consideration of the interests of the workforce, the stockholders, wider social and economic welfare? (40%)
 - Convergence of risk preferences between management and shareholders through trading of common stock (20%)
 - Management’s fiduciary responsibility to providers of debt capital (20%)
 - Insider trading (10%)
 - Industrial production costs affected by attitudes toward quality control, possibly defective workmanship and other aspects of ethical obligations, responsibility, and accountability (20%)
- Maximizing behavior by individuals (100%)
 - Stable preferences (30%)
 - Ex ante, well defined preference orderings (10%)
 - Autonomy of the individual (60%)
 - Individual ethics influenced by market forces (0%)
 - Contrary to the neoclassical postulate of autonomous and exogenous market participants, individuals are formed, as to their epistemic status and economic characteristics by their participation in the market process itself (0%)
 - Individuals make markets and markets make individuals (10%)
 - The “other” orientation of the individual (30%)
 - Smith’s general goodwill and human sympathy (10%)
 - The interdependence of preferences and of the conflict of rights that may follow from the expression of those preferences (e.g., abortion rights)(vs. preference autonomy) (0%)
 - Sen’s commitment and sympathy (0%)
 - The distribution of income influences individuals’ conceptions of attainable levels of satisfaction (10%)
- It is in no sense true that the possession of more material goods, or for society as a whole a larger level of GDP, necessarily implies a higher level of welfare (*limitations of GDP as an overall measure of well-being*) (100%)
- Optimal information (50%)
 - Advertising and promotion (100%)
- Ceteris paribus (100%)

- Little market stability – no logical basis for summation of individual desires, preferences, intentions into a market demand curve...inconsistent and irreconcilable (0%)
- Marginal productivity measures the social contributions of factors (90%)
 - To define and measure the marginal product of labour must hold all other factors constant...not possible (30%)
 - Wage rate in part determined exogenously by the distribution of bargaining power between the employer and the employed (see Distribution) (80%)
 - Under conditions of full-employment labour bargaining power is increased (10%)
 - Labour market discrimination (90%)

USURY (loan sharks) (40%)

CONSPICUOUS CONSUMPTION (Galbraith, Veblen) (30%)

PRESERVATION OF THE STATUS QUO

- An apologia for capitalism and its class interests (10%)

FULL EMPLOYMENT

- What constitutes full employment? (100%)
- Does the economy tend toward full employment? (100%)
- Underutilization of an economy's resources (100%)
- Allocation of resources to consumption or saving (100%)
- No necessary correlation exists between economic justice and economic efficiency (90%)

HONESTY AND INTEGRITY

- Impact on transactions costs (0%)
- Not telling the truth, not keeping a promise (0%)
- Adam Smith skeptical with respect to human nature and ability to adhere to honesty and integrity (60%)

INTERDEPENDENCE OF LEGAL, CULTURAL, POLITICAL AND ECONOMIC INFLUENCES (0%)

VALUE NEUTRAL MEANS

- The means employed determine the nature of the ends produced (10%)

DISCRIMINATION (70%)

- Provision of equality of opportunity (by gender, race, ethnicity) (70%)
 - Access to education; fairness of educational facilities among different population segments, social classes, and geographical areas (50%)

CONCENTRATIONS OF ECONOMIC POWER (EXPLOITATION)

- Monopoly, oligopoly, monopsony (100%)
 - Exploitation of consumers through pricing power (100%)
 - Inefficient allocation of resources (100%)
 - Tied outlet dealerships and tied prices (70%)
- Unions (90%)
 - Cost-induced inflation from unions (30%)
- Exploitation of the providers of factors of production (*monopsony*) (50%)
- Employment procedures and practices (30%)
 - Wage contracts, work rules, asymmetric bargaining power (40%)

MARKET FAILURE

- Externalities (e.g., pollution) (100%)
 - Ecological preservation (70%)

DISTRIBUTION OF ECONOMIC COSTS AND BENEFITS

- Distributive justice (100%)
- The rightness or wrongness of property entitlements or property rights (70%)
- Distribution of rewards for work (between and among capital and labour) (70%)
 - Attempt on part of different classes of income earners to increase their shares of national income and production to the disadvantage of other classes (*rent seeking*) (50%)
 - Special interest groups (50%)
 - Capital employs labour: providers of capital have a right to all value (surplus value) after paying the suppliers of labour (80%)
 - Labour employs capital (40%)
 - Are the risks of production shared? (30%)
 - Providers of capital entitled to a risk-adjusted rate of return (30%)
 - Labour is clearly exposed to the risks associated with specialized production, the business cycle (20%)
 - Labour sharing in ownership of means of production (*profit sharing*) (30%)
 - Over-remuneration of CEOs (40%)
- The endowments with which participants in an economy enter the earnings process (100%)
 - Intergenerational transfers of benefits and costs (80%)
 - Inheritance and estate taxation (70%)

- The acceptability of the initial distribution of endowments in the economy (economic efficiency vs. technical efficiency) (50%)
- Certain levels of skills and abilities, knowledge, motivations, ambition and other individual characteristics cannot be redistributed (100%)
- Distribution of economy's resources between private and public sectors (100%)
 - Efficient employment of public sector resources (e.g., government contractors; cost plus contracts) (70%)
- Welfare policies and programs (100%)
 - Pigou: diminishing marginal utility of wealth makes redistribution more acceptable (30%)
 - Progressive taxation (100%)
 - The validity of interpersonal comparisons of utility (20%)
 - The uniqueness, separability, and psychological individuality and sanctity of persons engaged in the economic and social process (0%)
 - Charity (10%)
 - The free rider problem and charity (0%)
 - The problem of assurance (0%)
 - Minimum social goods (40%)
 - A minimum acceptable income level to be made available to each employable individual, adjustable in the light of familial and dependent responsibilities (minimum guaranteed income; economic safety net) (30%)
 - Consumption targets vs. distributive justice (10%)
- Ethics of entitlement (incentives or disincentives to work) (70%)
 - The ethic of work (40%)
 - The ethic of contribution – does work effort derive from a deontological, or obligatory, or a teleological or consequentialist premise (0%)
 - The ethic of responsibility (40%)
 - Self-fulfillment (0%)
 - The ethic of accountability (20%)
 - To every reasonable extent poverty conditions should be alleviated in a manner that preserves human dignity, at the same time as incentives for individual responsibility and participation in productive activity of the economy are preserved (*poverty trap*)(40%)
- Inequalities tend to produce...envy, hatred and malice (0%)

SKEPTICISM ABOUT WHETHER ANY MORAL PRINCIPLES AT ALL CAN BE KNOWN OR PROVED TO BE TRUE

- A duty or obligation to do the will of God (0%)
- Dewey's position: nothing is intrinsically good or bad, and moral standards are like rules of grammar that are capable of changing with changing customs and conditions (100%)

- Act utilitarianism: the rightness of an action is judged scrupulously by the consequences of the act (10%)
 - May be necessary to make choices that are morally reprehensible (e.g., saving one's mother from a burning building or saving a great man whose works were more likely to benefit mankind) (0%)
 - What is the basis for deciding what is moral? (0%)
- Rule utilitarianism: a rule acceptable as a general practice in society (i.e., the Kantian categorical imperative) (10%)
- Smith's "impartial spectator" (10%)
- Hume's "judicious spectator" or external "bystander" (0%)
- Robinson: ethical institutionalism "implanted in each of us by our upbringing.." (0%)

INDIVIDUAL SATISFACTION MAY INHERE IN THINGS THAT ARE ILLEGAL OR MORALLY REPREHENSIBLE (or NOT IN THE INDIVIDUAL'S BEST INTEREST)

- Fetal research (0%)
- Fetal abortion (0%)
- Illegal drug use (40%)
- Addictive drug traffic (40%)
- Vice (*prostitution, gambling*) (20%)
- Pornography (0%)
- Handguns (0%)
- Cigarette (tobacco) manufacturing (40%)
- Ethics of advertising (70%)

Table 3 Source: Douglas R. Vickers, *Economics and Ethics: An Introduction to Theory, Institutions, and Policy*. Westport, CN: Praeger Publishers, 1997.

The ethical issues raised by Vickers appear to fall into three broad categories. First are issues that are cited in all ten introductory textbooks, or cited in the majority of the textbooks. Most of the frequently cited issues are of significant ethical import and students will certainly benefit from grappling with them (e.g., discrimination; the 'fairness' of inheritance; pollution; market concentration and the exploitation of consumers and suppliers; the distribution of resources between the private and public sectors; the principal-agent issue; the limitations of GDP as a measure of societal well-being; the rightness or wrongness of private property rights). Of course many of the issues are noted only in passing and ignored in the subsequent technical analysis. All the textbooks, for example, acknowledge that pursuit of self-interest may extend beyond material objects and sensual pleasures, only one consequently demonstrates throughout the text how social, cultural, and historical values play a role in economics. Still, all the author(s) have opened the door to more substantive discussion of these ethical dimensions of economics. The instructor can not be accused of implementing a "hidden agenda" because she or he would merely be extending the consideration of issues already introduced by the textbook.

The second grouping is those ethical issues that receive mention in at least one textbook but not in a majority. Here again are issues where serious discussion may lead students to more solid ethical and economic ground. For example, since it is impossible to hold the contribution of all inputs to production constant, can workers ever be paid for their true contribution to production? Since labour endures the risks of changing market conditions shouldn't labour share in a company's profits? How can poverty be alleviated in a manner that preserves human dignity, at the same time as incentives for individual responsibility and participation in productive activity are preserved? What constitutes usury? What constitutes an acceptable balance between individuality and commitment to community? Should economic growth be curbed if it entails ethical losses?

Third, there are the issues that receive no mention in the textbooks. Many of these are central to the Christian worldview and Christian conduct but violate the politically correct position of complete permissiveness. These issues include: the sinfulness of man; the impact of the market system on community; the basis for morality and the law, including the existence of God and transcendent values; the importance of charity; the requirement of honesty; the unacceptability of all ends and any means (even if the means are efficient!); the prohibition against envy, hatred, greed; the sanctity of life. Although they are not introduced in the textbooks, many of these issues can be raised by an instructor from the perspective of their implications for economic life. What, for example, happens to transactions costs and total economic output in the absence of honesty in weights and measures? in contracts? Why shouldn't child pornography be treated like any other "free" market? Why shouldn't persons who will cost an economy more than they will contribute be killed with dignity (e.g., elderly with Alzheimer's; malformed, crippled fetuses; severely retarded adults)?

Finally, as additional 'jumping off' points, the supply of ethical issues made available in introductory texts extends beyond those covered by Vickers (Table 4).

Table 4
Additional Ethical Issues Cited in Introductory Textbooks

GOVERNMENT

- Lotteries
- Discouraged workers
- Social costs of unemployment (e.g., separation, divorce, depression)
- Welfare reform
- The marriage tax
- Exploitation of dependents
- Regulation: creative response, the capture hypothesis
- Auto safety regulations
- Drunken driving

- Social regulation: concerned with the conditions under which goods and services are produced, the impact of production on society, and the physical quantities of the goods
- Government promotion of industry: low interest loans, loan guarantees, favorable tax treatment, R&D subsidies, antitrust immunity, protection against foreign competition
- Resale price maintenance
- Beggar thy neighbour
- Political corruption and bribery
- The relationship between income and political influence
- The short time horizon of politicians
- School vouchers
- Special drawing rights

INTERNATIONAL

- Global income disparity
- International barriers to trade (e.g., tariffs, import quotas)
- Impact of import restrictions on low income households
- The costs and benefits of immigration
- Dumping
- Land reform
- The caste system
- Population control

MICROECONOMIC ISSUES

- Health care: limited access, the uninsured, the quality and value of life
 - A market for human organs
 - A market for babies
 - Ticket scalping
 - Black markets (underground economy)
 - Meritocracy
 - Downsizing, outsourcing
 - The tort system (liability rules and lawsuits)
 - The moral hazard problem
 - The adverse selection problem
 - Asymmetric information in market transactions
 - No fault divorce
 - Comparable worth
-

4. A Theological Framework

Christian theology, the study of God (theos – God, logos – discourse) from the Christian perspective, is logically the basis for Christian ethics, the study of Christian standards of conduct and moral judgement. While it is instructive for students to see the

application of Christian ethics to particular economic issues, our ultimate objective is for students to develop the capacity to puzzle through the ethical perspective on any economic issue that they might encounter. This is best accomplished by providing students with an explicit analysis framework. Most of the excellent work on Christianity and economics, unfortunately, co-mingles theology and ethics, providing no clear theological analytical framework. An exception is Donald Hay's *Economics Today* (1989).

Following is a proposed theological framework for consideration of ethical issues in economics. The framework starts with that provided by Hay and is (reinforced and) supplemented by the thinking of other scholars. The framework is based upon Scripture with a background of doctrine, and, of course, the dividing line between what constitutes theology and what constitutes ethics is grey.

- *ONE GOD* - "Hear, O Israel, the Lord our God, the Lord is One!" (Deut 6:4)¹³ Man is to worship God, and God alone. Idols are forbidden. We are to obey His commandments. There are absolute, transcendent values. There is truth. God conducts a theocracy, not a democracy. He will judge us according to His values.
- *CREATION, MAN* - God breathes life into man and gives man free will. Man is allowed to make choices and is held accountable for those choices. Man is given the intellectual capacity for understanding the order and facts of creation.
- *CREATION, THE EARTH* - God creates the earth and gives it to man. Man is "to work the earth and take care of it." (Gen 2:15) God mandates man's stewardship and ethical responsibility for the "need- satisfying resources inherent in created reality."¹⁴
- *THE FALL AND JUDGEMENT* - Even when all his needs are met, man is restless and subject to temptations, the most basic of which is a desire to be like God, to exist forever and to have complete knowledge. As a result of his sin in the Garden of Eden, man now lives in a fallen world filled with greed, lust, fear, injustice, disease, natural disasters. Man's sinful nature poisons his relationships with his fellow men and his fellowship with God. While he worked in the Garden as well, man's work on the land "now involves an element of struggle and domination."¹⁵ He relentlessly searches for security through material possessions, control of nature and power over other men.
- *THE COVENANT WITH NOAH* - Although the "imagination of man's heart is evil from his youth" God covenant's to never "again destroy every living thing..." (Genesis 8:21) God's grace is extended to all mankind "regardless of their spiritual standing before God."¹⁶
- *THE COVENANT WITH ISRAEL* - In His covenant with the people of Israel, God provides the Law and the assurance that obedience to the Law will bring spiritual and material prosperity and disobedience will bring punishment. The Law provides

guidelines for: the structure of society (including the state), the division of land, the pattern of work, lending and borrowing, charity (including tithing), treatment of the poor, and the administration of justice.¹⁷

- *THE NEW COVENANT* - God's covenant is extended beyond the people of Israel to all mankind. It is made clear that all are intended to be God's people and to love one another. Based upon the ministry, death and resurrection of Jesus,¹⁸ the new covenant allows sinful man to re-establish his fellowship with God through the grace of Christ and the communion of the Holy Spirit. And Christ lived and died for all. The new covenant does not abolish the Law, it requires man to go beyond the Law both behaviorally and spiritually. If men first seek God's Kingdom and His righteousness then they do not have to worry about their life, their body, what they eat or drink or wear. While work, sacrifice and death are assured in this world, through the Spirit there will be joy and peace. Individual Christians are instructed to gather together in communities called churches to worship, teach and support one another.
- *THE REVELATION* - With the final victory at the Second Coming of Christ man's struggle for physical survival and wealth ceases. Babylon, the epitome of commerce whose merchants were the envy of the world, is thrown down. The city which wanted a tower that would reach to the heavens so they could make a name for themselves, is no more. This marks the defeat of cosmos (the world with its systemic evil).¹⁹

In the next section these Biblical themes are used as the basis for a set of Christian ethics (social principles) relevant to economic life.

5. Ethical Principles For Economic Life²⁰

The implications of the theological themes for Christian economic conduct are obvious and many. The listing of Christian ethical principles for economic life that follows, again has its basis in Hay (1989) and includes contributions from other scholars (most notably Beisner, Blank, Novak, Sider, Surdyk, Vickers, and Wogaman). An attempt was made to minimize duplication and to not stray from principles into applications.

Personal Life

- ✓ Christians are to have a personal relationship with God through Christ and the Holy Spirit. They are to acknowledge, worship, praise, communicate with and submit to God.

Community

- ✓ Christians are to love God and their neighbour. We have mutual responsibilities to each other and "our economic life must recognize this

common humanity, providing opportunities to serve God and to serve other human beings...God's household becomes our household, and there are no longer any strangers among us."²¹ Each human life is sacred.

- ✓ The worship of God is a community activity (ecclesia). Christians are to support the church with their presence, prayers, service and gifts.
- ✓ Christians are to tithe in support of the church and the needy, and are not to neglect justice, mercy and faithfulness. (Matt 23:23)
- ✓ God has endowed individuals with differing talents and skills, making most productive work a cooperative venture (individuals joining together in a common task). Markets and economic institutions should facilitate the exercise and development of individuals' talents and reward them appropriately. Economic equalitarianism is rejected.
- ✓ God intends the family and the church to be the primary institutions for the spiritual and economic nurturing of persons.

Stewardship

- ✓ Everything belongs to God. ("God is the Creator and Sustainer of all life. He has made all things and He intends them to be used to His glory."²²) While man is given dominion over the created order to provide for his existence, he is also accountable to God for his stewardship (use and allocation) of those natural resources. This responsibility is both individual and collective (e.g., institutions, government).
- ✓ Persons are accountable to God for the stewardship of their individual talents and resources.
- ✓ "Humans are called to be co-creators with God, bringing forth the potentialities the Creator has hidden...they (are) to be inventive, prudent, farseeing, hardworking—in order to realize by their obedience to God's call the building up and perfecting of God's kingdom on earth...to labour for human progress."²³

The Distribution of Goods and Wealth

- ✓ "Every person has a right to share in God's provision for mankind for their basic needs of food, clothing and shelter. These needs are to be met primarily by productive work."²⁴ Every person should have access to the resources necessary for life and ensured the opportunity to participate in the economy. Charity is obligated to those who are in need, particularly because of circumstances beyond their control.
- ✓ Man is to rely on God rather than on material possessions. We are to seek first the Kingdom of God.
- ✓ Wealth is not anathema to God. The generation of wealth allows for the improvement in the material well being of all persons and may facilitate charity. Wealth, at the same time, can easily lead to idolatry.
- ✓ Covetousness (greed) is sin. Conspicuous consumption is to be avoided. Self-indulgent, pleasure-oriented hedonism is sin.

- ✓ While individual ownership of property is acceptable, because everything ultimately belongs to God there are no individual or institutional perpetual rights to property.

Work

- ✓ Man has a right and an obligation to work. If the right to work is to be exercised the economy must be generating jobs (ideally with multiple possibilities of employment and reward). Opportunities to work should not be limited by discrimination. The obligation to work is part of the creation mandate to subdue and conquer. If a person is able to work, they are to do so. If they choose not to work, they are to be held accountable.
- ✓ God hates laziness. We are to work as if working for the Lord. Workaholism, however, is idolatry.
- ✓ Neither workers nor employers nor suppliers nor consumers nor borrowers nor lenders are to be exploited.

Justice

- ✓ God desires us to recognize and protect the sanctity and rights of the individual, individual dignity and freedom.²⁵ Persons are to be treated equitably.
- ✓ God is on the side of the poor, the weak and the oppressed and wants His people to fight economic injustice.
- ✓ Forgiveness and redemption are to characterize our human relationships.
- ✓ Final judgement is God's.
- ✓ Liberty is the freedom to do what is right. "Any economic system that attempts to force acts of love, such as charitable giving, violates the true nature of love and so commits injustice...charitable giving cannot be compelled."²⁶
- ✓ Contracts and commitments are to be honoured.²⁷ God desires commutative justice (e.g., prices are not just when there is fraud or coercion in the market).

The State

- ✓ Because man is steeped in sin and his heart is desperately wicked, the state is necessary for the adjudication of justice, to protect against aggression and to provide for public goods. For the same reason concentration of civil (and economic) power should be kept limited, with appropriate checks and balances, and complete freedom in economic affairs is rejected. "We are sinners, and our economic life always shows it."²⁸
- ✓ Christians have the same civic responsibilities as all citizens and as citizens of the Kingdom of God are to bring God's standards of righteousness and justice, His transcendent values into the public square. Civil authorities are to be obeyed until they set themselves in opposition to divine law.²⁹

6. What Is Needed?

The position that economics is a pure science divorced from ethics is a relatively new and, in fact, minority one in the scholarly literature. Beginning with Moses and the Hebrew prophets, continuing with Plato and Aristotle, the early Christian church, the Scholastics of the Middle Ages, the religious principals of the Reformation, the Physiocrats, Hume, Adam Smith, and the majority of classical economists, economic issues were always considered within an ethical framework.³⁰ The issues encompassed wealth *and* welfare, poverty *and* charity, growth *and* justice, individualism *and* community. Moreover, during the 20th century and particularly during the last three decades there has been a steady stream of books and articles by Christian scholars dealing with economics and ethics.³¹

Given the size, scope and quality of the scholarly output on issues high in content for both economics and ethics, why are ethics so underrepresented in mainstream economics today and the average student so uninformed? I can propose at least four reasons. First, given the success and attractiveness of the natural sciences emanating with the Enlightenment (the Age of Reason), the swing of the pendulum of economics toward a pure, 'objective,' predictive science had to run its full course. The zenith occurred with the triumph of the mathematical economists and econometricians during the 1950's and 1960's.³² The air began to leak from the balloon with the failure of econometrics to anticipate and explain the stagflation of the late 1970's and with the unrelenting reality that increased mathematical sophistication and data did nothing to reduce predictive error. (*Ceteris paribus* is a cruel mistress...)

Second, ethics has been crowded out as the substantive technical material to be covered in even an introductory economics course has, since Marshall, become enormous. Can a student claim to have a working knowledge of economics without understanding the basic logic of price elasticity and its relationship to total revenues, the government multiplier, the equilibrium effects of externalities, the mechanics of exchange-rate systems? Aside from such quantitatively gifted students as those whose main subject is engineering, the average person does not easily master these concepts. It takes time, both in and outside of class, to climb the technical learning curve. Consequently, material on the history of economic thought where students typically encounter the ethical dialogue behind what is currently considered well entrenched, solid mainstream economics has been eliminated as required in most economic curricula. This has been compounded by the recent smashing victory of open market economies over communist systems and over many socialist systems as well. Having to confront the arguments of Marx and major socialists forced students to give focus to the tension between the individual and the community (the collective).

Third, the past four decades has seen the ultimate ascendancy of humanism in the public square. Under this system the only absolute value is that there are no absolute values. Such an environment not only makes the discussion of ethics "politically incorrect," it renders it futile. All behaviours can be justified. It does not matter whether conduct is a product of the Holy Spirit or of lust. Everything is relative.

Finally, for the average student the barriers to entry to the understanding of ethical issues in economics have been too high. Despite their substantive output, Christian scholars have been preaching to the choir.³³ Powerful insights are hidden behind “two dollar”, promotion and tenure words such as: ‘hermeneutics,’ ‘eschatology,’ ‘epistemology,’ ‘consequentialism’ and ‘deontology.’ References are made to Arrow’s impossibility theorem, Rawls’ theory of justice, nontransitive preference orderings and Pareto-optimal trading points. In his second epistle to the Corinthians Paul states: “For we write you nothing other than what you can read and also understand: I hope you will understand until the end—as you have already understood in part—that on the day of the Lord Jesus we are your boast even as you are our boast.” (2 Cor 1:13-14)

I would suggest that the ideal way to reach the average student would be a very ‘readable’ supplementary textbook to parallel the many fine current introductory economics texts. The supplementary textbook would begin with a review of the range of ethical considerations in the history of economics. Next, an underlying theological framework and derivative Christian social principles similar to those presented in this paper would be covered. The remainder of the book would consist of relatively short chapters covering the ethical aspects of various economic assumptions (e.g., the pursuit of self-interest enhances the public welfare) and topics, with a continual focus on “real world” applications. In keeping with the structure of introductory economics textbooks, the chapters would be grouped under the major headings of: a) an introduction to economics; b) macroeconomic issues; c) microeconomic issues; and d) international economics. Instructors would be able to choose those issues that best suited their course sequence and the occurrence of ethical issues in their principle textbook. The text would avoid professional jargon and would use only those technical terms covered in an introductory principle textbook (e.g., economic efficiency, diminishing marginal utility).

Alternatively, using a theological framework and derivative Christian social principles similar to that presented in this paper, instructors could either construct their own positions on various ethical issues and/or have students read relevant application oriented articles. Appropriate articles may be found in a book of readings such as *On Moral Business: Classical and Contemporary Resources for Ethics in Economic Life*, ed. Stackhouse, et al., a chapter from books such as Larry Burkett’s *Business by the Book: The Complete Guide of Biblical Principles for Business Men and Women*, or in such journals as *Markets & Morality*, *The Journal of the Association of Christian Economists*, or the *Journal of Biblical Integration in Business*.

7. Conclusions

The current mainstream principle textbooks do a fine job of presenting the technical and conceptual frameworks that underlie the economic success of the market system. Despite skepticism to the contrary, these textbooks also cite a range of ethical issues and thereby provide ample opportunity for instructors to introduce through discussion and supplementary materials the serious consideration of ethical issues in economics, even in a secular and committed “value-free” institution. Grappling with

these many ethical issues will return substance, relevance and excitement to the learning of economics, and may reverse the long decline in the population of economics students, students who are seeking more than simplistic technical “solutions” to essential individual and collective decisions. Frank discussion of ethical issues will counter the standard impression that the worldview of mainstream economics is that unrelenting and generally unconstrained pursuit of self-interest is a virtue. This is a worldview that has led many persons to stubbornly reject the obvious material and democratic benefits brought by the market system.

Christian instructors must incorporate the consideration of ethics in their teaching of introductory economics. Christians are mandated by God to present His truth to a lost world and should we fail to do so “they shall die for their sin, and their righteous deeds that they have done shall not be remembered: but their blood I (God) will require at your hand.” (Ezek 3:20) The Bible, supplemented by the rigorous scholarship of sincere theologians over almost two millenia, provides clear standards of conduct in many areas of economic behavior and in the remainder enlarges our vision, providing room for empirical research and ethical reflection and the influence of the Holy Spirit on both.

Notes

¹ 1998 data from Monument Information Resource based upon sales from college bookstores.

² See Robert H. Frank, Thomas Gilovich, and Dennis T. Regan, 1993.

³ Samuelson and Nordhaus, 1998, p 8.

⁴ Douglas Vickers, *Economics and Man: Prelude to a Christian Critique*, 1976, 44-45.

⁵ Tom Rose, 1989, 16-17.

⁶ See Donald A. Hay, 1991, chapter 2 in particular.

⁷ <http://netec.wustl.edu/JokEc.html>

⁸ David M. Gould, et al, 1993.

⁹ Gwartney, et al, 1996.

¹⁰ W. Michael Cox and Richard Alm, 1997.

¹¹ W. Michael Cox and Richard Alm, 1998, 3-6.

¹² 1998 data from Monument Information Resources was used to select the following top selling principle textbooks: Colander, *Economics*, 3rd ed. NY, NY: McGraw-Hill, 1998; Gwartney and Stroup, *Economics: Private and Public Choice*, 8th ed. NY, NY: The Dryden Press, 1997; Mankiw, *Principles of Economics*, NY, NY: The Dryden Press, 1998; Mansfield and Behraves, *Economics U\$A*, 5th ed. NY, NY: W.W. Norton & Co., 1998; McConnell and Brue, *Economics: Principles, Problems, and Policies*, 14th ed. NY, NY: McGraw-Hill, 1999; Miller, *Economics Today*, 9th ed. NY, NY: Addison-Wesley, 1997; Samuelson and Nordhaus, *Economics*, 16th ed. NY, NY: McGraw-Hill, 1998; Schiller, *The Economy Today*, 7th ed. NY, NY: McGraw-Hill, 1997; Tucker,

Economics for Today, Minneapolis/St. Paul, MN: West Publishing Company, 1997
Plus, a best seller from the United Kingdom: Sloman, *Economics*, updated 3rd ed.
London: Prentice Hall Europe, 1999.

¹³ Unless otherwise noted all Scripture is from the NKJV, Thomas Nelson, Inc.

¹⁴ Vickers, 1976, 2.

¹⁵ Hay, 1989, 21.

¹⁶ Hay, 1989, 27.

¹⁷ Hay, 1989, 32-38.

¹⁸ Hay, 1989, 43.

¹⁹ For a thorough theological consideration of the meaning and role of Babylon see Linthicum, 1991.

²⁰ This subheading is an adaptation of Hay's "Biblical principles for economic life," which I find quite succinct!

²¹ Blank, 1992, 21, 46.

²² Sleeman, 1953, 15.

²³ Novak, 1982, 39-40.

²⁴ Hay, 1989, 75.

²⁵ Vickers, 1976, 47.

²⁶ Beisner, 1989, 38, 40.

²⁷ J.D. Mason and K.C. Schaefer, 1990, 54-55.

²⁸ Rasmussen, 1981, 78.

²⁹ Colson, 1987, 278-79.

³⁰ See Flubacher, 1950, for a thorough and enjoyable review of the integration of ethics throughout the history of economics. An excellence though brief review is James E. Alvey's 1999 article.

³¹ See, for example, the references in the bibliography to this paper.

³² See Yonay, 1998, Chapter 9.

³³ An opposite view, for example, is expressed by Mark Allan Powell in his discussion of the research on Jesus as a figure in history: "All these images of Jesus come into play for historical researchers, and eventually, affect perception at the popular level as well. The work of academicians has a way of trickling down to the people in the pews...Preachers are shaped by what they read, and they, in turn, shape their congregations." (1998, p 64). Altogether I find this to be a substantial overstatement of the influence of academicians on society, and particularly in the case of Christian ethics and economics. Even before the scholarly language of ethics is overlaid, the majority of persons, including pastors, find economics a technically intimidating, and perhaps boring,

subject. Of the many outstanding books on Christianity and economics at least half were out of print within less than a decade and I doubt that many ever even achieved a breakeven circulation of ten thousand.

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COMPETITION: BIBLICAL THEMES AND EMPIRICAL EVIDENCE

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Definition: *Competition* 1. The action of endeavouring to gain what another endeavours to gain at the same time; the striving of two or more for the same object. (Shorter Oxford English Dictionary)

1. Introduction

Competition is a central organising concept in economics which can be dated back to a tradition of economic analysis which existed even before Adam Smith¹. Stigler notes that ““Competition” entered economics from common discourse, and for a long time it connoted only the independent rivalry of two or more persons”². The idea that competition should be analysed and that it, rather than political or ethical forces, was beneficial in determining prices was the starting off point for the discipline of economics.³ Since then competition has become a term with which we are all familiar but which can have very precise and different meanings. McNulty usefully distinguishes the tradition which sees competition as a process from the tradition which associates competition with market structure. The first focuses on concept of competition as ‘one of business behaviour which might reasonably be associated with the verb “to compete”’, while the second focuses on ‘competition as a state in which that process had run its course’⁴. The first tradition traces a line through Smith to Marx and Hayek while the second proceeds through Cournot, Jevons, Marshall and Knight and associates competition with the notion of ‘perfect competition’. Both share the idea that competition is linked to the theory of value and the determination of rents, profits, wages and prices.

* The authors wish to thank David Cook and David Prior for shaping discussions on this topic, and Jackie Cook, Geoff Harcourt and participants at the 1998 ACE Conference for their many helpful comments on an earlier draft. All remaining inadequacies in the paper are our own.

¹ See Eatwell, J., (1982) ‘Competition’, in Bradley, I. and Howard, M., *Classical and Marxian Political Economy Essays in Honour of Ronald L. Meek*, Macmillan, Basingstoke, pp. 203-228 and McNulty, P.J., (1967), ‘A note on the history of perfect competition’, *Journal of Political Economy*, Vol.75, pp.395-399.

² P.1, Stigler, G. (1957), ‘Perfect Competition, Historically Contemplated’, *Journal of Political Economy*, Vol.65, No.1, pp.1-17.

³ McNulty (1967), p.396.

⁴ McNulty (1967), p.398.

In this paper we start from the definition of competition as a behavioural process, in the sense of the dictionary definition. We make a number of key observations about the context, process and results of competition. We attempt to analyse the observations in the light of biblical truth. The aim is to draw out some interesting relational parallels between these observations and biblical themes. This exercise has value to the extent that it highlights what is good about the nature of competition in market economies and what is bad about it from a biblical standpoint. In doing this we are in a tradition of economics which has drawn attention to some of the apparent failings of competition⁵.

The exercise is inspired by the observation that a lot of recent empirical work on market dynamics has now given us a much richer picture of what competition is actually like. Competition in practice is a long way from the textbook models of different types of markets: far from being static, markets are characterised by a continual entry and exit as well as intense rivalry between existing firms.

The paper is organised as follows. In section 2 we look at competition in the Bible and how it differs in different periods of biblical history. Section 3 examines the context of competition: asymmetric power in the market place and the adversarial nature of competition. Section 4 analyses the process of competition. Two characteristics of the process are looked at: firm death and restructuring within the process of creative destruction and the tendency for large firms to beat small firms. Section 5 investigates the results of competition. Here we examine three aspects of the consequences of competition: improvements in productivity and product quality, market inefficiency and the inequality of market outcomes. Section 6 is a short conclusion.

2. Competition in the Bible

We examine what the Bible might be saying about competition by looking at different sections of the Bible in turn.

Competition in the Garden of Eden contrasts with competition after the Fall⁶. A crucial cause of competition is scarcity⁷. Thus in one sense there was no competition in

⁵ Stigler (1957) notes three main criticisms made of competition: the distributional consequences of competition, the inefficiency resulting from the existence of externalities and the assertion that competition does not provide the right types of economic progress.

⁶ Gen 3.

⁷ Some have objected to this view, notably J.S.Mill, 'Private property and its critics', *Political Economy*, 1848, pp.201-20, 746-94 reprinted in Stackhouse, L., McCann, D.P., Roels, S.J. and Williams, P.N. (1996), *On Moral Business*, Grand Rapids: Eerdmans pp.215-224. The problem is not scarcity but mankind's greed. This is in line with God's promise to provide for the world's needs in Gen 8: 22. Griffiths, B. (1984) *The Creation of Wealth* London: Hodder and Stoughton, asks 'is competition Christian?' (p.73). He categorically states 'In a world of perfect Christian men and women, competition would

the Garden of Eden⁸ because of the lack of competition for scarce resources. Adam and Eve did not therefore need to compete economically as they had more than enough resources (and there was no-one to compete with). Arguably competition is an undercurrent in the Fall because it was in desiring to be like God⁹ - competing with Him - that Eve and Adam eat the fruit of the tree of the knowledge of good and evil. There was also the implicit competition between God and the serpent for the souls of Adam and Eve. Competition is not solely about scarcity as in the rivalry between Cain and Abel for God's affections¹⁰. This is not because God's favour was in short supply¹¹ but Cain still felt that it was because of his brother that he had not found favour with God¹².

The Fall ushers in the era of scarce resources and difficulty of work in which we now live¹³. Work is hard and we must all endure a certain amount of suffering in order to acquire the resources that we need to survive¹⁴. Of course production could be organised via markets or hierarchies post Fall. There is no need for a competitive production system. There is early biblical evidence of co-operation in production: in the building of cities¹⁵ and in the building of the Tower of Babel¹⁶. Co-operation is not evidently superior to markets because co-operation still may involve exploitation within the hierarchy e.g. Laban's exploitation of Jacob¹⁷ or the making of the golden calf¹⁸. Indeed one of the primary advantages of capitalism over socialism in the context of the Fall

be redundant.' Although scarcity in such a world would not be a problem, in a world where people are not perfect 'the case for competitive markets is that in a world of scarcity, they are superior to other practical forms of economic organisation in terms of allocating resources.'

⁸ Gen 2.

⁹ Gen 3:5.

¹⁰ Gen 4:2-5.

¹¹ God specifically says to Cain between his offering and his killing of Abel 'If you do what is right will you not be accepted?' (Gen 4:7), implying that it is up to Cain to please God independently of what Abel does. See also the comment on Cain in 1 John 3:12.

¹² Gen 4:8.

¹³ There is a debate about whether scarcity (a central concept in neo-classical thinking about economics) or the difficulty of economic reproduction (a central idea in Marxist economic thought) is the basis of competition. The account of the curse of the Fall seems to favour the difficulty of reproduction theory, but the introduction of scarcity in a meaningful sense also seems to be associated with Fallenness of creation and of Man.

¹⁴ Gen 3:17-19.

¹⁵ Gen 4:17.

¹⁶ cf. Gen 11:3.

¹⁷ Gen 29:14-30.

¹⁸ Exo 32:1-6.

would seem to be the need to restrain the capacity for evil to flourish within too powerful a hierarchy.¹⁹

Old Testament Israel clearly operates in a very different economy to the one in which we operate. Although the agrarian economy involves much less financial risk than that inherent in a modern economy - it is still characterised by economic uncertainty and hardship. For instance, Ruth was reduced to gleaning Boaz's corn²⁰ following the death of her husband and the Old Testament embodies many laws designed to protect the economically disadvantaged who have lost their assets legitimately in the economic process e.g. in the Jubilee principle²¹.

The Old Testament also raises the issue of the appropriate boundaries of competition both in terms of the morality of particular goods, such as the services provided by mediums²², and the morality of particular markets, such as the market for loans among Israelites²³. Sachs, in a recent summary of the fundamental insights of Judaism with respect of the morality of markets, notes that 'there are things which we may not exchange however high the price'²⁴. In this tradition Jesus notes that the human soul should not be traded.²⁵

The New Testament stands out firmly against the thinking of the world²⁶. The world is a place of rivalry but heaven is not. The supreme competition in the world is the competition for souls between God and the Devil²⁷. However the church is to reflect the

¹⁹ Many right-wing Christians might argue that economic experience strongly suggests that inefficiency is often associated with hierarchies, especially the hierarchies which characterised centrally planned economies and large state owned enterprises. See for example Novak, M. (1991), *The Spirit of Democratic Capitalism*, London: IEA and Griffiths (1984). Novak points to the idea that hierarchies tend to develop in order to exercise oppressive authority, arguing that socialist thought 'fuels its historical tendency toward coercive behaviour and sectarian schism.' (p.201). Griffiths discusses the inefficiency of public sector enterprises in the UK (pp.31-32).

²⁰ Ruth 2.

²¹ Lev 25.

²² Deut 18: 9-13.

²³ Deut 23: 19.

²⁴ Sachs, J. (1998), '*Markets and Morals*', 1998 Hayek Memorial Lecture at the Institute for Economic Affairs.

²⁵ Mark 8: 36-37.

²⁶ See for instance John 15:18-27 and Rom 12:2.

²⁷ This is illustrated in the temptation of Jesus (Matt 4:1-11; Luke 4:1-13) and the parable of the weeds (Matt 13:24-39; 36-43) and in Peter's comment about the devil in 1 Pe 5:8.

values of heaven - James and John are rebuked for competing for the top jobs in heaven²⁸. The church is to be a place of co-operation and mutual support²⁹ - it is a body within which all exercise a role and where there is a hierarchy of gifts³⁰. However the reality of rivalry within the church exists and the church needs to be pragmatic in a fallen world - and there are competing factions³¹ and false teachers³² around. Thus denominations within the church often seem to serve as checks on how far from the truth the global church can stray - there even appears to be an inverse relationship between church attendance and concentration between denominations across countries³³.

There is no suggestion that there will be any competition in heaven³⁴. Once again, as in the Garden of Eden, there will be no scarcity but additionally there will be no sin or temptation to stray from God's instructions - even the competition for souls which we detected in the Garden will be eliminated.

It is important to note here that competition is not present in the ideal societies of the Garden and the New Jerusalem (in heaven). Economists must never be so caught up with the beauty of market mechanisms that they forget that markets contain the seeds of their own destruction. Brilliant economic policies are analogous to brilliant medicines: they are good in a fallen world characterised by unemployment and death but unnecessary in heaven³⁵.

3. The context of competition

Some biblical views of competition were outlined in the previous section. In this section we highlight two aspects of economic context of competition: asymmetry of power between market participants and the adversarial nature of much competition.

Observation 1: There is often an asymmetry of power between market participants.

²⁸ Matt 20:20-28.

²⁹ 1 Cor 12.

³⁰ 1 Cor 12:27-31.

³¹ It is interesting to note that Paul (in 1 Cor 3) associates debates about the relative merits of Paul, Apollos and Cephas with division within the church.

³² 2 Pe 2:1, 1 Joh 4:1.

³³ Iannaccone, L. (1991), *The Consequences of Religious Market Structure: Adam Smith and the Economics of Religion*, University of Western Ontario Papers in Political Economy.

³⁴ Examine Rev 21:1 - 22:6.

³⁵ Academic economists might take particular note of 1 Cor 1:20 and Col 2:8 'has not God made foolish the wisdom of the world?' and 'see to it that no-one takes you captive through hollow and deceptive philosophy, which depends on human tradition and the basic principles of this world rather than on Christ.'

Asymmetry is pervasive within markets. This especially true between consumers and producers. Consumers are usually weak relative to producers because there are many fewer producers than customers in most markets. This situation gives rise to instances where producers are able to exploit their customers, especially via charging high prices. Thus competition authorities have as a primary aim the protection of customers from exploitation³⁶.

Markets are characterised by a highly skewed size distribution of firms: in many markets there are a small number of very large firms and a long tail of very small firms³⁷. These firms either compete directly with each other or are involved in vertical relationships³⁸. In either case there are opportunities for the large firms to exploit their market power with respect to the small firms.

The problem of asymmetry is that power has a tendency to corrupt. If there are incentives to exploit customers or supplier firms, some powerful firms will do it. The biblical parallels are many.³⁹

Observation 2: Market competition is adversarial in nature.

As the dictionary definition of competition suggests, competition is often zero sum in nature, one firm cannot gain except at the expense of another. Competing firms are thus adversaries.⁴⁰

³⁶ For a discussion of actual competition policies see Hay, D. and Morris, D. (1991, pp.612-622), *Industrial Economics and Organisation*, Oxford: OUP. For a discussion of a Christian view of competition policy see Hay, D. (1991), 'What is fair in the Market Place? Reflections on Competition Policy', *ACE Journal*, No.11, pp.33-45.

³⁷ See for example Eurostat (1994), *Enterprises in Europe 3rd Report*, Brussels: Eurostat, for information on the distribution of employment in firms of different sizes.

³⁸ For a discussion of the ethics of vertical relationships see Jones, I.W. and Pollitt, M.G. (1995), *Economics, Ethics and Unfair Competition*, ESRC Centre for Business Research Working Paper No.22.

³⁹ For example Jezebel's desire to have Naboth's vineyard led her to abuse her power as Queen to get it (1 Kings 21:1-16, and the leaders of Persia who opposed Daniel and Mordecai (in the book of Esther).

⁴⁰ Etzioni, A. (1988), *The Moral Dimension*, New York: Free Press, argues that 'competition is a form of conflict, namely contained conflict' (p.202). As such it needs to be contained within a capsule by normative, social and government mechanisms (see Etzioni, 1988, pp.199-216). Some writers have sought to argue for a more co-operative version of capitalism as practised in Germany and Japan (e.g. Hutton, W. (1995), *The State We're In*, London: Vintage, p.287). The evidence on entry and exit rates into markets suggests some difference between Germany and the US and UK (See Cable, J. and Schwalbach, J., 1991, 'International Comparisons of Entry and Exit' in P.A.Geroski

Competition of this nature has many good aspects. Often it is motivated by a healthy desire to be the best⁴¹, by an enjoyment of doing good work⁴², the desire to achieve and push out the frontiers of knowledge⁴³ and a desire for recognition and fulfilment⁴⁴. All these things have biblical parallels and can be commendable.⁴⁵ In addition it is sometimes the case that the means may justify the ends.

One caveat with this is that winning may come at the expense of others. Enjoyment of winning may not justify the cost to the losers. A second caveat is that, while much competition may be driven by a creative desire to be the best, it can and is often focused on the destruction of the rival⁴⁶. This is within a biblical framework which warns us that desires can corrupt us⁴⁷.

The zero-sum perspective implied by adversarial competition is not one affirmed in the Bible. All can win in Christ, there is no sense in which one person's blessing or salvation reduces or precludes another's⁴⁸.

and J.Schwalbach, *Entry and Market Contestability: An International Comparison*, Oxford: Blackwell) with the US and UK having higher entry and exit rates than Germany. Moore, G. (1993), 'Beyond Competition', in J.Davies (ed) *God and the Market Place*, London: IEA Health and Welfare Unit, has argued that institutions such as Traidcraft and Shared Interest, which deliberately pay above the market price for fairly traded goods and accept below the market interest rate, suggest that it is possible to have a softer version of competition not based on lowest possible costs or highest possible prices.

⁴¹ We are enjoined to 'bring the best of the first fruits' to God (Num 18: 29); to 'do your best to present yourself to God' (2 Tim 2:15); and we are told that God wants the best for us (Heb 12:10).

⁴² Ecc 8:15.

⁴³ Slaves are to work as if they were serving the Lord (Col 3: 22-24). Some winning is clearly sanctioned by God especially triumphs over evil - we are encouraged by Paul to 'boast in the Lord' (2 Cor 10:13-17). See also Pro 15: 14 and 18.

⁴⁴ Abel wanted to please God with his offering (Heb 11: 4) and we are to desire others good (Matt 5: 6).

⁴⁵ In this vein see Novak (1991, pp.344-349) for a passionate, positive Christian view of competition, 'it is, in a sense, the form of every virtue and an indispensable element in natural and spiritual growth. Competition is the natural play of the free person. All striving is based on the measurement of oneself by some ideal and under some judgement.'

⁴⁶ Jones and Pollitt (1995). See also the prophet Samuel's speech to the people of Israel on the dangers of monarchy: 1 Sam 8: 10-18.

⁴⁷ 2 Pe 2:4 and 10 and 1 John 2:15-17.

⁴⁸ See Jam 1:5, John 1:7, John 12: 32 and 1 Tim 2:4.

4. The process of competition

The literature on market dynamics has provided many rich insights into the actual process of competition and how it proceeds. Three distinct sets of analysis can be highlighted: first on the nature of entry, exit and survival; second on the presence of strategic groups and the determinants of mobility within markets; and third on the nature of rivalry between large incumbent firms within markets.

We pick out a number of observations from this literature.

Geroski⁴⁹ notes the nature of entry, exit and survival within markets in his survey paper 'What do we Know about Entry?'. He observes that: entry rates into individual markets are high, but penetration rates are low; entry and exit rates are positively correlated; survival rates of entrants are low and even successful firms take many years to become large; large scale initial entry is penalised by high adjustment costs. In addition there is good empirical evidence for the following: entry rates react slowly to high profits; entry barriers appear to be large; high rates of entry are often associated with high rates of innovation and increases in efficiency; response by incumbents to entry is selective; and both firm age and size are correlated with the survival and growth of entrants.

Caves and Porter⁵⁰ note that consumer markets may consist of strategic groups of firms characterised by high within group competition relative to between group competition. Typically there may be three strategic groups: national branded producers, regional branded producers and unbranded firms. This is reflected in barriers to mobility which make it difficult for a given firm to move between groups.⁵¹

Sutton⁵² has highlighted the tendency for concentration ratios to be high in homogeneous goods industries with high minimum efficient scale to market size ratios or in heterogeneous goods industries characterised by vertical product differentiation (effected by R&D expenditure or advertising). His case studies highlight the fact that

⁴⁹ Geroski, P. (1995), 'What do we know about entry?', *International Journal of Industrial Organisation*, 13(4), pp.421-440.

⁵⁰ Caves, R.E. and Porter, M. (1977), 'From entry barriers to mobility barriers: conjectural variations and contrived deterrence to competition', *Quarterly Journal of Economics*, 91(2), pp.241-261.

⁵¹ This is weakly evidenced by the literature on market share and rank stability within industries which suggests evidence for the persistence of market share among the largest firms (see pp.999-1000, Schmalensee, R. (1989), 'Inter-industry studies of structure and performance', in R.Schmalensee and R.D.Willig (eds), *Handbook of Industrial Organisation*, Vol.2, Amsterdam: North Holland).

⁵² Sutton, J. (1991), *Sunk Costs and Market Structure*, MIT: MIT Press.

many industries have exhibited persistent dominance by a small number of very large firms.⁵³ Davies and Geroski⁵⁴ enrich this observation with analysis which shows that although the share of the leading 5 firms in an industry is reasonably stable there is considerable variance in the shares of individual leading firms (turbulence). Thus large firms exhibit a large amount of rivalry between themselves (driven by advertising and R&D). This rivalry may reflect the observation of widespread corporate restructuring, including mergers⁵⁵, among leading stockmarket firms in response to setbacks in markets leading to temporary loss of market share e.g. IBM in computing, Rover in automobiles, etc.

Two aspects of the market dynamics outlined above deserve analysis. First, the characterisation that market competition involves frequent death and restructuring of firms. Second, the observation that large incumbent firms do persistently better than small *de novo* entrants.

Observation 3: Competition involves the continual death and restructuring of firms.

Death and suffering are grand themes in the Bible and they have clear parallels in the competitive process.

Competition is hard on firms. Few firms survive through to maturity: 50% of new entrants do not exist after 4 years⁵⁶. Of new entrants only a very small number become very large: Dunne and Hughes⁵⁷ found only 2 firms out of 88 in the smallest size class in their 1980 sample made it to the largest size class by 1985.

Death is a reality of life in the post-Fall pre-rapture world⁵⁸. So it is with firms. Even if some firms have been extremely long lived - like some trees to use Marshall's famous analogy - often little of the original firm remains.⁵⁹

⁵³ Although Sutton's theoretical conclusion is that there is a minimum (non-zero) concentration for a given heterogeneous goods industry, his empirical work suggests that actual concentrations are much higher than the minimum supportable concentration. This observation is supported by Robinson, W.T. and Chiang, J. (1996), 'Are Sutton's predictions robust?', *Journal of Industrial Economics*, Vol.44, pp.389-408 analysis of a large sample of US industries.

⁵⁴ Davies, S. and Geroski, P. (1997), 'Changes in Concentration, Turbulence, the Dynamics of Market Shares', *Review of Economics and Statistics*, 79(3), pp.383-91.

⁵⁵ For a recent discussion see Markides, C.C. (1995), *Diversification, Refocusing and Economic Performance*, MIT: MIT Press.

⁵⁶ See DTI (1996), *Small Firms in Britain 1996*, London: DTI.

⁵⁷ Dunne, P. and Hughes, A. (1994), 'Age, Size, Growth and Survival: UK Companies in the 1980s', *Journal of Industrial Economics*, 42(4), pp.115-140.

⁵⁸ Compare Gen 3:19 and Rev 21:4.

Similarly suffering is a reality of the fallen world⁶⁰. However suffering in the Bible is frequently used by God to refine character and teach lessons⁶¹. Suffering is often to be welcomed for its beneficial effects. So it is with the difficulties that firms face. Geroski⁶² notes that it is the threat of entry that often causes firms to introduce new products or processes that they had been holding back. The result can be to strengthen companies competitive position and aid their survival in the longer run. For industry as a whole competition may be a process of ‘creative destruction’.⁶³

Corporate death is often not analogous to physical death in that there may be no identifiable loser in the process. Much corporate death simply represents a transfer of the control of productive assets to another firm - e.g. through take-over⁶⁴. Even among firms that genuinely fail, it may be that the failure represents a calculated failure resulting in a loss to a diversified shareholder who expected a certain percentage of failures. Corporate death may similarly not involve interruption of employment or even production.⁶⁵

The above picture downplays the negative consequences of competition. It is often the case that much corporate restructuring does result in disruption which has negative consequences for the individuals involved. Company failures and corporate restructurings can be extremely stressful⁶⁶ and involve prolonged unemployment or enforced retirement. The suffering of the individuals involved is very real at the time. However this does not mean that the longer run benefit in terms of moving people to more productive and fulfilling work is not high (even for the individuals concerned).

Observation 4: Big firms tend to beat small firms in the competitive process.

Before discussing the biblical parallels between the observation of the relative success of different types of firms it is important to note that most firms start small at some point.

⁵⁹ See Hannah, L. (1997), *Marshall’s ‘trees’ and the global ‘forest’: were giant redwoods different?*, LSE Centre for Economic Performance Discussion Paper No.318.

⁶⁰ Gen 3: 16-19.

⁶¹ Jam 1: 2-18 and Rom 5: 3-4.

⁶² Geroski (1995).

⁶³ See Schumpeter, J. (1943), *Capitalism, Socialism and Democracy*, London: George Allen and Unwin.

⁶⁴ Dunne and Hughes (1994) found takeover represented 61.4% of deaths of corporations in their sample.

⁶⁵ Especially possible under Chapter 11 bankruptcy protection in the US.

⁶⁶ Mortality rates are higher for the unemployed vs. the employed (see ONS (1996), *Social Trends 1996*, pp.21-22).

Relative size and strength are often discussed in the Bible. The most striking point to make is that God often appears to favour the small, the weak, the unpromising, the vulnerable⁶⁷. Thus God favours Israel in spite of its size⁶⁸, he delights in using the unpromising like David⁶⁹ and he protects and upholds the vulnerable - 'a bruised reed he will not break'⁷⁰.

God's value system is not the same as the world's. Thus size is not what is commended but faithfulness and sacrifice. The Widow's mite illustrates this beautifully⁷¹. We think that size is important and in competitive terms it is - in God's sight it is not.

That said, God sometimes favours individuals with worldly success and growth. Isaac did see his flocks increase⁷². David did become a great King. However the Bible makes clear that this is not the norm: 'the nations rage and the peoples plot in vain against the Lord and against his anointed one'⁷³. The world seeks to destroy that which God wants to grow.

5. The results of competition

In this section we examine three of the results of market competition. We begin by looking at both of the standard shortcomings of the market process: inefficiency and inequity. Finally we look at one of the advantages of competition - that it leads to continuous improvements in productivity and product quality. Competition, whatever its faults, has the virtue of delivering certain desirable economic consequences more effectively than any alternative mechanism⁷⁴.

Observation 5: Markets are often characterised by inefficiency.

⁶⁷ See Exo 12:4, Deu 1:17, 1 Sam 15:17, Matt 17:20 on God favouring the small and Ps 12:5, Ps 41:1, Ps 72:13, Ps 82:3-4, Eze 34:4, Acts 20:35 and 1 Thess 5:14 on God's concern for the weak.

⁶⁸ Deu 26:5.

⁶⁹ 1 Sam 16:1-13.

⁷⁰ Isa 42:3.

⁷¹ Luke 21:1-4.

⁷² Gen 26:12-14.

⁷³ Ps 2:1-2.

⁷⁴ Hay, D. (1989), *Economics Today: A Christian Critique*, Leicester: Apollos (p.307) notes four questions raised by economic growth: distributional consequences, environmental effects, positional competition, and its hedonistic character.

Much economic analysis is aimed at analysing the imperfections of markets⁷⁵. Markets rarely result in the efficient use of economic resources or in the most desirable outputs for society in either static or dynamic terms. Some of the manifestations of this are: the observation of income disparities between nations indicating that some systems are more efficient than others at maximising output from given inputs (e.g. Nigeria is one of the richest nations in the world in terms of natural resources but not in terms of per capita income)⁷⁶; the observation that competitive economies give rise to unemployment which is a major social problem; competition throws up significant externalities such as environmental pollution; and finally competition does not illuminate either X-inefficiency or allocative inefficiency within individual markets⁷⁷.

The term 'market imperfection' is loaded. It suggests that it is deviations from the ideal which result in undesirable efficiency consequences of markets. Some of these may have a spiritual dimension.

The reasons for systemic inefficiency may lie deep in the institutional structure of an economy. Nigeria and many other African economies suffer from poor economic infrastructure which is characterised by corruption. The roots of this lie directly in the failure of successive generations of leaders to obey God's laws⁷⁸. It may not just be leaders, of course, Fukuyama⁷⁹ identifies trust as a key determinant in the apparently differential performance of advanced countries e.g. Northern Italy, France, UK and US. Thus whole cultures may have practices which are actively detrimental to economic growth - e.g. (arguably) bans on interest in Islamic countries or tolerance of bribes.

Systemic (macroeconomic) and individual inefficiency can result from God's displeasure: spectacular negative macroeconomic shocks occurred in Egypt when the

⁷⁵ Hay (1989, pp.155-156) notes five violations of the general equilibrium model: actual behaviour does not conform to ideal, externalities, public goods, natural monopolies and investment decisions cannot include preferences of future generations.

⁷⁶ Looking at a sample of countries: there is a negative correlation between the percentage of exports which are natural resources and GDP growth. See 'Natural Resources Myth - Ungenerous Endowments', *The Economist*, 23 December 1995, pp.107-9 and Sachs, J. and Warner, A. (1995), *Natural Resource Abundance and Economic Growth*, Harvard: Harvard Institute for Economic Development.

⁷⁷ Hay, D.A. and Liu, G.S. (1997), 'The efficiency of firms: what difference does competition make?', *Economic Journal*, 107, pp.597-627. and Cowling, K. and Mueller, D. (1978), 'The social costs of monopoly power', *Economic Journal*, 88, pp.727-48.

⁷⁸ The Bible condemns various behaviours of leaders commonly observed in poor countries: oppression e.g. of the Israelites by the Egyptians (Deu 26:7); demanding bribes - 'by justice a king gives a country stability but one who is greedy for bribes tears it down' (Pro 29:4), similarly judges and powerful people (Mic 7:3); and late or low wages (Deu 24:15, Mal 3:5 and Jam 5:4).

⁷⁹ Fukuyama, F. (1995), *Trust*, London: Hamish Hamilton.

Pharaoh would not let the Israelites go⁸⁰. The Old Testament makes it clear that Israel often suffered economically when it strayed from obedience to God's laws⁸¹. In a modern context arrogance and hubris has often led to economic disaster e.g. third world debt problem, collapse of Barings Bank, etc. As Jesus reminds us in the Parable of the Rich Fool⁸², even at our most successful we can indulge in the temptation to neglect God and hence to court spiritual and economic disaster - the negative stochastic shock is always a possibility.

At the level of the individual firm X-inefficiency and active anti-competitive behaviour are often the result of laziness⁸³, greed⁸⁴, illicit deals⁸⁵ and deliberate attempts to defraud⁸⁶. These would not happen if God's word was taken seriously.

Externalities result from either a disrespect for others - a denial of the Golden rule⁸⁷ - or an unwillingness of society to accept its responsibilities in sharing the burden of the costs of correcting the externality. Calls to polluters to cut pollution is all very well but are we prepared to pay more for the goods and services which they produce?

Observation 6: Markets give rise to inequitable distributions of income and wealth.

Even in the Walrasian general equilibrium model there is plenty of scope for the results of competitive process to be unfairly distributed. If initial endowments of resources or skills differ, if stochastic shocks occur or if technologies are not universally available then the process of competition inevitably leads to inequitable economic outcomes. Over time resources disproportionately accumulate in the hands of those who inherited wealth and health from their parents. It is well known that 10% of people in the UK earn 50% of the income and that inequality of after-tax income has risen substantially since 1979⁸⁸.

⁸⁰ Exo 10-12.

⁸¹ By defeat in war e.g. Jug 2:15. In 2 Sam 24:13 David is given a choice of punishments: famine, defeat in war or disease.

⁸² Luke 12:13-21.

⁸³ Pro 10:4 and Ecc 10:18.

⁸⁴ Rom 1:29.

⁸⁵ '[A] wicked man accepts a bribe in secret to pervert the course of justice' (Pro 17:23).

⁸⁶ Pro 1:11.

⁸⁷ Mark 12:31.

⁸⁸ See Goodman, A., Johnson, P. and Webb, S. (1997), *Inequality in the UK*, Oxford: OUP.

The reality of an inequality of outcomes is recognised in the Old Testament together with the need for society to do something about it⁸⁹. Those who win the economic race have an obligation to give glory to God⁹⁰. Failure to do this is likely to have serious economic consequences as the risk of pride grows with wealth⁹¹ and it is hard for a rich man to enter the Kingdom of Heaven⁹². Tithing⁹³ and the Jubilee⁹⁴ represent significant redistributions of wealth (not just income) from the rich to the poor which were supposed to happen on a regular basis.

The New Testament re-emphasises the global responsibility to give even to other nations (e.g. the donation from the Antioch to the Jerusalem church⁹⁵). It also affirms that everything comes from God and that our obligation to give does not begin or end at 10% of our income⁹⁶. We are stewards of all that God has given us⁹⁷ and will be held accountable for what we did with what we were given (see the parable of the Talents⁹⁸)⁹⁹.

The challenge to the rich, as a recent issue of *The Economist* notes¹⁰⁰, is to redistribute significant amounts of wealth in order to ensure that the economic system continues to function adequately. Otherwise a backlash from the poor is likely. Winning the economic race may reflect superior initial conditions, blessing or skill. The objective of winning should not be to keep all that you accumulate¹⁰¹. Charity and good stewardship

⁸⁹ E.g. Lev 25.

⁹⁰ For example the King David see 1 Chron 29:10-13.

⁹¹ Pro 28:11.

⁹² Mark 10:23-27.

⁹³ Deu 14:22-29.

⁹⁴ Lev 25.

⁹⁵ Acts 11:27-30.

⁹⁶ We are to be living sacrifices (Rom 12:1).

⁹⁷ See Hay (1989).

⁹⁸ Matt 25:14-30.

⁹⁹ See Sedgewick, P. (1997), Christian Teaching on Work and the Economy, in The Council of Churches in Britain and Ireland, *Unemployment and the Future of Work - An Enquiry for the Churches*, London: Interchurch House, pp.219-228. Sedgewick reviews Christian attitudes towards work through the ages and concludes 'concern for treatment of the poor, the marginalised and vulnerable is a constant concern throughout the whole tradition' (p.228).

¹⁰⁰ See 'The challenge for America's rich' and 'Philanthropy in America', *The Economist*, May 30th, 1998, p.17 and pp.23-25.

¹⁰¹ The Bible suggests that being materially successful represents a trust by God with worldly things, if we are untrustworthy in the use of material possessions we will not be trusted with spiritual riches (Luke 16:11, Mark 8:36).

are Christian virtues precisely because in practising them we merely imitate the charity and good stewardship which we receive from the ‘God who gives generously to all without finding fault’¹⁰² and who ‘did not consider equality with God something to be grasped but made himself nothing...’¹⁰³.

Observation 7: Over the long run competitive markets have given rise to sustained improvements in productivity and product quality.

We have discussed above how markets have a tendency to be statically or dynamically inefficient relative to some ideal of what might be possible. However the presence of these sorts of inefficiency does not undermine the observation that competitive markets have triumphed across the world in their own terms. So much so that Fukuyama was moved to write a book entitled ‘The End of History and the Last Man’¹⁰⁴ in which he argued that capitalism had emerged as the dominant economic system following the collapse of the socialist alternative and the manifest failure of every other economic system in history. Competitive markets have delivered ever increasing standards of living, increased life expectancy, literacy and life chances for the vast majority of inhabitants in the countries which have most fully embraced them.

At the level of the individual firm market competition is a main driver of innovation and dynamic productivity growth and product development. Geroski¹⁰⁵ identifies a key role for potential and actual entrants in disciplining incumbents into innovation rather than settling for cosy profit maximisation from existing product lines.

The spiritual question that the growth process throws up is clearly the question of whether economic growth is spiritually beneficial? The Bible commends certain types of growth: personal spiritual growth and maturity¹⁰⁶, the multiplication of the Word of God¹⁰⁷ and the grace which increases as the need for it increases¹⁰⁸. However there is seemingly little parallel between these types of growth and the continuous economic growth observed in advanced countries since the industrial revolution¹⁰⁹.

¹⁰² Jam 1:5.

¹⁰³ Phil 2:6-7.

¹⁰⁴ Fukuyama, F. (1992), *The end of history and the last man*, London: Penguin.

¹⁰⁵ Geroski (1995).

¹⁰⁶ We are commended to grow in grace: 1 Cor 3:6-7, 2 Cor 10:15, Eph 4:15, 1 Pe 2:2 and 2 Pe 3:18.

¹⁰⁷ Acts 6:7, 12:24 and Col 1:6.

¹⁰⁸ Rom 5:20.

¹⁰⁹ Jesus says to his disciples ‘I do not give to you as the world gives’ (John 14:27).

The spiritual reality is that of cycles in morality - this is the biblical pattern of the Old Testament¹¹⁰. The spiritual climate of a nation may improve for a time (Himmelfarb¹¹¹ documents such a period in the UK in the late 19th century) but there is no guarantee that it will be sustained indefinitely. Recent trends in divorce, abortion, crime and illegitimacy all suggest that a moral reversion is possible and indeed happening at the moment in western countries. Thus spiritual revival is time and place specific. In particular, there is no evidence that economic growth leads to increased spirituality - indeed the historical record suggests the reverse.¹¹²

The analogy with grace increasing is worth considering in an economic context¹¹³. The world hates what God is doing through his church and there are spiritual forces active in opposing what God is up to¹¹⁴. The same is likely to be spiritually true of economic progress. Product innovation allows opiates to be used to relieve pain or to be used for illegal drugs; similarly plastic surgery can be used to reconstruct accident victims or to be used for frivolous cosmetic surgery; nuclear fission allows the nuclear power station but also facilitates the nuclear bomb. Even when it comes to the ever increasing productivity of production it is not clear why this is spiritually beneficial or whether increased productivity is good for the production of altruism or the positional goods which we really value¹¹⁵. Innovation and productivity are at best morally neutral or at

¹¹⁰ See the history of the Judges and Kings.

¹¹¹ Himmelfarb, G. (1995) *The Demoralisation of Society: From Victorian Virtues to Modern Values*, London: IEA.

¹¹² See Weber, M. (1930) *The Protestant Ethic and the Spirit of Capitalism*, London: Allen and Unwin, and Tawney, R.H. (1926) *Religion and the Rise of Capitalism*, London: John Murray, who both note that in spite of being capable of close association with positive religious change capitalism contains the seeds of its moral destruction as evidenced by the decline of Christianity in the west since the industrial revolution.

¹¹³ John 15:19.

¹¹⁴ Eph 6:12.

¹¹⁵ See Hirsch, F. (1977), *The Social Limits to Growth*, London: Routledge and also Luke 12:30. The question that arises is whether much of modern production is futile in the sense of having a market but ultimately not raising social welfare. See Cooper, B. (1998), *Futile Growth and the Economics of Ecclesiastes*, Paper presented at ACE 1998 conference, Oswald, A.J. (1997), 'Happiness and Economic Performance', *Economic Journal*, Vol.107, pp.1815-1831, Frank, R. (1997), 'The Frame of Reference as a Public Good', *Economic Journal*, Vol.107, pp.1832-1847 and Jackson, T., Laing, F., MacGillivray, A., Marks, N., Ralls, J. and Stymne, S. (1997), *An index of Sustainable Economic Welfare for the UK 1950-1996*, Centre for Environmental Strategy, University of Surrey. Cooper models how status goods - goods which have value only because of their rarity but which are of no intrinsic value - can over time rise as a percentage of GDP but reduce social welfare. Cooper links his analysis to that of the philosopher in Ecclesiastes who observes 'There was no end to his toil, yet his eyes were not content with his wealth.' (Ecc 4: 8). Oswald reviews the evidence on the correlation

worst facilitate a worrying increase in the variance of moral outcomes (e.g. unlimited cheap electricity vs. nuclear holocaust).

6. Conclusion

We have identified seven key observations that it is possible to make about the context, process and results of competition. We have attempted to evaluate a biblical response to each of these observations. We conclude by summarising our findings.

First, on the context of competition: firms compete in markets characterised by asymmetric economic power and where competition is adversarial in nature. These two features of competition are prone to corruption in a fallen world. Power combined with the opportunity to win gives rise to the likelihood of exploitation.

Second, on the process of competition: competition can be characterised as a process of creative destruction that could be very healthy. However the reality of this process is that big firms usually win out against smaller firms. This gives rise to the question of whether those firms that deserve to win the competition actually do so. It is likely that the actual exploitation of economic power does translate into the reality of large firms unfairly competing against smaller firms.

Finally, on the results of competition: these can be summarised as pervasive market inefficiency, inequality of outcomes and, at best, the morally neutral nature of economic progress. These results imply that the Bible does not support the view that economic progress and spiritual progress are positively correlated, indeed there is some evidence of the reverse.

The above conclusions suggest the need to explore the appropriate boundaries for the competitive process - best viewed as a 'contained conflict'. This is all the more pressing given the collapse of alternative economic systems to capitalism. Such an argument is strengthened by the apparent further triumph of Anglo-American capitalism over other variants of capitalism, notably those practised in the Far East.

between economic growth and happiness indicators and finds that at best there is a weak relationship in the post war period. Frank argues that happiness indicators show trend falls in happiness in the US since the War. Jackson et al. find that after adjusting UK GDP for factors such as environmental degradation and crime to get an index of sustainable economic welfare, such a 'corrected' GDP measure indicates negative per capita 'growth' since 1975 in the UK.

WHAT CHRISTIAN ECONOMISTS SHOULD KNOW ABOUT EVOLUTIONARY GAME THEORY

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1. Introduction

This article has a rather presumptuous title. You may well wonder whether you need to know anything at all about evolutionary game theory — or indeed whether *anyone* needs to know about it! However, the use of evolutionary game theory raises many important issues for the Christian wishing to interact critically with the contemporary world. Some very flawed thinking has been hidden behind its sophisticated veneer. The aim of this article is to pick out and expose this thinking in some key areas. But, firstly, what exactly *is* evolutionary game theory? Indeed, what on earth is game theory?

Game theory

Game theory is the formal study of interactive decision-making. In contrast with simpler decision problems, the outcome of a game depends on more than one decision-maker. The decision-makers have to take this into account. A high proportion of economic decision-making problems we might want to model have this interactive element. The tools of game theory allow us to model such situations with a high degree of precision, forcing us to make our models more transparent.

A typical game consists of a set of players, a set of strategies for each player, and a set of payoffs for each possible outcome of the game. The *players* are simply the decision-makers. A *strategy* is a complete description of what a player will do under every circumstance possible in the game. A *payoff* is the reward a player receives once the game has been played.

Having described the game, we can make a prediction about its outcome by appealing to one of many “solution concepts”. A solution concept describes the consequences of making particular assumptions about players’ beliefs and behaviour. For example, we might assume that players maximise expected utility given their beliefs about the game and the strategy choices of the other players.

Evolutionary game theory

Evolutionary game theory arose from the observation that, with a suitable interpretation of payoffs, a game can be used to describe interaction between animals.

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The big difference is that one can no longer think of the players as decision-makers. So when predicting the outcome of the game, one can no longer appeal to assumptions about the decision-making process. Rather, one appeals to some *adaptive* or *evolutionary* process that gradually changes the players' behaviour over time.

At face value, game theory is a complex and involved subject — one that even graduate students in economic theory find demanding. However, behind the technicalities and the jargon, most of the basic ideas are fairly intuitive. This makes it possible for anyone to assess its impact. The aim of this article is to guide Christian economists as they do this in three key areas of applied evolutionary game theory. These are theoretical biology, social science and the relatively new subject of “evolutionary ethics”.

2. Evolutionary game theory in theoretical biology: plausible but slippery

Darwinian ideas about evolution have raised huge issues for Christians over the last 140 years. Most of these are beyond the scope of this article, which will only address those issues relating to evolutionary game theory. However, there is now growing recognition that evolutionary game theory lies right at the heart of current thinking about evolution¹. I am not a biologist, but it seems to me that it is the only *general* way to express mathematically Darwin's intuitions². As such, the credibility of neo-Darwinian theory as a whole depends to some extent on the credibility of evolutionary game theory.

How evolutionary game theory models evolution

In evolutionary game theory, a strategy represents one of an organism's possible phenotypes³. A given “player” is thus stuck with a strategy for as long as they live. The payoffs in the game represent *fitness*. Roughly speaking, fitness is a measure of reproductive success.

A single instance of an evolutionary game is thus rather uninteresting. The players use the strategy they were given at birth, reproduce, and that is that. To model an evolutionary process, we need to think about *large* numbers of players interacting over *many* generations of play. The usual way to think about this is to imagine that the players

¹ Even when the idea very young, Richard Dawkins was able to write this about “ESS”, one of the central concepts in evolutionary game theory: “I have a hunch that we may come to look back on the invention of the ESS concept as one of the most important advances in evolutionary theory since Darwin,” Dawkins, *The Selfish Gene*, OUP, 1976, p. 90.

² The other candidates being population genetics and mathematical ecology that, while being more closely tied to the underlying genetic processes in reproduction, lack the interactive element captured by game theory.

³ A phenotype is the set of manifest attributes (appearance, behavioural traits etc.) of an organism with a given genetic structure.

from a large population are randomly matched to play simultaneously a large number of identical games over a sequence of generations.

The classic example is Maynard Smith's "Hawk-Dove" game⁴. Suppose that two animals are competing for a high quality piece of land, which would result in the winner being able to raise 6 offspring, compared to the 2 offspring they would be able to raise elsewhere. Suppose also that this animal has only two possible attributes: either it is "hawk-like" or it is "dove-like". Hawk-like animals always fight, and will not stop fighting until another fighter injures them. Suppose the probability of winning against another hawk-like animal is one half, and that an injury will reduce its number of offspring by 1. Dove-like animals never fight and retreat on facing a fighter. However, dove-like animals will share the high quality land with another dove-like animal, in which case they are able to raise 2 extra offspring each. The different possible outcomes are summarised in the table below.

Table 1: Expected number of offspring for the first animal

	Second animal is hawk-like	Second animal is dove-like
First animal is hawk-like	$\frac{1}{2}(6+1) = 3\frac{1}{2}$	6
First animal is dove-like	2	4

The question is: how will a population of this animal evolve? Which of the two phenotypes is selected in the long run? Or will both phenotypes survive?

There are two main approaches to answering this question. The first is to run the following thought experiment. Suppose we have a population all of one phenotype (which could in principle correspond to a mixed strategy⁵ of the game). Now consider an invasion by a different, "mutant" phenotype, such that in the post-invasion population a proportion ϵ are the mutant phenotype and a proportion $1 - \epsilon$ are the original,

⁴ John Maynard Smith, *Evolution and the Theory of Games*, Cambridge University Press, 1982. For the payoffs chosen here, this is very similar to the prisoners' dilemma. If the cost of losing a fight is made higher, then the game becomes what conventional game-theorists call "chicken".

⁵ Playing a "mixed" strategy involves randomising over some of the "pure" strategies available to a player. For example, an animal might be hawk-like with probability one third and dove-like with probability two-thirds.

“incumbent” phenotype. If, in this post-invasion population, the expected payoff under random matching to the incumbent is greater than the expected payoff to the mutant, then the incumbent is said to *repel* the mutant invasion.

A strategy is an *Evolutionarily Stable Strategy* (ESS) if it can repel all possible “small” invasions. More precisely, a strategy is an ESS if there exists a threshold level of ϵ between 0 and 1 such that all invasions smaller than the threshold are repelled⁶. This example is very simple, since the hawk-like strategy strictly dominates being dove-like. The expected payoff to being hawk-like is always higher than that of a dove-like mutant, no matter what the size of the invasion. So here the unique ESS is to be hawk-like.

The second approach to imagine that the two animals are drawn randomly from a population where a proportion p are hawk-like, and a proportion $1 - p$ are dove-like. If we now only allow pure-strategy phenotypes, then p describes the state of the population in a given generation. We can now model the evolution of p directly as a dynamical system.

Suppose that the growth rate of p is governed by some deterministic function g . We can introduce the basic idea of natural selection in the following way. Let the *relative fitness* of the hawk-like strategy when the population state is p under random matching be given by the expected payoff to hawk less the average payoff across the population. Attention is usually restricted to growth-rate functions in which a high growth rate is associated with high relative fitness. In particular, a *payoff monotonic* growth-rate function is one where g is a monotonically increasing function of relative fitness. The special case where g is a linearly increasing function of relative fitness is known as the replicator dynamics.

Given such a formally defined dynamical system, one can then find the fixed points of the system and test for stability. Again, our example is very simple. Since being hawk-like is always better than being dove-like, the relative fitness of the hawk-like strategy is positive for all $p > 0$. The system therefore converges to $p = 1$ under any payoff monotonic dynamic from any initial condition⁷.

So the application of evolutionary game theory to this setting, this (very simple) animal and an environment inducing these payoffs, under the assumption of random

⁶ ESS is closely related to “Nash equilibrium”, the central solution concept of conventional game theory. A Nash equilibrium is a situation where each player is using a strategy that maximises his or her payoff, taking the other players’ strategies as given. ESS is equivalent to the definition of Nash equilibrium plus an additional stability requirement. The stability requirement states that if a mutant strategy is an alternative best reply to the incumbent strategy, then the incumbent must be a better reply to the mutant than the mutant is to itself.

⁷ That is, any initial condition except $p = 0$, which is also trivially a fixed point, but obviously not stable. To avoid such odd effects at the boundary, it is conventional to restrict one’s attention to the interior of the state-space.

matching from a large population, yields an unambiguous prediction. Only hawk-like phenotypes of this animal will survive natural selection.

Comments

The major criticism of evolutionary game theory is that the outcome in terms of payoffs depends on interaction at the phenotypic level, while to interpret the payoffs as fitness we need to think of reproduction at the genetic level. A very simple link is assumed between genetic program and phenotype, such that reproduction results in *like begetting like* at the phenotypic level. The weakness of evolutionary game theory at this point raises a number of issues:

1. The complex pathways from the genetic program of an organism to its behavioural phenotype (via enzymes to hormones and muscles and nerves) are as yet unknown. A given behavioural trait is unlikely to be reducible to the action of a single gene, but is more likely to be the outcome of a complex combination of genetic and environmental factors. Indeed, it may be *entirely* learned rather than acquired genetically (more on which below).
2. Although these pathways remain something of a mystery, we know that the mind-boggling complexity of the genetic program must also result in a mind-boggling number of options at the phenotypic level. This makes the small strategy spaces of most evolutionary games entirely unrealistic (most have just *two* options at the phenotypic level).
3. Implicit in the assumption that “like-begets-like” is the assumption that reproduction is asexual. The recombination of genetic material under bisexual reproduction breaks this simple link between generations and may cause average fitness to *fall* over generations. Although some progress has been made on this issue, it remains something of a headache for theoretical biologists⁸.

We can conclude that evolutionary game theory might be able to say something about very simple instances of limited biological development in a stable environment. However, it is currently inadequate when it comes to modeling the broad sweep of evolution as a *complete* theory of biological development from the very simplest organisms and ecosystems to the world as we know it. As Josef Hofbauer and Karl Sigmund candidly admit in the preface to their textbook on biomathematics, “there is no denying that a certain highhandedness towards the complications of ‘real life’ persists”⁹. Given the claims made for neo-Darwinian theory as an established piece of scientific

⁸ Peter Hammerstein’s “streetcar” theory is one attempt to link ESS and the underlying genetic process. See Hammerstein, “Darwinian adaptation, population genetics and the streetcar theory of evolution”, *Journal of Mathematical Biology*, 1996, vol. 34, No. 5-6, pp.511-532.

⁹ Josef Hofbauer and Karl Sigmund, *The Theory of Evolution and Dynamical Systems*, London Mathematical Society Student Texts 7, CUP, 1988, p. vii.

fact, it may surprise some people that there is as yet nothing even approaching a calibrated mathematical model of general natural selection that bears any resemblance to reality. Given the complexity of the system biologists are trying to model, there may never be. The consequence is that there may never be a definitive answer to the questions we would like to ask of the theory, such as “How *long* would it take this complex organism to evolve under natural selection?”

Until neo-Darwinian theory is capable of dealing with the complexities of real biological systems and saying more about convergence times, it is hard to take as established scientific fact. In the meantime, we can no doubt grant it a vague plausibility. The selection mechanism of the theory is *capable* of searching the complex space of possibilities generated by interacting populations of organisms based themselves on complex genetic programs. But that does not mean to say that the world as we know it must be the outcome of such a search¹⁰.

A Christian Response

As with other reservations about neo-Darwinian theory, the reservations expressed above about evolutionary game theory should not be taken as part of an argument for the existence of God. That would be to commit a category error. Evolutionary theory is a materialist theory, and whether such a theory is right or wrong has nothing at all to say about the existence or otherwise of the *Creator* of the material universe. Or, to put it another way, we should not fall into the trap of suggesting that God can only exist when no materialist explanation is available.

However, we can be reminded that the whole issue of biological development remains an area of intense speculation. Whether the mechanism of natural selection is a sufficient explanation remains an open question. The apostle Paul warned his friend Titus to “avoid foolish controversies and genealogies and arguments and quarrels about the law, because these are unprofitable and useless.” (Titus 3:9.) I suspect that “foolish controversy” describes exactly the “creation verses evolution” debate. It is a dangerous red herring, more likely to generate division than to edify. As such, I think it unwise for Christians to adopt a strong pro or anti stance on this issue¹¹.

¹⁰ To use T. H. Huxley’s analogy, monkeys and typewriters are *capable* of writing all the books in the British Library. But it does not take much thought to realise that even with a very large number of monkeys tapping randomly at a very large number of typewriters, the expected time for one of them to write something even vaguely readable must be very long indeed.

¹¹ In saying this, I am of course aware that some Christians have taken a strongly anti-Darwinian stance based on a strong view of the authority of the Bible and their understanding of the early chapters of Genesis. I have some sympathy with this view — after all, since Jesus clearly took the scriptures as God’s true and faithful word, then who am I to differ? If Genesis 1 *does* restrict all descriptions of the biological development of the world to six twenty-four hour periods, then either the Darwinian description must

3. Evolutionary game theory in the social sciences: innocuous but limited

The main difference when we move to the game-theoretic modeling of *social* evolution is a change in the mechanism that propagates behaviour from generation to generation. There may be some vagueness about the connection between strategies and an animal's genetic program in the application of evolutionary game theory to theoretical biology, but at least the mechanism of reproduction is well understood. In social evolution, on the other hand, the mechanism could be anything from rote learning to imitation to belief learning.

Of the many possible propagation mechanisms, it is the process of imitation or contagion that has received the most attention. Richard Dawkins coined the word *meme* to represent a behavioural rule that is passed from generation to generation, analogous to the genetic program propagating behaviour in biological evolution¹². In the language of evolutionary game theory, this is simply a strategy.

It is relatively easy to suggest imitation mechanisms that result in payoff monotonic dynamics¹³. For example, players might have a random "aspiration level" drawn from a uniform distribution: if their current payoff is at least as good as this aspiration level they stick with their current strategy; if not, then they imitate the strategy of another player drawn at random from the population. Rules-of-thumb such as this one allow us to derive growth-rate functions for the population proportions. Once we have mechanisms that give us payoff monotonic dynamics, all the asymptotic results derived for biological evolution simply carry over to the analysis of social evolution.

Is this useful? Perhaps the most interesting result is that all stable population states under a payoff monotonic dynamic correspond to a (mixed strategy) Nash

be wrong or Jesus was wrong. However, even if the word "day" in Genesis 1 is meant to indicate twenty-four hours (the Hebrew word *yom*, translated as "day", can also mean a varying period of time, an age or an epoch), my personal view is that one may admit longer descriptions without compromising a high view of scripture. We must always read scripture with an awareness of the genre in which it was written: poetry *as* poetry, narrative *as* narrative *etc.* The genre of "creation story" is not a familiar one to us, but even a brief read through the early chapters of Genesis will indicate that its style is far more poetic than the dry, "scientific" descriptions of material change we are more used to. Moreover, the main point of the account would seem to be to establish the true *relationships* at the heart of the universe: between Creator and creation, man and woman, mankind and the world *etc.* It does so in a way that is clearly understandable to people across different ages and different cultures, regardless of what we might currently call a given reader's "scientific competence".

¹² Dawkins, *op. cit.*, chapter 11.

¹³ Chapter 4 of Jürgen Weibull, *Evolutionary Game Theory*, MIT Press, 1995, has a number of examples.

equilibrium. A Nash equilibrium is a situation where each player is using a strategy that maximises his or her payoff, taking the other players' strategies as given. So we can identify conditions under which very stupid players using simple rules-of-thumb will (eventually) learn to behave as if they were the calculating payoff-maximisers of conventional microeconomic theory.

Moreover the set of states that are stable under payoff-monotonic dynamics is typically smaller than the set of Nash equilibria. So this is one way of selecting between multiple Nash equilibria (although it will not select between *strict* Nash equilibria)¹⁴.

Comments

As hinted at above, the big limitation on evolutionary game theory to this area is not knowing quite how behaviour propagates socially. Moreover, it seems likely that the propagation mechanism may vary according to context. If we try to explain why certain mechanisms are used by appealing to some ulterior evolutionary process, then we run into the problem of how to explain why *that* process came to be used — and so on¹⁵.

The only obvious way to cut this Gordian knot is to find out as much as we can about the actual propagation mechanisms used by real subjects — *i.e.* by painstaking empirical and experimental work. However, this is clearly a very long-term research project, so in the meantime evolutionary game theorists in the social sciences are constrained to keep their assumptions about transmission mechanisms as flexible and general as possible.

A Christian Response

Even die-hard anti-Darwinian Christians need not be unduly concerned about evolutionary game theory as it is applied in the social sciences. It is just one of a number of ways of describing human behaviour. As such, it must stand or fall on how useful it proves to be.

Indeed, evolutionary game theory shows that Christian economists need not feel so uncomfortable about using models based on utility maximising agents. Although such models are presented as positive descriptions of behaviour, they do leave a vague feeling of an underlying normative agenda. It sometimes seems that economists are saying, "Well, if people don't behave the way our models predict, then they ought to get their act

¹⁴ See George Mailath, "Do players use Nash equilibrium? Lessons from Evolutionary Game Theory", *Journal of Economic Literature*, 1988.

¹⁵ Some might argue that the regress stops when we reach strict biological evolution. However, given that the various levels of evolution within such a system would not be stationary relative to each other, but rather co-evolve, the task of constructing such a "Theory of Everything Evolutionary" seems virtually impossible. Moreover, it would probably be a fruitless task, in that such a theory would be unlikely to supply much in the way of falsifiable predictions.

together and start maximising more effectively!” However, we can see from the evolutionary analysis that the assumption of rational utility maximisers can be valid even when people actually act with relative stupidity. One simply requires the players to be familiar with a game because they have played it many times before.

4. Evolutionary game theory in “evolutionary ethics”: prescriptively empty, but descriptively quite useful

“Evolutionary ethics” is a relatively new subject area¹⁶ that aims to explain the ethical behaviour of humans as the outcome of some evolutionary process — which could be biological or social, or some combination of the two.

It is a subject likely to put most Christians on the defensive. The basic claim of the theory — that justice is phenomenological — is thoroughly anti-Christian. Some Christians — following the lead of C. S. Lewis in *Mere Christianity*¹⁷ — like to begin their apologetics by appealing to the innate sense of justice we all have as something that must have a divine origin. Evolutionary ethics sets out to rubbish all that by giving an entirely materialist explanation of our sense of justice. What is more, it even sets out to explain religion in materialist terms. Religion is seen as an outmoded social mechanism designed to induce conformist behaviour through the teaching of entirely fictitious rewards and punishments.

However, when we look at it more closely, the surprise is that evolutionary ethics turns out to be at least as much a friend as a foe.

How it works

There have been a large number of popular books on evolutionary ethics in recent years including Peter Singer’s *The Expanding Circle*, Robert Wright’s *The Moral Animal*, Matt Ridley’s *The Origin of Virtue* and Sober and Wilson’s *Unto Others*. Many of these rely heavily on Robert Axelrod’s highly influential *The Evolution of Cooperation*¹⁸. However, we have to say that these authors exhibit a weak grasp of the game theory at the heart of the subject. By far the most complete and rigorous account of evolutionary ethics so far is Ken Binmore’s monumental work in two volumes, *Game*

¹⁶ Or perhaps it would be more accurate to say that it is a new name for an old subject area — there being nothing new about moral relativism, even if the arguments have changed.

¹⁷ C. S. Lewis, *Mere Christianity*, Fount Paperbacks.

¹⁸ Peter Singer, *The Expanding Circle*, Clarendon Press, Oxford, 1981; Robert Wright, *The Moral Animal*, Abacus Books, 1996; Matt Ridley, *The Origin of Virtue*, Penguin, 1997; Sober and Wilson, *Unto Others*, Harvard University Press, 1998; Robert Axelrod, *The Evolution of Cooperation*, Penguin, 1990 (first published by Basic Books, 1984).

*Theory and the Social Contract*¹⁹. Binmore is a well-respected game theorist and knows what he is talking about. The aim in this section is to sketch briefly the main components of his thesis.

Binmore considers social interaction of the most simple form — that between just two people. The two people interact in a stable environment. Or, to put it in the language of game theory, they play a repeated game, which Binmore calls the “game of life”. A *social contract* is simply a Nash equilibrium of this game, sustained by an appropriate choice of strategies. Binmore’s theory describes firstly how an equilibrium in the game of life is sustained, and secondly how an equilibrium in an expanded game of life is selected

Sustaining an equilibrium in the “game of life”

The “game of life” in Binmore’s theory is a *repeated* game, so the Folk Theorem applies. The Folk Theorem states that pretty much any feasible payoff outcome of a repeated game is possible — *i.e.* can be sustained as a Nash equilibrium under an appropriate choice of strategies.

This set-up means that the analysis doesn’t depend on specifying a particular game of life. We do not need to suppose that the players are necessarily playing a repeated prisoners’ dilemma. Indeed, the analysis does not rely on any of Axelrod’s flawed tournament results²⁰. Neither does it rely on a specific enforcement mechanism. Although Folk Theorem results are typically derived by constructing strategies able to “punish” anyone deviating from the equilibrium path, outcomes may be sustained by much more sophisticated mechanisms or legal arrangements.

The important implications of modeling the social contract this way are: first, that there are many possible social contracts; and, secondly, that social contracts are simply Nash equilibria. As we saw in the previous section, this means they can be reached by many plausible evolutionary processes. It also means they are *self-policing*.

¹⁹ Ken Binmore, *Game Theory and the Social Contract: Volume I, Playing Fair*, MIT Press, 1994; Volume II, *Just Playing*, MIT Press, 1998.

²⁰ Game theorists like Binmore are understandably put out by the success of Axelrod’s book. That cooperation is possible in the repeated prisoners’ dilemma under certain conditions is a trivial consequence of the Folk Theorem, a result that was independently derived by a number of game theorists in the late nineteen fifties. Moreover, Axelrod’s methodology leaves much to be desired and his book is quite misleading in some places — something Binmore dedicates much space to demonstrating in the second volume of *Game Theory and the Social Contract*. However, one should not feel too sorry for the game theorists — this unfortunate situation is largely a result of their own failure to publicise their work.

Selecting a new equilibrium in an expanded “game of life”

Consider the following thought experiment. Suppose some event (such as a technical advance), changes the game of life, expanding the set of feasible Nash equilibrium outcomes. There is now a whole set of new equilibria that will make at least one player better-off without making the other worse-off. (Or, to use the jargon of welfare economics, there is a non-empty set of Pareto-improving equilibria.) How will the two players solve the equilibrium selection problem? What will be the new social contract?

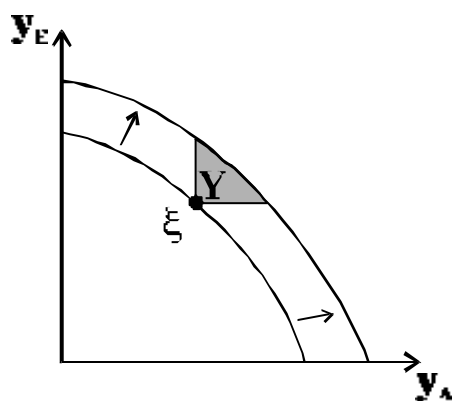
Each player has preferences over the outcomes of the game of life, expressed in expected utility form in the normal way. However, the first twist is that the players also have *empathetic* preferences over the outcomes of the game. That is they are able to think about how it would feel to be the other person in each possible outcome. In the short-run, these assessments need not be accurate. However, in the medium-run, social learning brings players to a common exchange rate between their two measures of utility — as part of an “empathy equilibrium”.

Binmore speculates that this capacity to empathise evolved in our distant past on the plains of Africa. That is, it is a consequence of an evolved ability to *sympathise* with near-relatives. Sympathy involves both an ability to empathise — to put oneself in someone else’s shoes — and a desire to help. There is an evolutionary advantage in sharing food with those who also share some of your genetic structure. But the mechanism that enables sympathy for near-relatives could also be used to help solve an expanded set of problems — food sharing with *non*-relatives. One may call the operation of the mechanism in this expanded set of circumstances a “fairness norm”, a “sense of justice” or a “moral code”. In a society based on hunting, there would be uncertainty over who would bring in a kill on a particular day. Individuals would like to insure themselves against the risk of going hungry. That is, they would like to come to some self-enforcing agreement to share all food that comes in. Given that they were already able to empathise, Binmore suggests that rather than bargain directly over food-sharing contracts, people treated this sharing problem *as if* they were uncertain about their identity rather than uncertain about the future. That is, they evolved a mechanism by which they implicitly bargained behind a “veil of ignorance” in order to arrive at “fair” food-sharing contracts²¹.

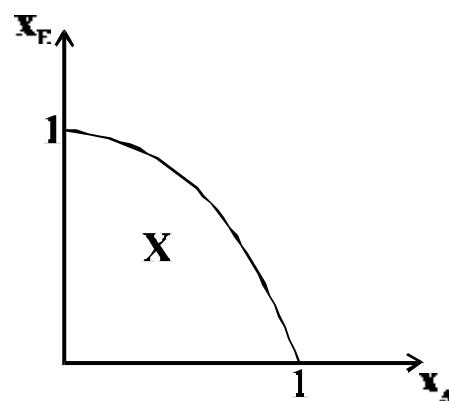
Solving a two-person bargaining problem behind a veil of ignorance with empathetic preferences in an empathy equilibrium selects the “maximin” point on the Pareto frontier. That is, the point that maximises the lower of the two utility levels

²¹ Binmore is well aware that this jump from uncertainty over the future to uncertainty over identity may not be particularly intuitive: “In negotiating an insurance contract, to accept that I may be unlucky seems a long way from contemplating the possibility that I might become another person in another body. But is the difference really so great? After all, there is a sense in which none of us are the same person when comfortable and well fed as when tired and hungry.” *Game Theory and the Social Contract*, vol. II, p.219.

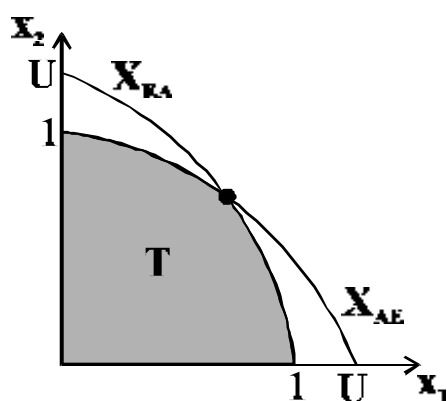
received. This is the same “egalitarian” solution derived by John Rawls²², but by a very different line of argument.



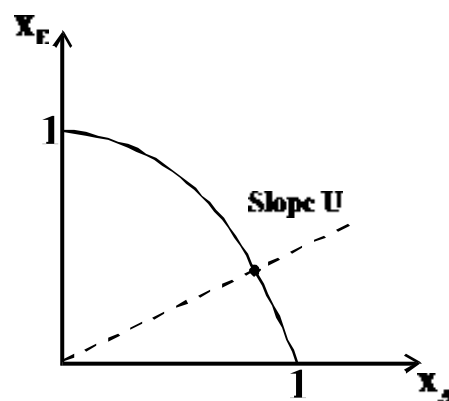
(a) The Equilibrium Selection Problem



(b) Rescaled to focus on choice set



(c) Behind the veil of ignorance



(d) Point selected corresponds to maximin point (if X is convex and comprehensive)

Figure 1: Choosing a new social contract

Deriving this result requires some rather fiddly manipulation and re-calibration of preferences, but the general idea is sketched in Figure 1.

Panel (a) shows the situation Binmore imagines. The two people in this society, labeled Adam and Eve²³, are currently playing an equilibrium in the game of life that gives them payoffs marked by the point ξ . However, some radical change occurs, and the feasible set of payoffs expands. They can now agree to move to a new equilibrium, with payoffs in the set Y .

Panel (b) shows their choice set once their preferences have been re-calibrated to place the status-quo payoffs at the origin, and fix the maximum payoff available to either of them at 1.

²² John Rawls, *A Theory of Justice*, OUP, 1972.

²³ In common with other writings on evolutionary ethics, *Game Theory and the Social Contract* is full of somewhat mocking references to Christianity — although none of them quite reach the harshness exemplified by Dawkins.

Panel (c) is where the action happens. Adam and Eve now move behind the “veil of ignorance” and forget who they are. For simplicity, suppose that the players have a common understanding of how to compare Adam’s payoff to Eve’s (as would happen in an “empathy equilibrium”), such that 1 unit of Adam’s payoff is worth U of Eve’s. We re-label Adam as player 1, and Eve as player 2. Player 1, for example, believes he has a 50% chance of becoming Adam and a 50% chance of becoming Eve. If he becomes Adam (call this event AE), then the set of feasible payoffs is X_{AE} . If he becomes Eve (call this event EA), then the set of feasible payoffs is X_{EA} . The two players bargain over the social contract given these two sets.

However, there is a further twist in that both players are permitted to return behind the veil of ignorance and renegotiate if they are unhappy with the final outcome. This effectively restricts the players to choose contracts where they get the same payoff under events AE and EA. That is, they bargain over the set T , which, under reasonable assumptions, results in the contract marked with a “•”.

Panel (d) shows this contract once the players have come out from behind the veil of ignorance. It corresponds to the maximin point of X (so long as X is convex and comprehensive).

The Naturalistic Fallacy

To justify values by stating facts is known as the “naturalistic fallacy”. More generally, one can use this term to describe any ethical argument that moves from description to prescription without carefully defining and defending the intermediate steps.

Peter Singer’s *The Expanding Circle* has an interesting section exposing the naturalistic fallacy in Edward Wilson’s *On Human Nature*²⁴. For example, Wilson notes that a descriptive insight of genetics is that our genes come from a common gene pool and will return to a common gene pool. He concludes that we therefore *ought* not to do anything that imperils the common gene pool. But, as Singer points out, this logic involves an implicit intermediate step. That is, a value statement, such as “We ought not to do anything which imperils the long-term survival of genes”. Picking out the intermediate step shows just how weak the prescription is. We immediately ask “Why? Why should I care about the long-term survival of my genes?”

All “evolutionary ethics” is vulnerable to criticism along these lines. We can pick out similar intermediate value judgments that are implicit in Binmore’s work (and, ironically, in Singer’s work too).

²⁴ Singer, *op. cit.*, pp. 72-86. Edward Wilson, *On Human Nature*, Harvard University Press, 1978.

For example, Binmore's theory claims that a social contract is a Nash equilibrium in the game of life. But how then *should* a member of society behave? The argument implicitly goes something like this:

Premise. Conforming to the social contract results in my preferred outcome (assuming everyone else conforms).

Conclusion. Therefore I ought to (or it is "right" to or it is "my duty" to) conform to the social contract.

Similarly, Binmore claims that fairness norms evolved to quickly select new social contracts following an unexpected change in the game of life. But which social contract *should* one choose in such a circumstance? The argument implicitly goes like this:

Premise. Proposing "fair" social contracts may result in quick movement to the Pareto frontier following an innovation.

Conclusion. Therefore we ought to propose "fair" social contracts.

Implicit in both these prescriptive arguments is a second premise: that our personal preferences are also our basic ethical values. That is, in some sense they are our "default" values. Other value systems can be, and have been, constructed, but they are without foundation²⁵. Moreover, while it might seem like there are other values, "rights", "duty", "fairness" and "justice" can all be explained away under this premise. Ultimately, Binmore claims, what we value is simply what we want.

Binmore is aware of the naturalistic fallacy, and his prescriptive statements are consequently very cautious. For example, in proposing that we attempt to select "fair" social contracts when given the opportunity, he says this:

In making this proposal, no claims are made that it is the Good or Right thing to do. Followers of the Seemly claim no special authority for the preferences they reveal when advocating one feasible reform rather than another. They simply invite others with similar prejudices about the society in which they would like their children to live to join them in trying to create such a society.²⁶

²⁵ We might also follow C. S. Lewis in noting that any constructed or invented ethics are subject to a problem of regress. If one constructs a value system according to some criteria, then that just places the problem on a new level. Of all the possible criteria to construct a value system, why choose that one? That is, by what criteria should we choose the criteria to choose our values? And so on, *ad infinitum*. See C. S. Lewis: "The poison of subjectivism", in *Christian Reflections*; and *The Abolition of Man*, both in Fount Paperbacks.

²⁶ Binmore, *op. cit.*, vol. II, p. 453.

This is hardly a very compelling claim on our behaviour. However, one can at least empathise with the point of view. If the material universe is all there is, if it really is true that “what-you-see-is-all-you-get”, then perhaps this is all one can say.

5. A Christian response

Although it is now unusual to follow the lead of *Mere Christianity* in making a common “sense of justice” the starting point of explaining the gospel, some appeal to justice as real rather than contrived is essential in every gospel presentation. For example, “Two ways to live”²⁷ is one of the better gospel tracts, in that it attempts to explain the good news about Jesus within a framework of biblical theology. But all such presentations have to abbreviate the biblical material to some extent. Here, people are expected to instinctively recognise (without a great deal of explanation) that God acts justly when he judges those who rebel against him. That is, their behaviour is symptomatic of their broken relationship with God, and condemns them. People frequently find this step quite intuitive: it just seems *right* that God, if he exists, should act this way. However, the more that theories such as evolutionary ethics leach the content out of the concept of justice, the less intuitive this step will prove to be.

Evolutionary ethics will almost inevitably grow in popularity, and its influence has already begun to spread beyond the confines of academia. As a descriptive theory of how collective standards of behaviour evolve in different environments, it is quite compelling. Prescriptively, it is virtually empty. But its prescriptive weakness is more likely to make it seem very attractive than hold it back. If this is all we can say about how we should behave, then we effectively have a license to do what we like — or at least as much as we can get away with.

Christians have a lot of ground to catch up. The concept of absolute justice — as something that lays an absolute claim on all people, regardless of circumstance or culture — was not really under question during the Reformation, and our systematic theology is consequently rather weak in this area. We are greatly in need of a biblical theology of justice that addresses the modern issues.

In the meantime, however, there is much we can do to improve our presentation of the Gospel. Indeed, the good news is that, when we look into it, evolutionary ethics can actually be rather helpful in getting the gospel message across. Here are a few suggestions about how to get back into the fight:

1. Point out the consequences.

²⁷ “Two ways to live: the choice we all face”, is published by Matthias Media, PO Box 225, Kingsford NSW 2032, Australia. Or see <http://www.matthiasmedia.com.au/2wtl/index.html>.

For all their attempts to dress it up as something that affirms the “niceness” of humanity²⁸, writers on evolutionary ethics cannot hide the unpleasant nature of the societies they are describing and proposing. A society based around a social contract is an uncivilised society, kept together by calculated selfishness, enslaved by its desires. It is *uncivilised* not just because the opportunities to cheat in an uncertain world makes the feasible set of possibilities rather puny, but because essentially anything goes. If someone likes something, no matter what it is, then it will appear as an input to the implicit bargaining process by which the contract is settled. It is kept together by *calculated selfishness*, because that is all that “enlightened self-interest” actually means. And it is *enslaved by its desires* because at the root the contract is governed by personal preferences that have no ethical substance and may drift arbitrarily over time.

So a society may be governed by a “fair” social contract but still be perfectly disgusting. There is a close fit here between the descriptive elements of evolutionary ethics (once stripped of its deceptive gloss) and the biblical account of human conduct. Whether it is narrative, wisdom or epistle, the verdict on society is the same: uncivilised, kept together (if at all) by calculated selfishness, enslaved by its desires²⁹.

2. Suggest a more plausible context

Evolutionary ethics attempts to describe and prescribe within the context of a material universe without a creator. However, there is a much more plausible context in which to place the world we observe around us. That is, that we do not inhabit a world *without* God, but a world *given over* by God.

Romans 1:18-32 is a useful summary of the real context. Early on, Paul makes it clear that it should be obvious that we live in a created universe. Something from something (or rather *someone*) is inherently more plausible than something from nothing. (To this general revelation of God through creation we may, of course, add the special revelation of the Creator in Jesus Christ.) However, we have deliberately chosen to ignore our Creator, and so he has quite rightly left us to suffer the consequences. This terrifying and immediate punishment is announced in Paul’s account three times: therefore, he says, “*God gave them over...*” (verses 24, 26 and 28). Divorced from its Creator, the consequence is an unremittingly ugly world that no social contract could even begin to mitigate. Preferences go haywire, sexual relationships collapse, behaviour degenerates. It does not take much observation to notice that such is the world we live in — and it would be naïve to pretend otherwise.

²⁸ For example, “Nice guys come first” is the title of Dawkin’s chapter on Axelrod’s tournament results in the revised edition of *The Selfish Gene* (and of a BBC *Horizon* program covering the same material).

²⁹ Note, for example, how keen Jesus is for his disciples to disentangle themselves from a society founded on reciprocal altruism and the threat of retaliation in Matthew 5:43-48 and Luke 6:32-36.

3. *Point people to the absolute standards built into the created order.*

It may well be true that the ethical standards people use in practice are relative and arbitrary. However, if it is true that we live in a created world (albeit one left to suffer by its own devices), then there are absolute standards which have a claim on us all. We need to make this point quite carefully. Peter Singer has made the extraordinary claim that the existence of God would not solve the problem of ethics³⁰. Morality is arbitrary, he claims, if something is good or bad solely on the basis that God says it is. What if he had said that murder was good? And if we say that what God says is good because God is good, then we are using a standard that is independent and superior to God. We still have not established why “good” *is* good.

The correct response to this is, of course, to reject the idea that we can think of morality as an abstract, independent entity — not only with respect to God’s character, but also with respect to his creation. That is, what God says is “good” really is good because he is God *and also* because that is the way he made the universe. Indeed, one of the more striking features of the creation account in Genesis 1 is the constant refrain at each stage, “And God saw that it was good” — culminating with the final verdict, “God saw all that he had made, and it was very good”.

As such, we may liken the rejection of these absolute standards to the folly of someone who throws away the instruction book for a complex piece of machinery. The consequence is a right mess that does not work. But just as throwing away an instruction book does not render the instructions invalid, so inventing our own morality does not negate the absolute standards of the created order. Whether we ignore God or not, we still depend on his patience for our very existence now. And our ultimate destiny lies in his hands.

These are merely a few sketchy ideas. However, they perhaps indicate how it might be possible to bring people strongly influenced by evolutionary ethics to recognise their need for mercy through Jesus Christ.

6. *Conclusion*

This article has attempted to cover a lot of ground. Evolutionary game theory may not seem an obvious candidate for study by the hard-pressed Christian economist, but its influence is extending further and further into the way people think. In theoretical biology, it gives Darwinian evolution a vague plausibility — but denies it a solid mathematical foundation. In the social sciences, its use is fairly innocuous — but we need to be aware of its limitations. In evolutionary ethics, it threatens the very concept of absolute justice — but actually turns out to be descriptively quite useful. It is in this final area that we perhaps need to be most on our guard and most on the lookout for opportunities. Evolutionary ethics is fundamentally flawed from a prescriptive point of

³⁰ Singer, *op. cit.*, p. xi.

view. However, it may ironically prove very useful in bringing a whole new generation to Christ.

