

# The EVF Model: A Novel Framework for Understanding Gambling and, by Extension, Poker

Arthur S. Reber

## Abstract

There are several senses in which the term *gambling* is used. All have liabilities, problems that have muddied the waters in scientific research, generated conflicting legal decisions, compromised debates over ethical and moral issues, and have led to uneven legislation. Here, a novel framework for the term is offered, based on two continuous variables: a) the Expected Value (EV) of any arbitrary game and, b) the inherent Flexibility (F) of that game. This EVF model produces a classification system for all the enterprises that can or have been called *gambling*. It is one that allows for more measured decisions to be made and provides a more coherent platform on which to deliberate the many significant issues that have been raised over the years. It also permits a sensible answer to the question of the nature of games like the stock market, opening a small business, and especially, poker.

## Introduction

What activities constitute “gambling?” If gambling is a legitimate category, what are its boundaries? What features do the objects in the category express? What characteristics do they have in common, if any? Surprisingly, there aren’t any satisfying answers to these questions – which is disturbing because there are significant legal, legislative, economic and ethical issues lurking behind them. This paper presents the EVF model, a novel conceptual framework for viewing these issues. It allows for a different gloss on the core term *gambling* and provides a format within which some of these concerns might be approached. The model represents gambling activities along on two continuous dimensions: the Expected Value (EV) of a game and the inherent Flexibility (F) that it affords participants. The model is a general one but, largely because of the intense scrutiny accorded it in recent years, the game of poker will take a central place in the discussions.

*The term gambling has had an unhappy lexicographic experience.*

## Definitional Issues

The term *gambling* has had an unhappy lexicographic experience. In popular parlance, it is used with considerable latitude and, for the most part, without causing any particular problems. Gambling is taking risks, putting something of value (usually, but not always, money) in jeopardy with at least a reasonable hope of ultimate gain. The looseness of the meaning has led to its application to a wide range of human conduct. We have all seen the stock market called a gamble; real estate ventures and other forms of investment are routinely called gambles; and politicians who stake out controversial positions are often described as gambling. The connotations here are usually benign.

Arthur S. Reber  
Department of Psychology,  
University of  
British Columbia  
reber@brooklyn.cuny.edu

The gambler in these instances is merely taking a chance on a program, project or an enterprise that has some balance between risk and reward.

There is, however, a second cluster of connotations that accompany the term, ones that derive from viewing gambling as an activity linked with games of chance, enterprises that take place in casinos, racetracks, lottery kiosks, card rooms, billiard halls and other venues whose social status is generally pegged below those of Wall Street, Congress or a Justice of the Peace's office. Those who gamble in this sense are commonly viewed with a moral opprobrium rarely found applied to those who gamble in the former sense. The connotative clash here has caused problems, most compellingly when efforts to curtail or even outlaw one kind of gambling are made while leaving the other largely to the kinds of limited regulatory oversight consistent with free market policy. To see this distinction, consider the following tale.

### **The Saga of N.L.**

This story is presented as, in Dennett's (1995) famous phrase, an *intuition pump*. It concerns N.L., a young British businessman who made a number of decisions in a highly volatile area, wagering on anticipated future outcomes. Things did not go well, and N.L. found himself in a financially difficult situation. He struggled to recoup the initial losses by increasing the stakes. Again, reality was uncooperative; losses continued to mount. Convinced that his luck was bound to change, he began taking staggering risks; he falsified accounts to hide his losses, hoping he could make the "big score" that would bail him out of the mess he had created. But the spiral continued. Eventually the bottom fell out. His life lay in ruins. Family, friends and businesses were dragged into the morass and because of the tangled web of connections, the misery extended in ways unimaginable when the first ventures were made.

This sounds like a classic case of an individual with a gambling problem. In a sense it was, but the gamble was not what most consider gambling. N.L. is Nick Leeson, the trader whose speculations some years ago on the international money market brought down Barings Bank, then one of Britain's oldest and most storied investment houses, and the personal bank of The Queen.

What do our intuitions tell us about Mr. Leeson? Was he an investor or a gambler? Should we see him as a bold financial speculator who made a series of ill-judged decisions concerning currency futures or is he a flawed human being with deep personal weakness? If the wreckage of Barings had been found under a roulette table rather than on a trading room floor, would we feel differently? Would there be cries for legislation to curb such excesses if they had resulted from losses due to poor handicapping of sporting events rather than from reckless financial decision making? Is there a stain upon the soul of Leeson the gambler that Leeson the speculator somehow avoids?

There was little doubt that his actions violated the mores and laws of conduct in the business world and he was found guilty of fraud in a court in Singapore. But to put his escapade in perspective, after serving over six years in prison he returned to Ireland, wrote two books, one of which was made into a movie (*Rogue Trader*) and recently retired as CEO of Galway United FC. According to his personal web site, he "continues to be in-demand around the world for conference and after-dinner speaking." Leeson's story is not unusual. Michael Milken, known famously as The Junk Bond King, was convicted of securities fraud and served almost two years in a US Federal prison. After his release he was warmly embraced by the investment community as a speaker and consultant and is currently a high-profile philanthropist and public figure. The writer and media personality Martha Stewart similarly returned unscathed to her TV show and culinary publishing empire after her conviction for insider trading. These cases sit in dramatic contrast with that of Pete Rose, one of the best hitters in the history of baseball, who was banished from the

*Is there a stain upon the soul of Leeson the gambler that Leeson the speculator somehow avoids?*

game for life (thereby excluding him from the Baseball Hall of Fame, its highest honor) because he bet on baseball games.<sup>1</sup>

*The connotative boundaries of the term gambling are ill-defined and the category itself is misunderstood to the point where whether an activity gets assigned to it or to some other category is based, not a set of well-articulated properties, but on prejudice, cultural background, specific models of morality and political considerations.*

There is a problem here and it is being caused by a simple category error. As noted above, the connotative boundaries of the term *gambling* are ill-defined and the category itself is misunderstood to the point where whether an activity gets assigned to it or to some other category is based, not a set of well-articulated properties, but on prejudice, cultural background, specific models of morality and political considerations. These issues were first recognized in the legal world where this kind of ambiguity of usage was deeply problematical.

#### Legal Usage

The courts needed a more focused definition, one that could withstand the scrutiny of the constitution and existing precedent. Legal scholars are fond of quoting Justice Potter Stewart in the case of *Jacobellis v. Ohio* (1964), “I shall not today attempt further to define [it]. But I know it when I see it....” Stewart, of course, was referring to pornography, but the same subjective aspect applies to gambling. The Internet site *USLegal* tries to give substance to a Stewart-like implicit understanding in its effort at a definition of gambling law:

A person engages in gambling if he stakes or risks something of value upon the outcome of a contest of chance or a future contingent event not under his control or influence, upon an agreement or understanding that he or someone else will receive something of value in the event of a certain outcome. Gambling does not include bona fide business transactions valid under the law of contracts, such as the purchase or sale at a future date of securities or commodities, contracts of indemnity or guaranty and life, health or accident insurance.

The problems embedded here are numerous. For one, it would seem that Pete Rose, by virtue of having “control or influence” over the outcome of baseball games, was not really gambling when he wagered on their final score. Second, because the initial statement seems to apply to many financial activities including the buying and selling of stocks, commodities and other instruments, futures trading, real estate and insurance, the definition specifies that “transactions valid under the law of contracts” are excluded. It is difficult to see this clause as anything other than an unconvincing apologia designed to separate what are regarded as socially accepted forms of gambling from those that are not.

This gambit not only does not work, it fares poorly when applied to other games, such as predictions markets, where individuals may invest (wager? gamble?) on outcomes over which they have no control or influence, such as upcoming elections, meteorological events, technological developments, entertainment, civil cases, etc.<sup>2</sup> The existence of these markets is evidence of a serious interpretive problem. It appears to be perfectly legal to purchase an option on how a particular business deal will turn out, what the impact of climate change will be, which popular entertainer will win an award, how financial markets will move and, of course, what political figures will rise or fall, win elections or lose them, be involved in scandals or even die. But you will not find the

<sup>1</sup> Rose apparently never bet against his team, so could not be accused of doing anything other than trying to take advantage of his skills as a manager and player. No evidence was presented that his actions compromised the integrity of any game he played in or managed.

<sup>2</sup> For examples see either <http://www.intrade.com/> or <http://tippie.uiowa.edu/iem/index.cfm>, two of the most popular futures markets where a large number of real world propositions are publicly traded.

outcome of a sporting event listed among the many available wagers – at least not on sites that are open to residents of the United States.

Interestingly, these markets, because they are based on pari-mutuel principles, have turned out to be remarkably sound measures of reality. Brandt, Kavajecz, and Underwood (2007) outline how they operate in treasury futures. Their near prescient sensitivity to events is such that in 2003 the Pentagon considered establishing a futures market on when and where terrorist attacks were to occur. It was soon scrapped, not because it was deemed to be gambling, but because it seemed so bizarre and unethical and, as several critics noted, had inherent difficulties including manipulation of the market by real terrorists.

The *USLegal* entry also notes, correctly, that there are complex state laws that control gambling activities and they do not all mesh easily. Humphrey (n.d.) has compiled an analysis of each of the 48 states where some form of gambling is legal. The result is a truly messy set of legal circumstances which, given the manner in which the 10<sup>th</sup> Amendment to the Constitution has been interpreted, is not surprising. As far as US courts are concerned, the closest to a coherent definition comes from the generally accepted argument that gambling is an enterprise involving three necessary elements:

- *Consideration*, or what you must pay to play
- *Prize*, or what you can win
- *Chance*, or the role of luck in the gamble.

Consideration and prize are relatively solid factors. They need to be bounded, as some gambles are over matters trivial while others involve significant amounts but this element presents no significant legal challenge. The deep problem lies with *chance*. Virtually every game, every venture, has some element of chance; random factors are omnipresent in all complex activities. The solution has been the Dominant Factor (or Principle) Test (DFT) which was first introduced in *Morrow v. State*, a 1973 case in Alaska: do random, chance factors dominate in the sense that they control the eventual outcome or do the skills of the players, the decisions made, and actions taken ultimately trump the chancy side?

At first, this principle appears straightforward. Ancient games like the Egyptian casting of bones surely seemed like gambling, as did other popular pastimes like wagering on cockfights, dogfights, and races between horses and camels. Enterprising rulers like Heung Leung of China's Han Dynasty who developed the first Keno-type lottery over two thousand years ago was unambiguously inviting his subjects to gamble. More modern games like craps, slots, roulette, baccarat and *chemin de fer* that are featured in casinos also fall comfortably into this category. All have the three criteria and, at least at first reckoning, in all chance seems to dominate.

However, many of these games that are traditionally considered to be gambling have a mix of skill and chance. Craps has a wide variety of bets that are paid at different odds; blackjack requires the player to make decisions on the play of every hand, as does video poker. These decisions have an impact on the long-term outcome, the *prize*. Even games played seemingly under a cloud of purely random outcomes have small non-chance elements, and this includes state-run lotteries<sup>3</sup> and slot machines.<sup>4</sup> However, in

3 Picking a series of numbers like 7, 17, 27, 37 etc. or playing the numbers on a diagonal on a lottery card is a poor strategy. These are selected by large numbers of superstitious regulars and, if they were to win, the payoff would be low because it would be split between all who hold winning tickets. A better strategy is to play the numbers that won last time or a sequence like 5,6,7,8 etc. If these win you are likely the only ticket holder.

4 The payout schedule on a slot machine is set on the basis of the base-bet with 1¢ and 2¢ slots having a return in the low to middle 80% range, 25¢ machines are around 90%, the higher base-bet (\$1, \$2) machines payout in the low to mid 90 percent range and those in the upper reaches (\$10 and up) pay out in the upper 90%. A player comfortable wagering \$1 on a spin should play a \$1 machine and not put make four plays at a time on a 25¢ machine.

all these games (with the exception of blackjack under the right circumstances) the skill factor cannot dominate; it cannot overcome the random, chance factors and the player is, probabilistically speaking, going to lose in the long run.

*In poker the skill element looms large and recently courts in Nevada, Colorado, Pennsylvania and South Carolina have ruled that the skill element is, in fact, dominant.*

But there are other games that people and legal jurisdictions had classified as gambling, like poker, fantasy sports, wagering on horse and dog races and sports betting where the relationship between chance elements and decision making is less obvious. In poker the skill element looms large and recently courts in Nevada, Colorado, Pennsylvania and South Carolina have ruled that the skill element is, in fact, dominant (Baxter v. United States, 1986; People V. Kevin Raley, 2009; Pennsylvania v. Dent, 2008; Chimento et al. v. Town of Mount Pleasant, 2009). In fantasy sports, participants select fantasy teams based on real players and either lose their entry fee or win

those of the other participants depending on whose players perform best. Participants who are more skillful in selecting players for their team will be able to win at higher than chance rates. Interestingly, fantasy leagues were exempted from the 2006 Unlawful Internet Gambling Enforcement Act (UIGEA), which criminalized the transfer of money between an individual and a known gambling site.

Similarly, wagering on the outcome of sporting events and other competitions has a significant skill component. As early competitors quickly realized, someone who could handicap the roosters stood to win more than he would lose wagering on cockfights, and the same applies to football games, hockey matches and horse races. The legal situation, however, is again ambiguous. Horseracing and greyhound racing are considered to be gambling and share virtually all essential elements – the primary distinction is the species doing the running. However, horseracing, like fantasy sports, was exempted from the UIGEA, but dog racing was not. Wagering on Jai Alai is still legal in Florida, but in no other state. Sports betting is permitted in Nevada and, in limited ways in a few other states, but criminalized elsewhere and the Federal Wire Act of 1961 forbids the use of communications devices to transmit information about interstate wagers on sporting events let alone the wagers themselves. Try as one might, it is difficult to find a coherent pattern here.

*The predominance rule, as it is generally applied, has no temporal parameters. But the skill-to-chance balance in many of these games, particularly the more problematical ones like poker, is sensitive to time and frequency.*

In addition to these sources of confusion, there are the problems of time and repetition. The predominance rule, as it is generally applied, has no temporal parameters. But the skill-to-chance balance in many of these games, particularly the more problematical ones like poker, is sensitive to time and frequency. The outcome in a poker game that lasts but a few hands is overwhelmingly dictated by chance. But the longer the game goes on, the more hands that are dealt, the more decisions that have to be made, the more likely it becomes that the skills of the participants come to dominate. Fiedler

and Rock (2009) developed a quantitative measure, the Critical Repetition Frequency, which provides an estimate of the number of repetitions (or hands) needed to determine when the skills of a player outstrip the luck element. The failure to take the temporal element or the number of iterations of an activity into account has led many to make inappropriate regulatory proposals.

What is needed is a more coherent conceptual framework for the core term *gambling*. Without it the current mish-mash of rules, laws, regulations, prejudices and incoherent ethical and moral arguments will doubtlessly continue.

### **Defining Gambling**

In my view, the most straightforward definition of gambling is from the *Dictionary of Psychology* (Reber, Allen & Reber, 2008, p. 319): The risking of something of value with the possibility of ultimate gain.

This is where this discussion began and, of course, there are problems with almost every word. What does risk involve? What is the range of values that come under scrutiny here? What level of possibility counts? What kinds of gains are included? On the surface, it looks hopeless.

But this lexicographic messiness is actually a virtue. Its unimpeded reach allows one to tuck all those complex human activities that involve risk and the possibility of gain (or loss) of things of value under the umbrella of *gambling*. Opening a small business is a gamble, playing the stock market, getting married, sky-diving, buying a house, going to medical school are all, under this omnibus definition, gambles as much as shooting dice or betting on the Kentucky Derby.

Conceptually, this is a not-uninteresting move but, as before, it has to be narrowed down; boundaries need to be established. Others, of course, have tried to do this, but they have used non-relevant criteria and taken too narrow a stance. For example, there are learned treatises on the foundations of Islam's prohibition of gambling (Sharawy, 2000), insightful discussions of the somewhat more nuanced Judeo-Christian views that strive to distinguish acceptable from unacceptable forms (Kumar, Page & Spalt, 2011), extended deliberations by economists who have sought balance between the revenue-generating capacity of gaming (Eadington, 1987) and its potential for social disruption (Lugar, 1998) and, of course, extended debates in psychological and psychiatric circles on problem gambling, its etiology, frequency and surprising resistance to psychotherapy (Leiseur, 1998). None of these efforts succeeded, not because they didn't make contributions to one or another element in the discussion, but because they focused on *gambling* without unpacking the underlying dimensions that characterize the enterprise.

### **The EVF Model**

The EVF model is an effort to detail such dimensions. The core assumption is that each of the myriad activities that we call *gambling* lies somewhere along each of two continuous dimensions, *expectation* and *flexibility*. Expectation is the expected value of a game, the theoretical or empirical return on the investment (ROI) the player makes. Flexibility is the degree to which the outcomes of any particular game can be altered by the manner in which it is played. In the legal determination of gambling discussed above, expectation is the relationship between *consideration* and *prize* and flexibility is the balance between *skill* and *chance*.

### **Expected Value (EV).**

The expected value of a gamble is the long-term return to those involved in the enterprise. In a game with negative expected value (-EV), players enter at a statistical disadvantage. This does not mean that in the long run the player will lose; merely that the mathematical properties of the game state that, all other factors being equal, the theoretical player will find that the *prizes* do not compensate for the *considerations*. In standard terminology, the payoff odds are less than the true odds.

Similarly, if the game has +EV, the player enters with a statistical advantage; the prize exceeds the consideration or the payoff odds are greater than the true odds. Again, there is no guarantee that every player will emerge a winner, only that the structure of the game is such that it gives the idealized competitor a statistical edge. As will become obvious, an individual participant's ROI is not necessarily equal to the EV of the game. In some situations the EV of the game has a theoretically calculable value, in others the factors that contribute to it are too complex or unknown and empirical data are needed.

*The EVF model is an effort to detail such dimensions. The core assumption is that each of the myriad activities that we call gambling lies somewhere along each of two continuous dimensions, expectation and flexibility.*

*In some situations the EV of the game has a theoretically calculable value, in others the factors that contribute to it are too complex or unknown and empirical data are needed. The first type can be thought of as games with a theoretical EV; the latter, those with a normative EV.*

The first type can be thought of as games with a *theoretical* EV; the latter, those with a *normative* EV.

### ***Theoretical EV games.***

These games are ones where there is a discernable relationship between the payout odds and the true odds and both are known. State lotteries are good examples, as there is a known percentage of the ticket sales that is returned in the form of prizes.<sup>5</sup> Many casino table games are theoretical EV propositions. Sometimes the calculations are straightforward, as in games like roulette. Sometimes they are more complicated because the game allows for a variety of different bets with different odds (e.g., craps where multiple bets can be made on each throw of the dice, each having a different EV) or the game's proprietors impose different take-out rates for different wagers (e.g., horse racing where the so-called *exotic* wagers have a higher take-out than the traditional win, place and show bets). Video poker and slot machines also fall into this category, although different mechanisms operate. In video poker the payout schedule can be adjusted resulting in different EV's for different machines and forms of poker; in slots, the random number generator (RNG) that controls the device can be programmed for virtually any expectation. But despite these variations, in all these cases the theoretical EV can be determined objectively.

### ***Normative EV games.***

These are propositions where the probability distributions are unknown and must be determined by empirical means. The vast majority of gambles fall into this category. Classic examples are starting a small business, engaging in high-risk sports, going to college, entering into a profession like medicine or law. In standard discourse these are not regarded as *games* and not normally tucked under a conceptual umbrella labeled *gambling* – but, from the inclusive definition they are. Other, more traditional games, fall into this category. Poker is, for the most part, a normative EV game. While one can calculate the theoretical ROI in some cases (like tournament poker where there is a set buy-in, known registration fee and published prize schedule), the empirically discernable EV for individual players can only be assessed through normative means.

The EV of a game, however, is not the final determination on whether it can be played for profit. Several games with discernable negative EVs are played by professionals who make a living at them. Included here are the various market-based enterprises like buying and selling stocks and commodities, currency exchanges and trading futures as well as other activities more often thought of as games like poker, fantasy sports, prediction markets, sports betting and horseracing. In each of these, the negative EV comes about because each iteration of the game requires that the participant pay a fee for the privilege of playing. Each stock trade,<sup>6</sup> purchase or sale of a product, commodity, future right to buy or sell an option, requires the payment of a broker's fee. Each poker hand won is diminished by the rake the casino or card room imposes, investments in sporting events are taxed by the *vigorish* (or *vig*), a nominal percentage of the wager that is paid by the losing side in the transaction. One way to think of this is that it is simply the cost of doing business.

This is an important feature of the framework being developed. Games that are routinely played for profit by many individuals, organizations, conglomerates, even

5 In virtually all state-run lotteries 50% of the ticket sales is returned in prizes making them the worst proposition commonly offered. State lotteries are discussed below.

6 It has been argued that the stock market should not be thought of as a –EV game on the grounds that the broad market has, historically, gone up. This is correct but not relevant. The growth isn't derived from the game itself but in the fact that the broad market is a stochastic mirror of the economy and the beliefs about it that are held by the players. So long as economic growth is the norm or sanguine expectations are common, the market will rise. But each individual "event" in the game has *prima facie* negative expectation because of the fee that must be posted to play.

entire nations, are ones that have, mathematically speaking, negative expected value because in each more money (or other things of value) goes on the table than is ultimately taken off by the participants. The house takes its cut before distributing the proceeds to the winners. The reason for this ambiguity about individual EVs is found in the other primary underlying dimension, the *flexibility* of the game.

**Flexibility (F).**

This factor is simply the extent to which the EV of a game can be modified by decisions of the participants. Roulette is a good example of an inflexible game; the actions of the participants have no long term impact on the outcome – other than wagering on propositions that fall under the *en prison* rule.<sup>7</sup> Other casino-based games like baccarat have a modest degree of flexibility in that players can make the “bank” bet which has a small statistical edge over the “players” wager (-1.17% v. -1.36%) and avoid the “tie” wager with its -14% EV. Craps has the greatest degree of flexibility of the traditional table games. A player can make wagers that range from an EV of over -16% (the “any 7” wager) to a mere -.32% (“pass line plus 5-times odds”). However, the inherent flexibility of these casino games is limited. There are no wagers or decision strategies that will elevate the EV into the positive realm.

Other games have greater underlying flexibility, where the decisions participants make are of sufficient impact that even those with a theoretical negative EV can be turned into ones with +EV. Included here are traditional gambles like poker, horseracing, sports betting and blackjack, as well as other endeavors not typically thought of as gambles like starting a small business, predictions markets and fantasy sports. The games are highly flexible and the skills of the participants are significant features in determining the eventual outcomes. The flexibility factor, of course, expresses the balanced roles of skill and luck in the game. The simplest way to present these dimensions, and the manner in which they map into individual gambling endeavors, is to cut each continuous dimension into distinct categories: positive vs. negative expected value of a game and high vs. low flexibility of the game. Table 1 lays out the four cells that capture this framework along with examples of the games that fall into each.

*Flexibility is simply the extent to which the EV of a game can be modified by decisions of the participants.*

Table 1. The two dimensions of the EVF model with examples of games that fall into each of the four broad categories.

		Expected Value	
		Negative EV Games	Positive EV Games
Flexibility	Low	<b>A</b> Casino table games Slot machines Bingo & Lotteries	<b>B</b> Treasury bonds
	High	<b>C</b> Small business start-up Stock market, Poker, Sports betting, Horse racing, Fantasy sports	<b>D</b> Professional schools (law, medicine)

<sup>7</sup> Many casinos have this rule for even money wagers like red-black or odd-even. If the ball lands in the 0 or 00 slot only half the wager is lost; the other half remains on the table for the next spin, effectively cutting the -EV in half.



This classification system has obvious advantages over the patchwork ones currently in use. First, it treats all of these enterprises as gambling, which is treated here as a large, multi-faceted, conceptual umbrella that encompasses a wide array of actions and activities. The legal, legislative, regulatory and socio-psychological decisions that a society makes about the games its citizens engage in should be made on the basis of the cell into which each falls, not arbitrary sets of rules derived from misguided efforts governed by a category error.

#### **The Entailments of the EVF model**

The EVF framework has several significant advantages. Most obviously, it invites legislative, legal and academic bodies to view each game in a novel format and, in many cases, reassign them. For example, games like poker, sports betting, fantasy sport leagues, and predictions markets do not belong in the same category with casino table games, slot machines, lotteries and bingo. Their positioning on the two key dimensions shows that they are properly assigned to the same cell as endeavors like investing in the stock market, commodities trading, currency speculation and business start-ups – and the types of rules and regulations that govern these latter areas should acknowledge the common conceptual base.

*The EVF framework has several significant advantages. Most obviously, it invites legislative, legal and academic bodies to view each game in a novel format and, in many cases, reassign them.*

The EVF perspective also forces a novel take on many pursuits that would not be in the average person's list of gambles. Take two common examples, one from Cell C, starting up a small business, and one from Cell D, going to law school. Starting up a small business has large, normative negative EV. Historically over half of all start-ups fail within five years, a rate up there with another big gamble, getting married. Of course, some succeed, occasionally stunningly so but the typical outcome is a substantial loss. However, the game is one with a measure of flexibility and the eventual outcome is often (although, as Gladwell (2008) and Kahneman (2011) point out, perhaps not as often as many believe) dependent on the skills of the players. Because of the inherent flexibility component and the link that business has with capitalism, it is rarely classified as a gamble and the regulatory mechanisms in place are those that focus on business practices – which is entirely appropriate. The same general kinds of regulatory systems ought to be the case with other instances of games in this cell – but they rarely, if ever, are.

*The 2 x 2 framework also allows a different gloss on the often passionate arguments put forward against gambling.*

Law school has a different profile. It is also high on the flexibility dimension. Success is dependent on factors such as grades, the school attended, area of specialization, location, and the interpersonal style developed. Generalizing from those who have gone before, the law school graduate, unlike someone who opens a small business, has a high likelihood of playing the game with positive expectation. But there are no guarantees. Some law students never make it. Some drop out, others fail to pass the bar exams, others never establish a sound practice. They lose in this game and the losses can be substantial.

The 2 x 2 framework also allows a different gloss on the often passionate arguments put forward against gambling by prominent figures such as Richard Lugar, Republican Senator from Indiana, William Safire, former speech writer for President Nixon and one-time columnist for the New York Times, and Kerby Anderson, Head of Probe Ministries. Anderson (2002) wrote that, "Legalized gambling is bad governmental policy. Government should promote public virtue not seduce its citizens to gamble in state-sponsored vice." He went on to argue, predictably, against low-flexibility, negative-EV games, those in Cell A. He was particularly critical of state lotteries and, interestingly, made a number of legitimate points such as the fact that lotteries are a regressive form of taxation. But what was diagnostic were the loaded terms: virtue, seduce and vice – words it is unlikely he would have used for church-sponsored bingo, a game with structural

characteristics virtually identical to a state-sponsored lottery, or for a brokerage house which shares underlying features with poker. Anderson focused on issues that should be of concern but the target of his critique is not what he seems to think it is.

Anderson's position is held widely among prominent figures such as Ralph Reed, who mounted a vigorous anti-gambling campaign while head of the Christian Coalition,<sup>8</sup> Pat Buchanan, conservative writer and commentator whose standard stump speech includes the phrase, "gambling should return to the swamp from whence it came," and Methodist minister Tom Gray who heads the National Coalition Against Legalized Gambling.

*The anti-gambling camp has committed two key errors.*

Some years ago, William Safire (1995) brought this perspective to the *New York Times*. In an influential Op-Ed essay, he criticized contemporary society for removing the "moral stigma" from gambling and sanitizing it, accused the public of having elevated the high roller from the previously held position as "scum of society" to "folk hero." He called the "yen to gamble" a "personal weakness," raised the specter of "addiction," and warned that gambling was corrupting students in schools and colleges around the country. Safire also raised the specter of organized crime, claiming that "crime always goes hand-in-hand with gambling."

These criticisms are, within the EVF framework, easily seen as the result of a category error. The one about organized crime is flawed at the deepest levels. It is precisely when the activities are criminalized that organized crime gains influence. The lessons of Prohibition seem to have been forgotten.

The anti-gambling camp has committed two key errors. First, they misclassified the various kinds of human activities that fall under the umbrella of "gambling." Second, they approached the topic from a perspective tinged with theological considerations and puritanical principles, a stance that has prevented them from recognizing the first error. They are concerned about games where the odds are set independent of the play of the participants such as lotteries and slot machines but allow their disquiet to drift into games like sports betting and poker where it is not. Because they fail to appreciate the distinction between the generic sense of gambling and the specifics of casino gaming, they view the craps shooter as unsavory but not the NASDAQ investor; they see the poker player as a disagreeable character but not the day trader or the real estate speculator.

They are often inconsistent in their moral judgment. Critics argue that the enterprise invites bribery and various other related forms of chicanery such as fixing games, loading dice, and colluding in Internet poker. There is no doubt that a bit of this true. Larceny lurks in the hearts of many be they casino managers, bet cappers at a roulette wheel, or stock brokers with a soft spot for inside information. However, game-fixing scandals in the world of sports betting or malfeasance in Internet poker are actually quite rare and limited in scope when compared with instances of financial fraud, insider trading and other forms of banking and brokerage misrepresentation.

Logically, institutionalized, controlled, casino gaming cannot be treated as distinct in kind from gambling in the larger, generic sense. It is incoherent to maintain that if you bet on Dallas beating the Giants by more than three points you are a gambler but if you bet on the Japanese Yen dropping .11 against the American dollar you are an investor. It doesn't make sense to criminalize poker on the Internet, but still permit its residents to use web-based systems to wager on horseracing, bet on fantasy sports, trade stocks and buy and sell propositions on futures markets.

Considerations of ethical conduct need to be carried out with an eye to the dimensions of *flexibility* and *expectation*. There are not definitive answers, but the EVF model provides a coherent platform to engage in reasoned debate. The issues need to be framed

<sup>8</sup> Reed later was later implicated in a highly publicized case where his consulting firm received over \$1 million to lobby for several Indian gambling casinos (Edsall, 2004).

*There are not definitive answers, but the EVF model provides a coherent platform to engage in reasoned debate.*

in a context that recognizes that a large number of activities are, indeed, gambling, that they involve games where participants take risks, put things they value in jeopardy, look for avenues that lead to ultimate gain, and engage in these enterprises using whatever skills and talents they can bring to the table. Each of these games needs to be viewed from a larger socio-economic perspective based on whether the game is one with a positive or a negative EV and just how flexible it is.

If the game is one where the participants' actions play a significant role in determining the outcomes and if, through skill, knowledge and talent, an individual can play with positive expectation, then the kinds of ethical, legal, legislative and regulatory issues raised should be different in kind from those raised when the games are inherently inflexible –EV enterprises.

### **The EVF Model Applied to Poker**

Poker is one of the more popular games played in organized settings. Estimates vary but most surveys report that there are some 60 million people who play at least occasionally (including the canonical *poker by the kitchen sink* games) in the United States, another 6 or 7 million in Canada and at least an additional 40 million in Europe. According to Fiedler and Wilcke (2012, Vol. 16, Issue 1, pgs. 7-19), there are over 4.5 million who play regularly in real money games online and, until the recent legal actions taken against Internet poker in the United States, which effectively curtailed the use of the Internet to play poker for money as of April 15, 2011 (see US Department of Justice, 2011), roughly 1.5 million Americans were regular participants. Poker appears to be as, or more, popular than other more mainstream games such as tennis, golf, bridge or chess.

*Despite its popularity, poker still has an overall negative valence associated with it.*

But, despite its popularity, poker still has an overall negative valence associated with it. Some of this comes from its checkered history which is replete with stories of card sharps on riverboats scamming innocent travelers, of illegal games played in smoke-filled rooms run by unsavory characters and of wide-spread cheating. Some of this true (Wilson, 2008) but was not and is not today the norm. The overwhelmingly common poker session has always been a low-stakes game played among persons with either a common interest in the game in organized, legal card rooms or an informal gathering among friends in private homes, country clubs and social organizations. The vast majority of the tens of millions who play the game today do so in these distinctly benign settings.

Yet, the game has been stigmatized in ways that other games have not. It is diagnostic that when casinos became legal in Nevada and later in several other states, they included poker but not bridge, backgammon or chess among their offerings. In the public eye, poker is implicitly lumped in with games in Cell A; these others are viewed as skill-based competitions and, for the most part, the gambling element is not raised. However, chess, backgammon and bridge are routinely played for substantial amounts of money. Anyone who has spent time in a chess club in a major urban setting or, perhaps more ethnographically interesting, wandered through New York City's famous Washington Square Park on a warm spring day, will see dozens of chess games being played for considerable amounts. Bridge is typically played for substantial sums as, for that matter, are a vast array of traditional sports such as golf, tennis, bowling and, of course, billiards.

In passing, it is worth noting that poker has been called a game that can only be played for money which, so the argument goes, differentiates it from these other enterprises, like golf or tennis. This is a myth, as the popularity of the '.net' poker sites on the Internet shows. At any given moment tens, even hundreds of thousands of people are playing poker online for fun or for the sense of competition with no financial payoff.

This cultural isolation of poker is, as the EVF model makes clear, traceable to a category error. It has been treated in legal, socio-ethical, legislative and economic circles

as though it shared fundamental elements with Cell A games. It does not. It belongs with games in Cell C, ones marked by features of risk and reward, chance and skill, but where the knowledge and talents of participants operate to determine whether the game is played with a negative or a positive EV – which brings up a question often asked:

### **To What Extent is Poker a Game of Skill?**

It is important to be careful here. It is easiest to begin with a number of straightforward facts. First, there are professional poker players, people who make their living at the game much as professional golfers, tennis players, chess players, bridge-experts or a host of others who have mastered their specific games. Their existence should be sufficient to dispel any notions about what cell in Table 1 poker belongs in. There are no professionals playing games in Cell A; there are many in Cell C.

Second, analyses of online poker games have revealed an interesting element: the actual best hand in poker only wins some 12% of the time. This is because the betting patterns in a hand persuade the individual holding what would ultimately turn into the best hand to fold. The notion that “cards speak” has some truth, but in a real poker game they mostly remain silent.

Third, similar analyses show that less than a third of all hands go to a *show-down* where the remaining players reveal their cards to determine the winner. Again, this result comes about because one player has made bets or raises that convince his or her opponents to fold even when they hold a stronger hand. These simple facts make it clear that strategic elements in the play of each hand override the chance elements, the ones that determined who was dealt what cards.

In addition to these fairly obvious factors, a number of recent empirical studies have been carried out that further reinforce the overarching role of skill. Ingo Fiedler and colleagues (Fiedler, in press; Fiedler & Rock, 2009) examined the data from the vast sea of hands and games played online. They developed the Critical Repetition Frequency (CRF) metric, which takes into account the importance of the temporal factor noted earlier. The CRF functions as a threshold for the number of iterations in each case needed to solidify the trends – that is, it damps the impact of random fluctuations. They focused mainly on mid-stakes games (\$1 - \$2 to \$5 - \$10) but looked briefly at games from the lowest (in the 1¢ - 2¢ range, known as micro-stakes) to the highest (\$50 - \$100 and up, known as nosebleed stakes). The data overwhelmingly show particular players as consistent winners, as one would expect in any game of skill. Interestingly, the variability of skill levels or the edge that the best have over the others diminished as the stakes were increased. Again, this is expected in games that call upon extremely high levels of skill.

A recent study by Levitt and Miles (2011) examined the ROI of two groups of poker players at the 2010 World Series of Poker (WSOP). One group, made up of professionals who play poker for a living, was compared with another comprised of those who play recreationally. Levitt and Miles (2011) reasoned that if poker was truly a game of skill (or in the, admittedly more awkward terms of the EVF model, could elevate a game with a theoretical negative EV to one with a positive EV), it should be manifested in the returns from these two groups. What they found surprised even them. The amateurs had an overall ROI of -15%; for the professionals it was +30%, a number that dwarfs the best returns from successful financial investments. As they put it, “The observed differences in ROIs are highly statistically significant and far larger in magnitude than those observed in financial markets.” Levitt and Miles’s (2011) linking of poker with financial investing fits nicely with the EVF model.

Poker is, unassailably, a game of skill, one where the decisions made by each participant determine the long-term outcomes. It has a measure of chance, as does virtually every other gambling endeavor, and, while skill ultimately trumps luck, it is

*Poker is, unassailably, a game of skill, one where the decisions made by each participant determine the long-term outcomes. It has a measure of chance, as does virtually every other gambling endeavor, and, while skill ultimately trumps luck, it is important to keep in mind that this skill element has a strong temporal component.*

important to keep in mind that this skill element has a strong temporal component. It takes, as Fiedler and Rock (2009) noted in explicating the use of the CRF statistic, a good bit of experience before its role becomes clear – just as it does in virtually all competitive settings such as professional sports, where playoff series are multi-game affairs, golf, tennis, chess and similar competitions where play continues for days and extends over many iterations.

### **Socio-Ethical Issues**

The EVF model also provides a novel platform on which to discuss a host of social, political, economic and ethical issues. The following are offered as additional “intuition pumps.”

1. Should we be concerned when games like lotteries, which are inflexible and played with seriously negative expectation, are used by governments as forms of (highly regressive) taxation? As Tomlinson (2003) reports, lower income groups buy more lottery tickets and spend more of their total income on them than middle- and upper-income earners. Those with annual incomes below \$10,000 spend an average of 1.5% of income on lottery tickets; the equivalent figure for those with incomes over \$70,000 is a mere 0.18%.

Moreover, these games are often misrepresented to the players. As noted above, with a theoretical EV of -50% state lotteries have the poorest expectation of any regularly played game. But this number virtually never appears in promotional literature or ads – and it is not even the full story. In practical terms it is far worse, particularly in the case of jackpot games. Large wins are not paid out immediately.

The holder of the lucky ticket may either take the money spread out over several years or receive a reduced lump payment. If the former is elected, the state keeps the interest on the remaining winnings that they hold, and the value of the annual payouts is reduced by inflation. If the winner chooses the latter, the actual payout is far less than the announced size of the jackpot. And in both cases the winnings are taxed as income.

It is worth noting that the United States is unusual in the way in which these large payouts are handled. In many other countries the win is classified as a “windfall,” the full amount is paid up front and untaxed. Since states retain 50% or more of the proceeds from ticket sales, the game has already been effectively taxed. A Canadian who wins a large lottery will receive the full amount, in a lump sum and untaxed. An American who takes an equivalent prize spread out over twenty years will receive, in current dollars and after taxes, roughly 10% of the nominal win. Many anti-tax groups assail the inheritance tax claiming that it amounts to double taxation. But rarely (if ever) do they apply that argument to this practice of multiple taxation of windfall income.

There are legitimate questions about how the games that are in Cell A should be managed, advertised, promoted and regulated and just what the role of government should be but there is little doubt that they need to be handled separately from those in the other three cells of Table 1.

2. Government policy on the distribution and taxation of gambling winnings has significant but rarely noticed consequences. Take a notorious example from horseracing. The policy of withholding taxes from large windfall payouts at the tracks has spawned a group known in the trade as *10% 'ers*. These people will, for a fee, front for winners of large exotic bets who do not wish to have their identity revealed to the IRS. Some are marginal types whose real income is from drugs and loan sharking and they are using the IRS gimmick as a way of showing what appears to be legitimate income. Others use it as a source of personal income. They declare fictitious losses against these illusory wins and get back rebates from the taxes they have already

*The EVF model also provides a novel platform on which to discuss a host of social, political, economic and ethical issues.*

*Government policy on the distribution and taxation of gambling winnings has significant but rarely noticed consequences.*

paid – which, of course, were actually paid by the person who bought the winning ticket. Government policy is encouraging criminal behavior and the government is not even getting the tax revenues they believe they are.

3. A case can be made that the criminalization of games from both Cell A and Cell C has led to a significant loss of tax revenue. Internet gambling is a large and growing industry. To date, the largely negative valence attached to these games has led governments to criminalize the playing of them on the Internet outright (as the state of Washington has done) or to severely restrict them by imposing penalties for financial institutions that transfer funds to or from individuals and the sites that operate them (as the UIGEA does). There are various estimates of the revenues that would be generated by taxing the profits of the online sites and most of them are nontrivial. Moreover, by criminalizing these activities, a host of additional, and largely hidden, expenses have accrued in legislative time, the establishing of legal offices to pursue those who violate the laws' dictates, the cost of pursuing individual cases, etc.

*A case can be made that the criminalization of games from both Cell A and Cell C has led to a significant loss of tax revenue.*

Governments routinely acknowledge the legitimacy of *some* games in Cell C. They regulate the activities of participants as well as of those who own and operate the businesses, and they tax the profits. It would be logically consistent to do the same with the others in that group, rather than continue to view them as though they belonged in Cell A.

4. Should governmental bodies take legislative or judicial action to remedy some of the inconsistencies currently enshrined in law? For example, the UIGEA exempts the use the Internet to wager on horse races but not dog races. It specifically exempts fantasy sports leagues but not poker. Washington State's 2006 law criminalizes gambling on the Internet with draconian penalties. Violations are a Class C Felony, punishable at the same level as distributing child pornography or heroin possession. Because of the usual category error, poker is included while other Cell C games are not. The law makes playing poker online for stakes less than 5¢ - 10¢ (the most commonly played levels) a serious criminal act.

*Should governmental bodies take legislative or judicial action to remedy some of the inconsistencies currently enshrined in law?*

5. Should enterprises that are productive be held to different ethical standards than those that are nonproductive? On the face of it institutionalized gambling looks like a nonproductive activity. It doesn't make anything except money – and it doesn't really *make* it so much as redistribute it. Someone who gambles on a small business, perhaps by throwing together some electronic tinker toys in their garage has, so the argument goes, at least a chance of adding to the greater economic good.

But then again, casinos, racetracks and card rooms are not supposed to produce anything. They are in the entertainment business. They render services, like professional athletes or actors. Moreover, they add to the overall quality of life much like the Miami Dolphins or whoever is the latest rock star. And, they do create jobs and by doing so they do contribute to the emergence of a solid economic base for a community. The debate is a not simple one.

6. Is problem gambling an issue sufficiently serious that it should neutralize the arguments made here? Pathological gambling is a recognized psychological disorder. The Diagnostic and Statistical Manual (DSM) of the American Psychiatric Association classifies it as an impulse control disorder. But the condition is a complex one. This is not the place for a full analysis of the issue but a few main points need mention. First, pathological gambling is relatively rare; the DSM gives a rate of, at most, 1% to 3% of the population.<sup>9</sup>

<sup>9</sup> Interestingly, in the UK, where gambling on a far wider set of propositions is legal and betting shops are as common as greengrocers, the British Gambling Prevalence Survey (2007) found an incidence rate of .6%, less than one-third the US. It might well be the case that the negative aura of gambling in the United States makes it appear more alluring than in societies where it is accepted as an unexceptional part of life thereby increasing the incidence of psychopathology.

*On the face of it institutionalized gambling looks like a nonproductive activity. It doesn't make anything except money – and it doesn't really make it so much as redistribute it.*

Second, the DSM restricts the diagnosis to instances not accompanied by mood disorders such as mania or thought disorders such as grandiosity. However, when public evaluations of the incidence of problem gambling are made this nicety is not always observed leaving some to believe that problem gambling itself is more common than it is.

Third, pathological gambling is a classic *co-morbid* disorder.

That is, it often occurs together with a variety of other psychological disorders, in particular mood disorders, attention-deficit hyperactivity disorder, narcissism, antisocial personality disorder, borderline personality disorder and alcohol, drug and other forms of substance abuse.

Fourth, the problematic aspects of pathological gambling are not restricted to gambling in the sense of engaging excessively in Cell A games. The difficulties are found through the many focused enterprises people engage in. Most of these tendencies and behaviors can be seen, for example, in lawyers who are maniacally focused on their careers, stock brokers who are striving for success, in artists obsessed with expressing their creativity, even academic researchers often neglect family and social lives to pursue their work. To appreciate the analogy here, the following is the list of the diagnostic criteria provided by the DSM for pathological gambling. When five or more are present the diagnosis of a disorder is deemed appropriate. In each, the word gambling was removed, and “currency exchange” or a synonym inserted.

- The individual is preoccupied with currency exchanges, has frequent thoughts about past experiences, plans upcoming ventures and thinks of ways to get money to invest
- Larger or more frequent wagers are made to achieve the desired experience
- Efforts to stop investing in currency futures or even cutting back on investment opportunities are unsuccessful
- Irritability and restlessness is associated with such attempts
- The subject uses currency exchange episodes to relieve dysphoric mood or escape problems
- Losses are often followed by increased investments to try to recoup
- Often the individual will lie to family and even therapists about the extent of involvement in currency exchange markets
- Forgery, theft and fraud are committed to obtain funds for future operations or to recover investment losses
- Significant relationships, jobs or other opportunities have been put in jeopardy because of continued investments in currency exchanges
- Appeals to others are made for funds to relieve the financial situation caused by investments made in currency exchanges

The point is not to deny the existence of a psychiatric disorder that, while uncommon, can be serious and refractory to treatment, it is merely to point out that the problem is not one ineluctably linked with games that are traditionally called gambling. It is a pattern that manifests itself in a host of human activities. The manner in which these criteria characterize Nick Leeson is quite compelling.

In short, it is likely that if all *institutionalized* gambling (i.e., the games in Cell A plus a few others that we have put in Cell C) were to suddenly cease we would likely not see a diminution in the overall level of maladaptive behavior – merely a redistribution of it.

7. Finally, what should the role of government be in the regulation of activities that involve free choice by its adult citizens? This is an issue with serious implications for social and political philosophy. It is worth noting that those who argue most passionately against the spread of institutionalized gambling often ground their arguments in either theology and/or conservative political philosophy.

The former approach is understandable to the extent that Biblical and Koranic

texts share the classification rules with many contemporary theologians. The latter is something of an anomaly. The classic conservative position has, historically, favored a smaller and less intrusive government, one that respects the rights of adults to make measured choices on their own and accept the consequences of their decisions. Yet, oddly, those who openly espouse this political position are the ones who have been most vigorously opposed to gambling.

#### Summary

Gambling is not a singular activity, nor is it a term that embraces a small number of games that take place in restricted venues. It is a large, inclusive group of games and enterprises, ones that need to be viewed in a somewhat Wittgensteinian framework (Wittgenstein, 1953) where it is characterized by prototypical activities with in-principle, identifiable underlying dimensions. If this is done carefully, it should be possible to identify the games that fit the various categories, see where they lie on the two dimensions of Expected Value and Flexibility, and begin to unpack the legislative, legal, and, ultimately, the ethical, moral issues that pertain.

*The classic conservative position has, historically, favored a smaller and less intrusive government, one that respects the rights of adults to make measured choices on their own and accept the consequences of their decisions. Yet, oddly, those who openly espouse this political position are the ones who have been most vigorously opposed to gambling.*



## References

- Anderson, K. (2002). Gambling. In *Probe Ministries*. Retrieved from <http://www.leaderu.com/orgs/probe/docs/gambling.html>
- Baxter v. United States, 633 F. Supp. 912, 86-1 U.S. Tax Cas. (CCH) paragr. 9284 (D. Nev. 1986).
- Brandt, M. W., Kavajecz, K. A. & Underwood, S. E. (2007). Price discovery in the treasury futures market. *Journal of Futures Markets*, 27, 1021-1051.
- British Gambling Prevalence Survey. (2007). Executive Summary retrievable at: <http://www.gamblingcommission.gov.uk/pdf/British%20Gambling%20Prevalence%20Survey%202007%20executive%20summary%20-%20July%202008.pdf>
- Chimento, et al. v. Town of Mount Pleasant, Case No. 2009-CP-10-001551
- Dennett, D. C. (1995). Intuition pumps. In J. Brockman (Ed.), *The third culture: Beyond the scientific revolution*. NY: Simon & Schuster. (pp. 180-197).
- Eadington, W. R. (1987). Economic perceptions of gambling behavior. *Journal of Gambling Behavior*, 3, 264-273.
- Edsall, T.B. (2004, August 30). Reed confirms fees from Indian casino lobbyists. *The Washington Post*. Retrieved from <http://www.washingtonpost.com/wp-dyn/articles/A45348-2004Aug29.html>
- Fiedler, I. (in press). The gambling habits of online poker players. *Journal of Gambling Business and Economics*.
- Fiedler, I. & Rock, J-P. (2009) Quantifying Skill in Games - Theory and Empirical Evidence for Poker. *Gaming Law Review and Economics*, 3, 50-57.
- Fiedler, I. & Wilcke, A-C. (in press). The market for online poker. *UNLV Gaming Research & Review Journal*.
- Gambling law and legal definition (n.d.) In *USLegal, Terms, definitions and dictionary*. Retrieved from: <http://definitions.uslegal.com/g/gambling/>
- Gladwell, M. (2008). *Outliers: The story of success*. NY: Little, Brown & Co.
- Humphrey, C. (n.d.). State gambling laws. Retrieved from: <http://www.gambling-law-us.com/>
- Kahneman, D. (2011). *Thinking, fast and slow*. NY: Farrar, Straus and Giroux.
- Kumar, A., Page, J. K., & Spalt, O.G. (2011). Religious beliefs, gambling attitudes and financial market outcomes. *Journal of Financial Economics*, 102, 671-708.
- Leiseur, H. R. (1998). Pathological gambling is a psychiatric disorder. In *Legalized gambling: For and against*. R. L. Evans & M. Hance (Eds.). Chicago: Open Court Press. (pp. 37-53).
- Levitt, S. D. & Miles, T. J. (2011). The role of skill versus luck in poker: Evidence from the World Series of Poker. *National Bureau of Economic Research*, Working Paper #17023.

- Lugar, R. (1998). Gambling weakens the work ethic and the family. In *Legalized gambling: For and against*. R. L. Evans & M. Hance (Eds.). Chicago: Open Court Press. (pp. 219-223).
- Morrow v. State, 511 P.2d 127 (Alaska, 1973).
- Pennsylvania v. Dent, No. 2008-733, slip op. at 14-15 (Pa. Ct. Com.Pl. Jan. 14, 2009)
- People v. Kevin Raley, Weld District Court 2009CV168
- Reber, A. S., Allen, R. & Reber, E. S., (2009). *Dictionary of Psychology* (4<sup>th</sup> edition). New York: Penguin Books.
- Rose, I. N. (2011). A Present from the DoJ: Internet Lotteries (and Poker?) Are Legal. In *Gambling and the Law*. Retrieved from <http://www.gamblingandthelaw.com/blog/320-a-present-from-the-doj-internet-lotteries-and-poker-are-legal-december-24-2011.html>
- Safire, W. (1995, April 10). Gambling fever. *The New York Times*. Retrieved from <http://www.nytimes.com/1995/04/10/opinion/essay-gambling-fever.html?ref=williamsafire>
- Sharawy, H. M. (2000). Understanding the Islamic prohibition of interest: A guide to aid economic cooperation between the Islamic and Western worlds. *Journal of International and Comparative Law*, 29, 153-181.
- Tomlinson, M. (2003). The economic inequality of state lotteries. *Annual Review of Undergraduate Research at the College of Charleston*, 2, 266-283.
- United States Department of Justice. (2011). Manhattan U.S. attorney charges principals of three targets Internet poker companies with bank fraud, illegal gambling offenses and laundering billions in illegal gambling proceeds [press release]. Retrieved from <http://www.justice.gov/usao/nys/pressreleases/April11/scheinbergetalindictmentpr.pdf>
- Wilson, D. (2008). *Ghosts at the table*. Cambridge, MA: Da Capo Press.
- Wittgenstein, L. (1953). *Philosophical investigations*. NY: Blackwell.