



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

It would be a serious setback to growth and productivity in the beef industries of both Canada and the United States if long-term trade between the two countries is restricted. Consumers in both countries have come to rely on safe and nutritious beef made available at reasonable costs. The best way to ensure long-term competitiveness of beef relative to other meat products is continue the practice of harmonizing rules and standards of production throughout North America.

References

Canfax. Annual Report. 2002. www.canfax.ca

Farmers Independent Weekly. "U.S. Cattle Market Goes Wild." Vol. 3. No. 11, pp. 2, 3. 2003.

Organization of Economic and Co-operative Development. Agricultural Statistics. 2003.
www.oecd.org.

Perlich, Ken. Cattle on Feed Report. August, 18, 2003.

Statistics Canada. Census of Agriculture. 2001.
<http://www.statcan.ca/english/agcensus2001/index.htm>

United States Department of Agriculture. United States and Canadian Cattle. 2003.
<http://usda.mannlib.cornell.edu/reports/nassr/livestock/uscc/uscc0203.pdf>

Western Producer. Various Issues. www.producer.com.

Lottery Economics: The Role of Luck, Skills and Endowments in Determining Who Gets the Toys

by
Philip R. Wandschneider¹

(This paper is an adaptation of Dr. Wandschneider's Scholar's Address at the annual meeting of the Western Agricultural Economics Association in Denver, Colorado, July 2003)

"The race is not to the swift, nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, but time and chance happeneth to them all." -- Ecclesiastes 9:7-12

Why do some people receive large incomes and wealth, while others live in poverty? One view is that market rewards go to those who are productive – through either their own labor or their property. This view is codified in the marginal productivity theory of standard economics. Another view is that wealth and income are distributed according to socially defined positions. For instance, in classical economics, class determines earnings. But, what of the Preacher's words above? What role does luck have in determining who gets the toys?

¹ The author is a Professor, Department of Agricultural and Resource Economics, Washington State University.

Acknowledgment: The guidance of the editor and a wise reviewer elevated some sloppy arguments and greatly improved the brevity and clarity of this discussion. I also benefited from the insight of many colleagues, including members of a seminar on the sociology of risk led by Gene Roza. Remaining errors and illogic belong to the author.

The purpose of this paper is to present the case that chance is as important as economic productivity or social position in affecting the distribution of income and wealth. I propose that chance affects the strategies and psychology of economic agents in the “economic game.” In the conclusion, I discuss how the explicit introduction of chance could increase our understanding of innovation, system stability, and motivation in the market economy.

Both marginal productivity and social position theories of distribution have ethical and ideological counterparts with policy implications. A normative partner to marginal productivity theory is the idea that people are paid what they deserve in a market economy. A normative counterpart to the social position theories is that elites can extract undeserved shares of the total social output, illustrated by Marx’s critique of the capture of the economic surplus by capitalists. I shall conclude with a brief discussion of normative and policy implications.

Life as a Game

It is useful and stimulating to think of life as a game, in both the formal sense of game theory and the informal sense of a board game like *Monopoly*. In this board game metaphor, the winners of the game are those who get the greatest income and wealth. Of course, this metaphor is flawed because income and wealth are neither necessary nor sufficient conditions for happiness or well-being, but that is another story.

In outline the game is as follows. At birth, each player receives endowments of (quite different) initial sets of assets. As a player matures, she builds financial, human, and social capital. She enters the game proper by pursuing career paths and by accumulating wealth. Her progress in career paths and wealth accumulation depends on her stocks of human, financial and social capital interacting with luck. Throughout this process the player makes choices from opportunities presented by endowments and chance. The player’s choices have much to do with personal qualities, including risk aversion. The player’s choice is like placing a bet, with the stake being the player’s effort and endowment, and the payout generated by a combination of structural factors and chance.

Stage 1: The Birth Lottery

Birth is the first, and perhaps most influential, lottery. I define a *lottery* as a stochastic process generating a particular life event. The most successful players (agents) start the game by “choosing” the right parents and location. The “wheel of fortune” endows the player or agent with three initial resources: genotype, social position, and geopolitical position.

Starting at birth, the player’s genetic code interacts with the family physical and social environment to create the agent’s physical and intellectual capabilities and her “character,” including her individual tastes and risk attitudes. In economics, personal characteristics usually appear as the tastes and preferences (including risk preferences) that determine the value the agent places on different choice outcomes. But personal characteristics include physical and mental capacities as well as character. The genetic components of personal characteristics like sex, size, and hair color are obvious, but recently geneticists have found the genetic basis for a large number of personal characteristics including: shyness, risk for alcohol/nicotine addiction, sense of taste, and wake times. Genes bestow economic advantages and disadvantages. Professional athletes epitomize the role that genetics and environment (training) play in both career choice and opportunity.

Also, the birth lottery places the player in a particular family (social setting) and in a particular geo-temporal location. Birth to a wealthy family in Seattle, Washington in 1980 creates different potential than birth on a peasant farm in Bangladesh in 1948, the year of the Great Famine. The family of origin creates initial positions in the player’s social and financial capital. (Of course, social and genetic family may differ)

Stage II: Building Endowments

“The rich get rich and the poor stay poor...” -- God Bless the Child, Holliday and Herzog

As the agent grows, she builds assets in four accounts –three capital accounts and an inventory of personal characteristics². Personal characteristics were described above. Clearly the player’s initial financial capital plays a key role in building financial assets. Investment choices and luck interact with the agent’s other assets to influence outcomes. Thus, the player might have better returns in the stock market if she has “inside information” (more social capital), and her expected prospects may be greater if she is a risk seeker. The role of perspicacity, initial endowment, and luck in building financial endowment seems more obvious than that for labor income, so this paper will concentrate on labor income. However, note that entrepreneurial occupations, including farming, ranching, small shops, and “CEOing,” blend the wealth game and the labor income game.

The player begins life with an initial endowment of social capital. Social capital includes access to information, obligations and expectations, and social norms (Coleman). Social capital is like financial capital in that one can invest to increase its size, and one can use it to acquire other consumer goods and services. Serendipitous contacts can dramatically affect the details of a player’s social capital. I define *serendipity* as a (statistically) independent interaction between one player’s life path and the life events of other players and other stochastic events.

Human capital is the set of accumulated skills that agents gain through training and education. (See the work of Gary Becker and Jacob Mincer *inter alia*.) Modern theories of the distribution of personal income have focused on investment in formal education as measured by years of schooling. (Mincer is seminal.) The recent legal action concerning the admissions policy of the University of Michigan provides a conveniently numerical example of the college selection process. Candidates were assigned a score from a potential total of 150 points. The points were distributed as GPA (80 points); test scores (12 points); academic factors such as difficulty of classes and reputation of high school (18 points); family alumni or legacy (4 points); sports, clubs and other activities (10 points); and special factors including race and “President’s discretion” (26 points). The same process, albeit with different weights and less obsessively quantified, occurs at every college in the country.

One way that chance influences college selection is through serendipity. In college selection, the player’s choice of colleges for application is frequently capricious, and the match between prior life events and the college rating categories is somewhat haphazard. A fully informed rational agent would choose activities that maximize the sum of current utility and future value, but life is not so tidy. Moreover, entrance to college is a stochastic contest. It is a multi-dimensional game of musical chairs, with the “best” colleges having the lowest ratio of chairs to players. The musical chairs game is a multidimensional stochastic tournament. A *tournament* is a competition among agents for a prize or position (e.g., Gibbons). Some agent will be the “winner,” but which agent will win depends upon effort, endowments, productivity, random events, and the evaluator’s judgment. In different tournaments, the relative weights of the factors vary.

A player’s success in the game of life is heavily influenced by the human and social capital gained at college and both are chancy. For instance, it is said that Harvard rejects a group of candidates, equal in size to the number admitted, whose qualifications are equivalent to those who are admitted. Generally, which candidate is accepted at the margin is a matter of arbitrary factors and luck at all colleges. Attendance at an elite school is an *ex ante* investment in both human and social capital, but the outcomes, especially for social capital, will depend on serendipitous events: does one marry a Ford, or drive one?

² An interesting stochastic theory of scale free networks shows that hubs, once designated, grow disproportionately to the rest of the network.

Stage III: The career opportunity set: joining the “labor league”

Sometime in a player’s teens or twenties (in the USA) the player enters the job market, joining a labor pool. There is no grand, homogeneous labor pool. In many societies, agents have clearly different prospects: in some, an agent simply does whatever her parents did. The economic structure of the United States is much more complicated and fuzzy, and players have much greater choice and mobility, but economic prospects still differ. In real life, building human capital, joining a labor pool or work force, and getting a job are linked processes. However, separate treatment of admission to the labor pool highlights the role of endowments, particularly social capital (status), in determining economic rewards. However, in this framework social status does not dictate the agent’s job category and income, but it shapes her (fuzzy) career opportunity set. The player chooses which labor market and, eventually, which job slots to apply for from within the opportunity set. The agent evaluates job prospects ex ante, considering expected earnings along with other job characteristics (location, tedium, risk). Here, we remember that some players will accept lower economic prospects for other rewards.

Stage IV: Jobs, payouts and promotions

*“It may be that the race is not always to the swift, nor the battle to the strong -- but that’s the way to bet.”
Damon Runyon*

At this stage in the game of life, marginal productivity, position, and luck combine to determine individual payouts, the ex post distribution of personal income. To follow this part of the game, we must examine how the player gets into the job slot, and then how the economy rewards the job slot. The agent’s choice of job is a wager on expected outcomes (ex ante) in the economic game. Some bets are conservative, while other bets are risky.

Because of the interplay of luck and choice, agents with the same “qualifications” (endowments) may have very different career paths. To illustrate the role of serendipity, consider a well-qualified new PhD student. Entering the job market in year t , she finds four available jobs in four places in her specialty, applies to three she likes, and receives offers to two. Graduating a few years earlier or later, she will find a different number (and location) of open academic positions in her specialty. Chance also plays a role in “tournaments and “musical chairs” at job entry and promotion. For instance, a sales manager may win a promotion because of a chance contact from within her social network (social capital + luck), rather than because of her superior job skills or conventionally measured productivity.

Where is marginal productivity theory in this story? Labor payments are largely defined by the prevailing wage of a particular job slot. Surgeons are paid more than pediatricians, finance professors more than history professors, and electricians more than pre-school teachers. These payments are based largely on the marginal productivity of the job slot, rather than the specific effort, skills or productivity of particular individuals. Within slots, effort based job contracts (piece work) and merit premiums can individualize rewards. However, often an individual must change job slots to change payments – through promotion tournaments or career change.

While marginal productivity is the proximate determinant of expected payments to the job slot, one must not ignore underlying forces. Prices are set in a general equilibrium framework. A particular general equilibrium outcome is determined by factors including the initial endowments to the demanders, scarcity, tastes and preferences, and random shocks to the economy. Importantly, the individual chooses career and job slot ex ante, based on expectations. Players with similar endowments and ex ante expectations who “bet on” different careers or employment at different firms (Microsoft, Enron, Tyco, etc.) will experience different outcomes.

The Impact of Chance on the Economy

I have presented a four-stage game of life to illustrate that success in the game of life depends on a blend of luck, productivity, and skills and endowments. Existing general equilibrium and property rights

theories show how assets and market processes (demand, productivity) affect outcomes, so the claimed novelty of this paper is the addition of the role of chance. One might question whether including chance matters to our understanding of economic processes. For instance, one might argue that, while particular distributional outcomes are random, this does no more than add a random term to the structural models. I will argue that outcomes do matter for policy below, but let's suppose that stochastic processes have little direct explanatory importance. We would still want to know how significant random components are in the workings of the economy. To use an analogy from econometric theory, we want to know the R^2 , the variation of the dependent variable explained by the model³.

However, I want to make a stronger argument, an argument that stochastic processes are structural features of the economic system. To use (or abuse) the econometric analogy, a good model specification requires an account of the stochastic processes. Specifically, I believe that chance affects the workings of the economy through the psychology and actions of economic agents. This implies relevance to at least two inter-related research agendas: stochastic game theory and behavioral economics. In the description of the game, I have alluded to three stochastic processes: lotteries, serendipity, and tournaments. But in this section I want to focus on behavioral economics.

First, consider Schumpeter's theory of "creative destruction." A major engine of growth in capitalism is the continuous introduction of more productive processes or more popular products. Schumpeter argued that innovators are motivated by the prospect of windfall gains. In the process of innovation, fortunes are made (enhanced by monopoly rents) and lost, superseded by the latest innovation. It is the chance to win the lottery that inspires the innovators: psychologists tell us that intermittent rewards are very effective motivators.

A corollary to Schumpeter's theory is the role of the economic lottery in helping to stabilize and legitimize the capitalist market economy. Throughout America, many players hope that their business, property, stock or other stake in the system will win the prize. Just as the promise of reward in the afterlife is said to have helped win the allegiance of the peasant to the feudal system, the possibility of winning the economic lottery helps maintain the allegiance of the general population to the market system.

A third possible effect of the lottery economy may be to reduce productivity in the economy. Weber argued that the economic rise of Europe and industrial capitalism rested on the protestant ethic of hard work. A widespread belief that rewards have more to do with winning a lottery than effort, skill or productivity may reduce levels of individual industry in the economy and may interact with the agent-principal problem and rent-seeking to create perverse effects. A recent article in *The Economist* on the excesses of executive compensation bemoans the damage to executive behaviors induced by the "immense and random windfalls that stock options can bring."

Luck, rhetoric, and ideology: implications for policy

While it may be that stochastic process, not specific outcomes, are most interesting for theory, the nature and perception of the ex post distribution is critical for policy.

One inspiration for this paper is the recurring theme of "I earned it" asserted by some smug winner in the game of life. The most egregious example of the rhetoric of deservedness by winning came from the social Darwinists of the "robber baron era." They claimed that the capitalist market economy comprises a contest in which the best, the "fit," are rewarded, while the unfit perish. This rhetoric rests on a misunderstanding of evolutionary theory. Any organism that exists has (provisionally) won the contest of life. However, some organism must win the "game" of evolution (Dennett). For example, suppose one has a contest in which 100 participants "cast lots" until only one player emerges to win the

³ Interestingly, cross-sectional analysis of the determinants of personal income have R^2 's of about 30%, leaving a large unexplained component.

game. Generally, winning depends on some combination of luck, skill, assets, effort and productivity, and we usually cannot tell which is decisive. More significantly, in most ethical systems, winning is not sufficient moral grounds for deservedness.⁴

The behavioral aspects imply that chance matters to economic policy. Chance affects perceived legitimacy, which is as important as efficiency in the design of policy. For instance, unemployment insurance, social security and farm commodity programs are commonly seen as “insurance” payments against the vicissitudes of fortune rather than as transfer programs. In contrast, individual income support payments are perceived as fixed “gifts” supporting non-productive players. The lesson is that policy designers should recognize how agents will react to the random effects of the programs. For instance, while state lotteries may generate revenues for meritorious government services, do they enhance or reduce “lottery mentality,” innovation, or allegiance to the economic system.

In conclusion, I believe integrating the role of chance more fully into our models will advance our understanding of economic processes. As an economist, I think that marginal productivity is an important factor in explaining payments to factors (job slots), but it has less to say about the rewards that go to specific individuals. I conclude that a model of distribution in the economy should embrace social position, marginal productivity, and randomness, integrated through game theory and behavioral economics. Many pieces of this theory exist in the literature. But I think the general, integrated approach of this paper generates some interesting research topics with important policy implications.

References

- Alchian and Demsetz. "Production, Information Costs and Economic Organization," *AER* 62 (December 1972): 777-795.
- Becker, Gary S. "Investment in Human Capital: A Theoretical Analysis," *J. of Political Economy* 70(supplement) (October, 1962): 9-49.
- Coleman, James C. "Social Capital in the Creation of Human Capital," *American Journal of Sociology* 94(1988): S95-S120.4
- Dennett, Daniel, *Darwins' Dangerous Idea*, NY: Touchstone/Simon and Schuster, 1995.
- Gibbons, Robert. *Game Theory for Applied Economists*. Princeton, NJ: Princeton University Press, 1992.
- Mincer, Jacob. "Investment in Human Capital and Personal Income Distribution," *J. of Political Economy* 66(August 1958): 281-302.
- The Economist*. "Fat Cats Feeding: Special Report on Executive Pay," in *The Economist*. (October 11, 2003): 64-66.
- Schumpeter, Joseph. *Capitalism, Socialism and Democracy*. NY: Harper & Row, 1976 (reprint of 1950 edition).
- Weber, Max. *The Protestant Ethic and the Spirit of Capitalism*. NY: Translated by Talcott Parsons. Charles Scribner's Sons, 1958.

⁴ Even without the introduction of luck this claim has serious problems. If one assumes that much of the production of the economy is due to team activity, than one must ask the question of how the returns to the team production are distributed among the team members. Generally, the allocation of awards among any set of factors engaged in joint production is fairly arbitrary, although some scholars argue that efficient effort in a team organization requires that an agent who claims the residuals or profits of the enterprise monitor the team to prevent reduced effort (shirking) (Alchian and Demsetz).