A BETTER LEGAL DEFINITION OF GAMBLING: WITH APPLICATIONS TO SYNTHETIC FINANCIAL INSTRUMENTS AND CRYPTOCURRENCY

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I. INTRODUCTION

In many cases, gambling is relatively easy to identify. Purchasing a lottery ticket, betting on a particular team to win the Super Bowl, and playing blackjack at a local casino, all these activities undoubtedly constitute gambling. You just know it when you see it. But sometimes you do not. In some cases, gambling is not so easy to identify. Over time, questions have arisen as to whether certain transactions, often of critical importance in the moment, constitute gambling. Roughly a decade ago, for instance, there was considerable debate around whether trading in synthetic collateral debt obligations (CDOs) constituted gambling no different than placing a bet on the Yankees or, instead, served a socially useful purpose in the management of risk.[1] More recently, there has been a similar debate about the intrinsic value of cryptocurrency and whether cryptocurrency is merely a vehicle designed to enable gambling, allowing buyers and sellers to participate in what is, in effect, a

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[1] *See* Timothy E. Lynch, *Gambling by Another Name: The Challenge of Purely Speculative Derivatives*, 17 STAN. J.L. BUS. & FIN. 67, 70–71 (2011); Christopher L. Culp, *The Social Functions of Financial Derivatives*, *in* FINANCIAL DERIVATIVES: PRICING AND RISK MANAGEMENT 57, 58 (Robert W. Kolb & James A. Overdahl eds., 2010); Thomas Lee Hazen, *Disparate Regulatory Schemes for Parallel Activities: Securities Regulation, Derivatives Regulation, Gambling, and Insurance*, 24 ANN. REV. BANKING & FIN. L. 375, 436–38 (2005); Andrew Ross Sorkin, *True Investment or a Sucker's Bet?*, TAMPA BAY TIMES (Apr. 21, 2010), https://www.tampabay.com/archive/2010/04/21/true-investment-or-a-suckers-bet/ [https://perma.cc/8TXP-HWMQ].

lottery based upon a randomly drawn market price.[2] Today, similar confusion exists over whether governments should regulate the use of loot boxes in video games as facilitating digital gambling systems aimed primarily at children.[3] Daily fantasy sports also raise analogous questions regarding the distinction between entertainment and gambling.[4]

This confusion over what constitutes gambling matters because vastly different outcomes can obtain depending upon whether a transaction is classified as gambling or not. If trading in synthetic CDOs, for example, had been clearly classified, at the outset, as a form of gambling, then financial regulators may have implemented much more stringent regulatory safeguards than existed at the time, which might have prevented—or at the very least mitigated the impact of—the 2008 financial crisis. Likewise, social commentators would surely have been less willing to ascribe such revolutionary potential to cryptocurrency if trading in this asset class was viewed as merely a novel form of gambling. Presumably, parents would be much less willing to allow their children to play video games if a significant part of the appeal for children was the opportunity to engage in unregulated gambling. In general, if the law classifies a transaction as gambling, then the government tends to regulate the transaction much differently than other risk transactions, typically giving the transaction heightened regulatory scrutiny to address certain problems commonly linked to gambling, such as addiction.[5]

Given the significance of a transaction being categorized as gambling, the continuing confusion over what constitutes gambling is surprising. This Article suggests that this confusion stems, in large part, from the fact that gambling is not presently well-defined under state or federal law. Current legal definitions are overinclusive and do not permit easy categorization of novel risk transactions. In response, this Article, as its main contribution, provides a much more formal and precise definition of gambling than presently exists in the legal literature. Specifically, this Article extends the analytic framework set forth by Professor Lynch in an article that has been somewhat overlooked in the literature given its

[2] Rob Davies, *'Trading Is Gambling, No Doubt About It' – How Cryptocurrency Dealing Fuels Addiction*, GUARDIAN (Jan. 15, 2022), https://www.theguardian.com/technology/2022/jan/15/trading-is-gambling-no-doubt-about-it-how-cryptocurrency-dealing-fuels-addiction [https://perma.cc/43YF-C2LM].

[3] *See, e.g.*, Sheldon A. Evans, *Pandora's Loot Box*, 90 GEO. WASH. L. REV. 376, 421–22 (2022).

[4] *See, e.g.*, Marc Edelman, *Navigating the Legal Risks of Daily Fantasy Sports: A Detailed Primer in Federal and State Gambling Law*, 2016 U. ILL. L. REV. 117, 130–35.

[5] *See* Hazen, *supra* note 1, at 431.

originality and depth of analysis.[6] The key insight in this article is that "[a party] who enters into a derivatives contract is either motivated to hedge [or transfer] a pre-existing risk [of economic profit or loss] or is not."[7] That is, derivative counterparties can be divided into two mutually exclusive categories: (1) hedgers, defined as those motivated to hedge an existing risk of economic profit or loss, and (2) speculators, defined, in the negative, as those who are *not* motivated to hedge such risks.[8] In the corresponding taxonomy of derivative contracts based upon counterparty motivation, three categories of contracts thus exist: (1) hedger-hedger, (2) hedger-speculator, and (3) speculator-speculator.[9] Similarly focusing on the motivations of contract parties with respect to an existing risk of economic profit or loss, this Article expands the scope of this novel framework beyond derivative contracts to provide a formal definition of gambling that highlights the central importance of risk creation solely through contract.

The Article proceeds as follows: Part II considers how the law has sought to define gambling. Unless modified by statute, the law has defined gambling as any activity that includes the following three elements: (1) consideration, (2) chance, and (3) prize.[10] Traditionally, jurisdictions have divided regulated forms of gambling into three categories: (1) lotteries, (2) wagering, and (3) gaming.[11] Part II provides a brief survey of each category.

Part III introduces the baseline model of bilateral risk creation and extends this model to include two additional variables: (1) endogenous risk, and (2) risk mitigation. With the addition of these two variables, this broad definition of bilateral risk creation can be mapped onto the three traditional categories of regulated gambling examined in Part II. As one of its central claims, this Article contends that gambling, as currently defined under state or federal law, is overinclusive and fails to distinguish a risk transaction that *transfers* an existing risk of economic profit or loss, such as a securities investment or insurance contract, from a transaction that *creates* risk solely through the contractual exchange of bets. This Article

[6] *See* Lynch, *supra* note 1.

[7] *See id.* at 75; see also Lynn Stout, *Why the Law Hates Speculators: Regulation and Private Ordering in the Market for OTC Derivatives*, 48 DUKE L.J. 701, 735–36 (1999).

[8] *See* Lynch, *supra* note 1, at 75–76.

[9] *See id.* at 76.

[10] *See* FCC v. Am. Broad. Co., 347 U.S. 284, 290 (1954); *see also* Morrow v. State, 511 P.2d 127, 128 (Alaska 1973).

[11] *See, e.g.*, Mason v. Mach. Zone, Inc., 851 F.3d 315, 318–20 (4th Cir. 2017) (applying Maryland law); Phillips v. Double Down Interactive LLC, 173 F. Supp. 3d 731, 737 (N.D. Ill. 2016) (applying Illinois law).

proposes a model statutory definition of gambling that includes the concept of risk creation as a limiting principle to distinguish gambling from other bilateral risk transactions.

The analytic framework developed in Part III highlights two main regulatory concerns in connection with bilateral risk transactions: (1) moral hazard or fraud, and (2) risk mitigation. In general, these traditional regulatory concerns do not appear to justify the heightened regulatory treatment of gambling, however. Part IV argues that the difference in regulatory treatment between gambling and other forms of risk transactions derives from the key distinguishing feature of gambling: that gambling involves risk creation, and not risk transfer. This Article contends that the principal basis for a more rigorous form of consumer protection than found in the regulation of other risk transactions, such as securities investments or insurance, is most often a paternalistic one centered on the prevention of self-harm and a recognition of the fact that risk creation or gambling is, for some, the unfortunate byproduct of a self-destructive mental disorder.

As an illustrative application of the analytic framework, Part IV applies this novel definition to the regulation of synthetic trading positions and makes the case that the increased use of derivative contracts has allowed investors to enter synthetic trading positions that constitute gambling no different than placing a wager on the spin of a roulette wheel or the outcome of a sporting contest. Although financial regulators have recognized the counterparty risk implied by such synthetic trading positions, regulatory authorities have been reluctant to condemn such positions more generally.[12] The analysis below suggests that this is a mistake as risk creation is not only antithetical to the broader social mission of the financial sector, but makes the financial system less sound, amplifies volatility, and, ultimately, renders the economy susceptible to financial crisis and protracted recession.

As a second application, Part IV demonstrates how the analytic framework set forth in Part III can be employed to make the purely theoretical case that trading in cryptocurrency constitutes unregulated gambling. The claim is that cryptocurrency has no independent value as an economic good. Rather, cryptocurrency is merely a vehicle designed to enable risk creation or gambling, and not to transfer the existing risks of asset ownership to other parties

[12] *See Investor Bulletin: An Introduction to Short Sales*, SEC (Oct. 29, 2015), https://www.sec.gov/oiea/investor-alerts-and-bulletins/ib_shortsalesintro [https://perma.cc/CG8Y-HLFE].

who can bear these risks more efficiently. Betting on expected market price allows people to participate in what is, in effect, a lottery, with market participants placing bets on whether a "randomly drawn" market price will increase or decrease in the next period.

Part V briefly concludes.

II. GAMBLING DEFINED

Part II examines the legal definition of gambling and surveys the three traditional categories of regulated gambling: (1) lotteries, (2) wagers, and (3) gaming.

A. Elements of Gambling

Unless modified by statute, the law has defined gambling as any activity that includes the following three elements: (1) consideration, (2) chance, and (3) prize.[13]

1. Consideration

To start, for a game to qualify as gambling, a player must provide some form of consideration in exchange for the opportunity to participate in the game.[14] If no consideration is required, then the contest in question is categorized as a sweepstakes (or a no-purchase-necessary sweepstakes), and not gambling.[15] The consideration required for the creation of a gambling contract is usually more than the nominal (or peppercorn) consideration sufficient to satisfy the consideration requirement for a legally enforceable bargain under ordinary contract law.[16] The consideration must be more than a

[13] *See Am. Broad. Co.*, 347 U.S. at 290 (defining gambling as "(1) the distribution of prizes; (2) according to chance; (3) for a consideration"); *see also Morrow*, 511 P.2d at 128 ("Where the term 'lottery' is not defined by statute, courts generally adopt a definition including three essential elements: consideration, chance, and prize."); Anthony Cabot, Glenn Light & Karl Rutledge, *Economic Value, Equal Dignity, and the Future of Sweepstakes*, 1 UNLV GAMING L.J. 1, 2 (2010).

[14] *See, e.g.*, I. Nelson Rose, *Gambling and the Law: An Introduction to the Law of Internet Gambling*, 10 U. NEV. L.V. GAMING RES. & REV. J. 1, 2 (2006).

[15] *See, e.g.*, CAL. BUS. & PROF. CODE §§ 17539.5, 17539.15, 17539.55 (West 2022); TEX. BUS. & COM. CODE §§ 622.001–.002 (West 2022).

[16] *See* Alexandra M. Prati, *Video Games in the Twenty-First Century: Parallels Between Loot Boxes and Gambling Create an Urgent Need for Regulatory Action*, 22 VAND. J. ENT. & TECH. L. 215, 229 (2019). In determining what constitutes adequate consideration in a gambling contract, a decreasing minority of jurisdictions use the broad definition found in contract law, defining consideration as any "right, interest, profit or benefit accruing to one party, or some forbearance, detriment, loss, or responsibility given, suffered or undertaken by the other." *See,*

minimum effort.[17] Often, the consideration given in exchange for the opportunity to participate in a game is money.[18] A game that requires all players to bet cash, for example, plainly satisfies the consideration requirement.[19] A game in which players can enter free of charge, on the other hand, clearly lacks consideration.[20] An activity cannot constitute gambling unless the participant is required to risk something of economic value.[21]

2. Chance

Gambling must also involve a game of chance: games of skill cannot constitute gambling.[22] For a game to qualify as a game of chance, the outcome must be determined by chance.[23] Courts have proposed several tests for distinguishing a game of skill from a game of chance.[24] Implicit in all these judicial tests is the notion that a

e.g., Op. Att'y Gen. N.Y. No. 96-F1 (Jan. 29, 1996), https://ag.ny.gov/sites/default/files/opinion/96-F1%20pw.pdf [https://perma.cc/LZ2B-JUHG].

[17] *See* Cal. Gasoline Retailers v. Regal Petroleum Corp., 330 P.2d 778, 788–89 (Cal. 1958) (holding that a give-away of purchase tickets did not satisfy the consideration requirement).

[18] *See id*. at 785.

[19] *See* Prati, *supra* note 16, at 229. Online casinos, for example, typically operate on an account basis, requiring an initial "post-up" transfer of funds to a customer's secure online account by credit card, debit card, or wire transfer—consideration under any standard. *See* Scott M. Montpas, Comment, *Gambling On-Line: For A Hundred Dollars, I Bet You Government Regulation Will Not Stop the Newest Form of Gambling*, 22 DAYTON L. REV. 163, 171, 180 (1996); Brett Smiley, *How the U.S. Legal Sports Betting Business is Fundamentally Disadvantaged*, SPORTSHANDLE (Nov. 21, 2019), https://sportshandle.com/legal-sports-betting-disadvantages/ [https://perma.cc/977H-3R6Q].

[20] *See, e.g.*, FCC v. Am. Broad. Co., 347 U.S. 284, 293–94 (holding that no-purchase-necessary sweepstakes in which a player can freely enter lacks consideration and, therefore, cannot constitute gambling); *see also* Kit v. State, 7 So. 338, 339 (Ala. 1889) (holding that if tickets were available for free, then no consideration and, in turn, no gambling).

[21] *See* 7 RICHARD A. LORD, WILLISTON ON CONTRACTS § 17:6 (4th ed. 1997) ("[The] offer to give a prize to the winner of an athletic or similar competition does not give rise to a wagering contract, if the offeror of the prize does not personally take part in the competition.")

[22] *See* Prati, *supra* note 16, at 230.

[23] *See id*. Chance can be defined as (1) lack of control over events, or (2) uncertainty as to the realization of those events. *See* John L. Reiter, *Gambling: The Element of Chance*, 46 MARQ. L. REV. 537, 538 (1963).

[24] *See, e.g.*, Anthony N. Cabot, Glenn J. Light & Karl F. Rutledge, *Alex Rodriguez, a Monkey, and the Game of Scrabble: The Hazard of Using Illogic to Define the Legality of Games of Mixed Skill and Chance*, 57 DRAKE L. REV. 383, 390 (2009) (stating that under the Predominance Test, a trier of fact must "envision a continuum with pure skill on one end and pure chance on the other."). A majority of states employ the Predominance or Dominant Factor Test to determine if a game constitutes a game of chance. *See id*. This test considers whether chance and not a participant's skill or judgment, is the "dominant" or "controlling" factor in deciding the outcome of the game. *See, e.g.*, In re Allen, 377 P.2d 280, 281 (Cal. 1962) (citing People v. Settles, 78 P.2d 274, 277 (Cal. App. Dep't Super. Ct. 1938); Boies v. Bartell, 310 P.2d 834, 837 (Ariz. 1957); State v. Hahn, 72 P.2d 459, 461 (Mont. 1937); Baedaro v. Caldwell, 56 N.W.2d 706, 709 (Neb. 1953); State v. Stroupe, 76 S.E.2d 313, 316–17 (N.C. 1953); D'Orio v. Startup Candy Co., 266 P. 1037, 1038–39 (Utah 1928); Longstreth v. Cook, 220 S.W.2d 433, 437 (Ark. 1949); State v.

continuum of games exists ranging from a game of pure chance to a game of pure skill, with games involving a mix of skill and chance lying in between these two limit cases. Examples of games involving a mix of skill and chance include card games, such as poker and blackjack.[25] A conventional understanding of these card games is participation in a continuous sequence of distinct hands over a sustained period.[26] The skill in these games becomes evident only after multiple rounds of play. In playing a single hand of poker, for example, the most skilled player is not certain to win.[27] But as more hands are played, the most skilled participant becomes more likely to prevail over the other less skilled players—this feature explains why many contests, including card games, are typically played for more than a single round.[28]

Wiley, 3 N.W.2d 620, 624 (Iowa 1942); Adams v. Antonio, 88 S.W.2d 503, 505 (Tex. Civ. App. 1935)) (stating that, under the Predominance Test, "[i]t is the character of the game rather than a particular player's skill or lack of it that determines whether the game is one of chance or skill[,]" and that "test is not whether the game contains an element of chance or an element of skill but which of them is the dominating factor in determining the result of the game"). Under this test, a court will find a contest to be a game of chance if a player's own skill or ability controls less than fifty percent of the game's outcome. *See* Cabot et al., *supra*, at 391–92. Some states rely upon the Material Element Test to determine if a game is one of skill or chance. *See id*. at 392. The Material Element Test considers whether chance is a "material" element in determining the outcome of the game. *See id*. For a game to be classified as a game of chance, chance need not play a significant, or even dominant, role in deciding the outcome of the game; rather, a court will find a contest to be a game of chance if chance plays a "meaningful" role. *See, e.g*., United States v. DiCristina, 726 F.3d 92, 98 (2d Cir. 2013) (stating that, under the Material Element Test, a game of chance is defined as "any contest, game, gaming scheme or gaming device in which the outcome depends in a material degree upon an element of chance, notwithstanding that skill of the contestants may also be a factor therein"). Finally, a few states have adopted the Any Chance Test. *See* Nathaniel J. Ehrman, *Out of Bounds?: A Legal Analysis of Pay-to-Play Daily Fantasy Sports*, 22 SPORTS L.J. 79, 98 (2015) ("States that follow this approach include Arkansas, Iowa, and Tennessee."). Under this test, if *any* element of chance impacts the outcome of a game, then the contest is considered a game of chance. *See id*. at 99. Because most games involve some element of chance, most games will be deemed games of chance under this test. *See* Cabot et al., *supra*, at 393. Even chess, for example, which is typically considered a prototypical game of skill, has an element of chance as far as the initial draw of white and black pieces to select which player will make the first move of the game is determined purely by chance. *See* JONATHAN ROWSON, CHESS FOR ZEBRAS: THINKING DIFFERENTLY ABOUT BLACK AND WHITE 193 (2003) ("[T]he conventional wisdom is that White begins the game with a small advantage and, holding all other factors constant, scores approximately 56% to Black's 44%.").

[25] *See* Steven D. Levitt, Thomas J. Miles & Andrew M. Rosenfield, *Is Texas Hold'Em a Game of Chance? A Legal and Economic Analysis*, 101 GEO L.J. 581, 597 (2013).

[26] *See id*.

[27] *See* Alex A. Igelman & Joshua J. Prizant, *The Chess Conundrum: Skill Gaming and the Challenges of Head-To-Head Wagering*, 21 GAMING L. REV. 650, 653 (2017) ("Being dealt 'pocket aces' provides a tremendous starting advantage to the player, no matter their skill level.").

[28] *See* Levitt et al., *supra* note 25, at 597.

3. Prize

Lastly, for a game to be considered gambling, a player must receive a prize if the game is won.[29] If no prize can be won, then the contest in question is categorized as an amusement game, and not gambling.[30] Although a prize has been defined as almost anything of value, including a free replay or credit, many courts today require that the prize be something that can be readily redeemed for cash or some other item of economic value.[31] Under this view, a replay that must be played, for instance, would not be considered a prize, whereas a credit that can be easily redeemed for cash would.[32]

B. Three Categories of Gambling

Historically, regulated forms of gambling have been divided into three distinct categories: (1) lotteries, (2) wagering, and (3) gaming.[33] Gambling in each category can be further classified as (1) banked, or (2) non-banked.[34] In a banked game, players do not compete against each other, but against a gambling operator (i.e., the House) that has a fund of money (i.e., the Bank) against which the players bet.[35] The

[29] *See* Rose, *supra* note 14, at 2.

[30] *See id.*

[31] *See*, *e.g.*, Mason v. Mach. Zone, Inc., 851 F.3d 315, 318–20 (4th Cir. 2017) (applying Maryland law); Phillips v. Double Down Interactive LLC, 173 F. Supp. 3d 731, 737 (N.D. Ill. 2016) (applying Illinois law); Soto v. Sky Union, LLC, 159 F. Supp. 3d 871, 879–80 (N.D. Ill. 2016) (applying California law); *see also* Sebastian Schwiddessen & Philipp Karius, *Watch Your Loot Boxes! – Recent Developments and Legal Assessment in Selected Key Jurisdictions from a Gambling Law Perspective*, 1 INTERACTIVE ENT. L. REV. 17, 28 (2018); *cf.* Kater v. Churchill Downs Inc., 886 F.3d 784, 787–88 (9th Cir. 2018) (holding that virtual casino chips qualify as "things of value" under state statutory definition of gambling because chips extend privilege of playing casino games without charge). To help eliminate the prize element, video game developers have maintained a "closed economic system" that does not give players an opportunity to cash out in-game items received in return for real currency or other items with real value, such as game merchandise. *See* S. GREGORY BOYD, BRIAN PYNE, & SEAN F. KANE, VIDEO GAME LAW: EVERYTHING YOU NEED TO KNOW ABOUT LEGAL AND BUSINESS ISSUES IN THE GAME INDUSTRY 205 (2019).

[32] *See* BOYD ET AL., *supra* note 31, at 205.

[33] *See* G. Robert Blakey, *Gaming, Lotteries, and Wagering: The Pre-Revolutionary Roots of the Law of Gambling*, 16 RUTGERS L.J. 211, 214 n.8 (1985).

[34] *See* I. NELSON ROSE & MARTIN D. OWENS, JR., INTERNET GAMING LAW 51–52 (2009). This distinction can have legal importance. In California, for example, banked table games are illegal but non-banked table games and pari-mutuel wagering structures are legal under certain circumstances. *See* CAL. BUS. & PROF. CODE § 19801(a) (West 2022) ("State law prohibits commercially operated lotteries, banked or percentage games, and gambling machines . . .[.]").

[35] *See* ROSE & OWENS, *supra* note 34, at 51; *see also* Kelly v. First Astri Corp., 84 Cal. Rptr. 2d 810, 817 (Ct. App. 1999) (quoting People v. Ambrose, 265 P.2d 191, 194 (Cal. App. Dep't Super. Ct. 1953)) ("In a banking game the banker . . . is the one against the many, which is the supreme test of a banking game.").

House generates revenue by participating as a player in the game while holding some type of statistical advantage over the other players.[36]

In a non-banked game, the House is not a participant in the game.[37] Instead, the players compete against each other, with "no single participant having a continuous advantage," and the winnings are distributed among the players, and do not go to the House.[38] Rather than exploit a statistical advantage over the other players, the House generates revenue (1) by charging a seat-rental fee based upon the time of the game, (2) by charging an individual fee per hand, or (3) by collecting a fixed percentage of the players' winnings (i.e., "raking the pot").[39]

1. Lotteries

Over time, jurisdictions have proposed different definitions for what legally constitutes a lottery.[40] Some jurisdictions, for example, have adopted what is referred to as the "English Rule" under which a lottery is defined as any game with very little, or no, skill.[41] In these jurisdictions, a lottery has traditionally not been viewed as a game at all, but rather, as a type of scheme in which players are passive, merely purchasing tickets, having no impact upon the outcome of the

[36] *See* ROSE & OWENS, *supra* note 34, at 52.
[37] *Id.* at 53.
[38] *See id.*
[39] *See id.*; Sullivan v. Fox, 235 Cal. Rptr. 5, 12 (Cal. Ct. App. 1987).
[40] *See Ex parte* Ted's Game Enters., 893 So.2d 376, 378 (Ala. 2004) (quoting Opinion of the Justices No. 373, 795 So.2d 630, 635–36 (Ala. 2001)); Ronald J. Rychlak, *Lotteries, Revenues and Social Costs: A Historical Examination of State-Sponsored Gambling*, 34 B.C. L. REV. 11, 23 (1992) (The presence of legal lotteries in the United States predates the American Revolution). Lotteries were a popular alternative to taxes to raise money for charitable causes or other public works projects. *See id.* at 12 ("Lottery proceeds were used to build cities, establish universities, and even to help finance the Revolutionary War."). During the mid-1800s, however, the country experienced a fierce backlash against lotteries, driven by two principal concerns: (1) widespread fraud by lottery organizers, and (2) perceived social problems related to gambling, such as addiction, poverty, disintegration of families, crime, depression, and suicide. *See id.* at 32–36. In 1821, New York became the first state to pass a constitutional amendment banning lotteries. *Id.* at 36–37 (quoting N.Y. CONST. art. VII, § 11 (1821)). By 1860, all but three states had prohibited lotteries either by statute or constitutional amendment. *See id.* at 37–38. Not until the 1960s did lotteries reemerge as a common mechanism for raising state revenue. *See id.* at 44–45. Today, state lotteries operate in forty-five states. *See* Amanda Woods, *Mississippi Residents Line Up to Purchase State's First Lottery Tickets*, N.Y. POST. (Nov. 26, 2019), https://nypost.com/2019/11/26/mississippi-residents-line-up-to-purchase-states-first-lottery-tickets/ [https://perma.cc/8ATL-MAVP] (only Alabama, Alaska, Hawaii, Nevada, and Utah do not have state lotteries).
[41] *See* Joshua McCrory, *Video Poker and the Skill Versus Chance Debate*, 6 GAMING L. REV. 223, 224–25 (2002).

scheme.[42] Under this legal definition, a slot machine—a game of pure chance—constitutes a lottery, whereas blackjack or poker—games involving some skill—do not.[43]

To qualify as a lottery, some jurisdictions require that the lottery prize derive from a pool of players' bets when the prize is not fixed beforehand.[44] Under this definition, a lottery can be characterized as a type of betting pool.[45] A betting pool is a variant of parimutuel betting where participants pay a fixed price into a pool and then select the outcome of a random event (e.g., a lottery number).[46] In a true parimutuel betting system, all bets of a specific type are placed together in a pool, the house-take, or "vigorish," is deducted, and the payoff odds are calculated by the remaining support in the betting pools.[47] In a betting pool, by contrast, no odds are calculated; the payoff depends solely upon the number of bettors and the number of winners.[48] Significantly, the final payout in these types of betting pool systems *floats* and is not determined until the pool is closed.[49] In betting systems with floating payouts, such as a lottery, the players bet against one another, and not the House, which implies that the game is non-banked and can be conducted by a gambling operator with minimal operational risk.[50]

For a game of pure chance to constitute a lottery, some jurisdictions have further required that the game "must also be a public nuisance

[42] *See id.* at 224; Harris v. Mo. Gaming Comm'n, 869 S.W.2d 58, 62 (Mo. 1994), *abrogated on other grounds*, City of Aurora v. Spectra Commc'ns Grp., LLC, 592 S.W.3d 764 (Mo. 2019).

[43] *See, e.g.*, *Harris*, 869 S.W.2d at 64 (holding that casinos could offer blackjack, but not slot machines, because the Missouri Constitution forbids "lotteries"). *But see Ex parte* Pierotti, 184 P. 209, 210–11 (Nev. 1919) (holding that state legislature had power to legalize "nickel-in-the-slot machines," because these slot machines were not lotteries prohibited under the Nevada Constitution).

[44] *See* W. Telcon, Inc. v. Cal. State Lottery, 917 P.2d 651, 659 (Cal. 1996) (holding that the prize need not come from pooled ticket sales if the lottery game involves fixed prizes). The "bet" here is the purchase of a lottery ticket.

[45] *See* Bryan Clair & David Letscher, *Optimal Strategies for Sports Betting Pools*, 55 OPERATIONS RES. 1163, 1163–64 (2007).

[46] *See id.* at 1163; Marie-Cecile O. Tidwell, John W. Welte, Grace M. Barnes & Behnam Daya, *Gambling Modes and State Gambling Laws: Changes from 1999 to 2011 and Beyond*, 19 GAMING L. REV. & ECON. 13, 17 (2015).

[47] *See* ROGER MUNTING, AN ECONOMIC AND SOCIAL HISTORY OF GAMBLING IN BRITAIN AND THE USA 116-125 (1996); Tidwell et al., *supra* note 46, at 17; *see also* Richard H. Thaler & William T. Ziemba, *Parimutuel Betting Markets: Racetracks and Lotteries*, 2 J. ECON. PERSPS. 161, 162 (1988); Christine Hurt, *Regulating Public Morals and Private Markets: Online Securities Trading, Internet Gambling, and the Speculation Paradox*, 86 B.U. L. REV. 371, 388 (2006).

[48] *See* Clair & Letscher, *supra* note 45, at 1163–64; Tidwell et al., *supra* note 46, at 17.

[49] *See* Marshall Gramm, C. Nicholas McKinney & Douglas H. Owens, *Efficiency and Arbitrage Across Parimutuel Wagering Pools*, 44 APPLIED ECON. 1813, 1813–1814 (2012).

[50] *See* Sarah Remes, *Legalizing America's New Pastime: Teaming Up with the House for Pari-Mutuel Sports Betting*, 16 WAKE FOREST J. BUS. & INTELL. PROP. L. 551, 558 (2016).

or a widespread pestilence."[51] In *Stone v. Mississippi*,[52] the U.S. Supreme Court described this additional element as follows:

> [E]xperience has shown that the common forms of gambling are comparatively innocuous when placed in contrast with the *wide-spread pestilence* of lotteries. The former are confined to a few persons and places, but the latter infests the whole community; it enters every dwelling; it reaches every class; it preys upon the hard earnings of the poor; and it plunders the ignorant and simple.[53]

Under this judicial test, a game that requires a player to go to a specific place to participate, such as a casino or racetrack, is not considered a lottery.[54] Today, most courts generally do not emphasize physical location, finding that a game of pure chance with floating payouts constitutes a lottery even if "widespread pestilence" is not present.[55]

2. Wagers

Jurisdictions have defined a wager as a bet between two or more people on the outcome of an external random event.[56] Wagers can be characterized by fixed-odds betting.[57] Fixed-odds betting is a form of betting against odds, typically set by a bookmaker, in which the payout on a given proposition is fixed at the time the bet is made.[58] Unlike floating-odds betting where the final payout is not determined until the pool is closed, in fixed-odds betting, the final payout is

[51] Morrow v. State, 511 P.2d 127, 128 n.3 (Alaska 1973).
[52] Stone v. Mississippi, 101 U.S. 814 (1880).
[53] *Id*. at 818 (emphasis added) (quoting Phalen v. Virginia, 49 U.S. (8 How.) 163, 168 (1850)).
[54] *See*, *e.g*., *Ex parte* Pierotti, 184 P. 209, 211 (Nev. 1919) (holding that slot machines were not lotteries because players must go to a physical location, such as a casino, to participate in the game).
[55] *See*, *e.g*., State v. Coats, 74 P.2d 1102, 1105 (Or. 1938); *see also* Willard W. McInturff, Note, *Lotteries—Nature and Elements—Regulations,* 16 OR. L. REV. 164, 168 (1937).
[56] *See, e.g*., 31 U.S.C. § 5362(1)(A); *see also* Remes, *supra* note 50, at 558.
[57] *See* Steven D. Levitt, *Why Are Gambling Markets Organised So Differently From Financial Markets?*, 114 ECON. J. 223, 223–24 (2004) (discussing how bookmakers take large positions with respect to outcome of game).
[58] *See* Peter F. Pope & David A. Peel, *Information, Prices and Efficiency in a Fixed-Odds Betting Market*, 56 ECONOMICA 323, 325–26 (1989); *see generally* Tim Kuypers, *Information and Efficiency: An Empirical Study of a Fixed Odds Betting Market*, 32 APPLIED ECON. 1353, 1353–63 (2000) (examining the efficiency of fixed-odds betting).

agreed to by the parties at the time the bet is placed.[59] Straight bets, also known as "spread bets," are a common form of bet in a fixed payout betting system, where a betting line, often referred to as a point spread, is set by the bookmaker, and the bettor either bets on the favorite, giving up the points, or bets on the underdog, receiving the points.[60] The bookmaker acts as the House, keeping the wagers of losing bettors and distributing the payouts to the winning bettors.[61] In the case of a balanced (or even) book, the bookmaker profits from a statistical advantage held over the bettors: the bookmaker profits in the same manner as a casino, paying the winner less than the full odds.[62] In the case of an imbalanced (or uneven) book, the bookmaker might have to pay out more winnings than what was staked or might earn more than what was mathematically expected.[63] An imbalanced book can arise if the bookmaker fails to accurately predict the wagers that will be attracted by the fixed odds offered to bettors.[64]

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[59] *See* Kuypers, *supra* note 58, at 1353. In the fixed-payout betting game roulette, for instance, a straight bet pays out at fixed 35-to-1 odds. *See* Jordan T. Smith, *No Spin: Why Judge Posner's Roulette Player Can Recover His Orange Chip*, 15 GAMING L. REV. & ECON. 693, 696 (2011).

[60] *See* Jodi S. Balsam, *Criminalizing Match-Fixing as America Legalizes Sports Gambling*, 31 MARQ. SPORTS L. REV. 1, 6–7 (2020); Josh Appelbaum, *Sports Betting 101: Favorites, Underdogs, and the Point Spread*, VSIN (Mar. 19, 2020, 11:37 PM), https://www.vsin.com/sports-betting-101-favorites-underdogs-and-the-point-spread/#:~:text=The%20spread%20has%20nothing%20to,%E2%80%9D%20or%20%E2%80%9Creceives%E2%80%9D%20points [https://perma.cc/7NLT-Q38U]. In the United States, bookmakers also often quote money-line odds, which refer to the odds on the outcome of a game with no consideration given to a point spread. *See* Dominic Cortis, *Expected Values and Variance in Bookmaker Payouts: A Theoretical Approach Toward Setting Limits on Odds*, 9 J. PREDICTION MKTS. 1, 2 (2015); Balsam, *supra*, at 6–7. If the figure quoted is +200, for example, then $200 will be won on a $100 wager. Likewise, if the figure quoted is -200, then $200 must be wagered to win $100. *See* Cortis, *supra*, at 2–3.

[61] *See* ROSE & OWENS, *supra* note 34, at 68.

[62] *See* Walter T. Champion Jr. & I. Nelson Rose, *Daily Fantasy Sports and the Presidential Debate*, 27 MARQ. SPORTS L. REV. 301, 309 (2017) ("The most common wager is a multiple of $11 to win $10. If the sports book succeeds in having the same amount of money wagered on both sides of a match, it is guaranteed to make a profit. For example, if Patron A bets $11 on his team and Patron B bets $11 on the opposing team, then the sportsbook now has $22, but pays the winner, whoever he may be, only $21, his original $11 bet back and his $10 in winnings. The sportsbook keeps the additional $1.").

[63] *See* Levitt, *supra* note 58, at 223–24; Brad R. Humphreys, *The Financial Consequences of Unbalanced Betting on NFL Games*, 6 INT'L J. SPORT FIN. 60, 69 (2011).

[64] *See* Stewart Hodges & Hao Lin, *Fixed Odds Bookmaking with Stochastic Betting Demands*, 19 EUR. FIN. MGMT. 399, 400–01 (2013). Exchange betting solves the problem of an imbalanced book by matching people who wish to take opposite sides of a wager. *See, e.g.*, Michael A. Smith, David Paton, & Leighton Vaughan Williams, *Market Efficiency in Person-to-Person Betting*, 73 ECONOMICA 673, 674 (2006). Betting exchanges allow bettors both to buy (also known as "back") or sell (also known as "lay") the outcome of a given contest and to trade in real-time throughout the contest, either to reduce losses or to lock in profit. *See id*. Unlike a traditional bookmaker who generates revenue by offering less efficient odds, betting exchanges generate

3. Gaming

Finally, jurisdictions have defined gaming as any form of gambling where the bettor participates in a game involving some amount of skill.[65] Important examples include blackjack and poker.[66] Gaming can be categorized according to whether the prize involves a (1) fixed payout, or (2) floating payout.[67] The casino game blackjack is an example of a fixed-payout game and is typically offered as a single-player, banked game.[68] Each participant in the game plays each hand against a single opponent (i.e., the House), which has a fund of money (i.e., the Bank) that is relatively large compared to the limited stakes and maximum bet size allowed the players.[69] The House participates in every hand and has a statistical advantage that derives primarily from the fact that a player loses if both the player and the House bust.[70] Payouts are "fixed" at the start of the game and do not "float" depending upon the total amount bet by other players during a given hand.[71] Wins are paid out at even money, except for player blackjacks,[72] which have traditionally paid out at fixed 3-to-2 odds.[73]

revenue by charging a small commission calculated as a percentage of net winnings for each customer on each event or market. *See id*. at 676.

[65] *See supra* text accompanying note 24; se*e also* Remes, *supra* note 50, at 558.

[66] *See* Remes, *supra* note 50, at 558.

[67] *See id*. at 558.

[68] *See id*.; Will Bennis, *Blackjack Playing Strategies and Beliefs: A View from the Field*, EGAMBLING, Feb. 2004, at 1, 6, https://www.collectionscanada.gc.ca/eppp-archive/100/202/300/e-gambling/html/2004/no10/issue10/ejgi_10_bennis.html [https://perma.cc/SW5H-4NYV].

[69] *See* Remes, *supra* note 50, at 558; ROSE & OWENS, *supra* note 34, at 51.

[70] *See* Bennis, *supra* note 68, at 6, app. at 39. A blackjack player employing basic strategy loses less than an average of one percent of the action over the long run, giving blackjack one of the lowest house edges in the casino. *See* Robert C. Hannum, *Risky Business: The Use and Misuse of Statistics in Casino Gaming*, 18 CHANCE 41, 43–44 (2005).

[71] *See* Bennis, *supra* note 68, at 6–7.

[72] *See* Grant Uline, *Card Counting and the Casino's Reaction*, 20 GAMING L. REV. & ECON. 669, 670 (2016). "A 'blackjack' occurs when" the two initial cards dealt to a player have a "combined value of [twenty-one]." *Id*. at 669 (stating that "a 'blackjack' requires the first two cards to be an ace and any ten-valued card").

[73] Jeff Haney, *Taking a Hit: New Blackjack Odds Further Tilt Advantage Toward the House*, LAS VEGAS SUN (Nov. 13, 2003, 8:23 AM), https://lasvegassun.com/news/2003/nov/13/taking-a-hit-new-blackjack-odds-further-tilt-advan/ [https://perma.cc/62Y9-LTQ6]. Various methods exist to increase the probability of winning the game of blackjack. A strategy known as Basic, for example, requires integration of the player's and dealer's total to determine if one should hit or stay. *See* Albert W. L. Chau, James G. Phillips & Karola L. Von Baggo, *Departures from Sensible Play in Computer Blackjack*, 127 J. GEN. PSYCH. 426, 427 (2000). More controversially, card counting, in combination with perfect rules, such as a single deck dealt to the last card and the unlimited right to vary the size of bets, ensures, with statistical certainty, that the player, and not the House, will win in the long run, provided the player has enough money to

The card game poker, by contrast, is a floating payout game and is typically played as a non-banked, multi-player game.[74] In poker, players' losses go to another player, and not to the House: the House is not a participant in the game.[75] The winning player receives the pool of other players' bets, minus the House's take or "vigorish," as the prize for winning a hand.[76] Bluffing is fundamental to the game, and adds a psychological component to a game that requires a specific set of skills to succeed, "including selecting the right starting cards," correctly assessing the statistical odds, "reading tells," and provoking "other players to put them on tilt[.]"[77] The size of the winning payout is not *fixed* at the start of a hand, but *floats* according to the total amount bet by the players during a given hand.[78] This pooling of player bets is amplified when poker is offered in a multi-table tournament format where many players participate simultaneously at a large number of tables.[79] In a standard poker tournament, players are required to pay a fixed buy-in,[80] and the prizes for winning the tournament derive from a pool of money funded by the players' fixed buy-ins.[81]

endure short-term losing streaks. *See* Tom Julian, *Exclusions and Countermeasures: Do Card Counters Have a Right to Play?*, 9 GAMING L. REV. 165, 165–66, 169 (2005).

[74] *See* ROSE & OWENS, *supra* note 34, at 53, 55; Blake Griffin & Barbara Osborne, *The Legality of Charity Poker in North Carolina*, 19 J. LEGAL ASPECTS SPORT 7, 11–12 (2009).

[75] ROSE & OWENS, *supra* note 34, at 53.

[76] *See* Robert C. Hannum & Anthony N. Cabot, *Toward Legalization of Poker: The Skill vs. Chance Debate*, 13 U. NEV. L.V. GAMING RSCH. & REV. J. 1, 7 (2009); Hurt, *supra* note 47, at 388. Any advantage that the dealer enjoys in playing last is temporary, because the deal rotates, clockwise, to the next player after each round is over. *See* Griffin & Osborne, *supra* note 74, at 11.

[77] *See* Nigel E. Turner, *Viewpoint: Poker Is an Acquired Skill*, 12 GAMING L. REV. & ECON. 229, 229 (2008); *see also* Marco Alberto Javarone, *Poker as a Skill Game: Rational Versus Irrational Behaviors*, J. STAT. MECHS.: THEORY & EXPERIMENT, Mar. 2015, at 3, app. at 11 (noting that "the opportunity to perform bluffs makes this game non-trivial" in terms of devising algorithms to make machines capable of playing successfully against humans); *see generally* Michael A. DeDonno & Douglas K. Detterman, *Poker Is a Skill*, 12 GAMING L. REV. 31 (2008) (establishing that poker is not a game of luck but a game of skill).

[78] *See* Griffin & Osborne, *supra* note 74, at 11–12.

[79] *See* NICOLAE SFETCU, ABOUT ONLINE POKER 219 (2021).

[80] *Id.* at 218. "[S]ome invitational tournaments do not have buy-ins and fund prize pools with sponsorship revenue and/or gate receipts from spectators [these tournaments are referred to as "freerolls."]" *Id.*; *see also* Jocelyn Wood, *The Latest Innovation in Online Poker: Freebuy Tournaments*, POKERFUSE (Apr. 29, 2015), https://pokerfuse.com/news/poker-room-news/26806-latest-innovation-online-poker-freebuy-tournaments/ [https://perma.cc/7J56-UTC8].

[81] SFETCU, *supra* note 79, at 218. Prizes are awarded to winning players in one of two ways: (1) *fixed*, meaning that each placing corresponds to a certain payoff, or (2) *proportional*, meaning that payouts are determined according to a proportional-based payout structure. *See id.* at 218–19.

III. THEORETICAL MODEL

Part III introduces a theoretical model of bilateral risk creation and applies this model to the three distinct categories of regulated gambling introduced in Part II. Other types of bilateral risk transactions are also considered, including forward contracts and synthetic trading positions.

A. Model Setup

This subpart introduces a simple model of bilateral risk creation. The description of the basic setup of the model starts with a formal definition of a bet. A bet, B, is defined as a set of finite payouts, V, over a discrete set of states of nature, S. Suppose, for simplicity, that only two states of nature exist: $S = \{s_1, s_2\}$. The elements of a bet correspond to the payouts in each state of nature. The bet, $B = (5, -5)$, for example, yields a positive payout of 5 if state, s_1, is realized and a negative payout of -5 if state, s_2, is realized.[82] For ease of exposition, assume that the two states of nature are realized with equal probability, $p_1 = p_2 = 0.5$. Given this setup, a *bilateral risk transaction* is defined as a contract where Party X agrees to give a bet, B_X, to Party Y in exchange for Party Y agreeing to give a bet, B_Y, to Party X.

In addition, suppose that each contract party j has an initial risk endowment, V_j^0, that can be defined as a set of finite payouts over the two discrete states of nature. The initial risk endowment, $V_j^0 = (0, -10)$, for example, yields a payout of 0 if state, s_1, is realized and a negative payout of -10 if state, s_2, is realized.[83] Party j enters a bilateral risk transaction to transform an initial risk endowment, V_j^0, into a new payout distribution, V_j^1.

The risk associated with a given payout distribution, V, is formally defined as the standard deviation of the payout distribution.[84] In this

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[82] W.C. Bunting, *A Simple Unifying Framework for Classifying Disparate Risk Transactions: Securities Investments, Insurance, Gambling, and Derivative Contracts*, __ U. PA. J BUS. L. __ (manuscript at 19) (forthcoming 2023), https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID4278623_code1192692.pdf?abstractid=4041418&mirid=1&type=2 [https://perma.cc/2DJT-Z9KQ]. The probability of each state of nature is given by a discrete probability distribution, $P(v_i) = p_i$.

[83] *Id.*

[84] *Id.* (manuscript at 20, 20 n.73). The standard deviation of the random variable, V, can be expressed mathematically as follows:

$$SD[V] = \sigma = \sqrt{\frac{(v_1 - \mu)^2 + (v_2 - \mu)^2}{2}}$$

simplified formal environment, the risk of a payout distribution can be set equal to the difference (or distance) between the two possible payoffs; specifically, the *risk* of a payout distribution, $V = (v_1,\ v_2)$, can be expressed as follows:

$$\text{Risk} = |v_2 - v_1|$$

Under this formulation, the riskiness of a payout distribution, $V = (v_1,\ v_2)$, decreases (increases) as the absolute difference or distance between the two payouts, v_1 and v_2, decreases (increases). A payout distribution where the absolute difference or distance between the two payouts is zero (i.e., $v_2 - v_1 = 0$) has zero risk.

B. Baseline Model

This subpart introduces the main baseline model of bilateral risk creation and considers extensions of this model.

1. Bilateral Risk Creation

This subpart provides a formal definition of bilateral risk creation or gambling.

a. Formal Model

Suppose that both contract parties have initial risk endowments with zero risk, $V_X^0 = V_Y^0 = (0, 0)$.[85] Although the two states of nature are probabilistic, this randomness has no economic impact on either contract party: the realization of either state does not imply an economic profit or loss for either party. Party X enters a bilateral risk transaction with Party Y in which Party X agrees to give a bet, $B_X = (0, 5)$, to Party Y in exchange for Party Y agreeing to give a bet, $B_Y = (5, 0)$, to Party X Under this bilateral risk transaction, Party X receives a positive payout of 5 (= 0 + 5) if state, s_1, is realized and a negative payout -5 (= 0 − 5) if state, s_2, is realized. Party X's new

where the expected value (or mean) of the random variable, V, is given by:

$$E[V] = \mu = \frac{v_1 + v_2}{2}$$

If μ = 0, then the standard deviation, σ, can be rewritten more simply as follows:

$$SD[V] = \sigma = \sqrt{\frac{v_1^2 + v_2^2}{2}}$$

Note that the standard deviation can be any real *non-negative* number.

[85] *Id.* (manuscript at 24). Recall that Risk = $|v_2 - v_1| = 0 - 0 = 0$.

payout distribution is V_X^1 = (5, -5), which has risk.[86] Likewise, Party *Y*'s new payout distribution is V_Y^1 = (-5, 5), which also has risk. Both parties have *created* a risk of economic profit or loss by exchanging bets that are defined according to a source of randomness that initially had no economic consequence for either party. Table 1 summarizes this discussion.

Table 1: Risk Creation

States	V^0	B_X	B_Y	V^1
s_1	(0, 0)	0	5	(5, -5)
s_2	(0, 0)	5	0	(-5, 5)

Significantly, a gambling contract can be defined as a type of bilateral risk creation contract. A gambler has no preexisting economic exposure to the source of randomness that defines the bets exchanged. As Table 1 highlights, the gambler *creates* this economic exposure by entering a bilateral risk transaction in which the gambler agrees to pay $5 to a counterparty (e.g., the House, bookmaker, another gambler) if state, s_1, is realized in exchange for the counterparty agreeing to pay 5 to the gambler if state, s_2, is realized. Solely through the contractual exchange of bets, *both* parties have voluntarily transformed an initial risk endowment with zero risk into a new payout distribution with risk, converting a certain payout of 0 into an uncertain profit or loss of 5.[87] This type of risk creation is the defining feature of a gambling contract.[88]

[86] *Id.* Specifically, Risk = $|v_2 - v_1| = |-5-5| = 10 \neq 0$.

[87] *See id.* (manuscript at 25)*; supra* Table 1: Risk Creation.

[88] *See* EDWARD J. MURPHY, RICHARD E. SPEIDEL & IAN AYRES, STUDIES IN CONTRACT LAW 612 (6th ed. 2003) (claiming that those insured seek insurance "to compensate them for the possible occurrence of an existing risk" while "[g]amblers by their contracts create the risk at issue"); THOMAS A. HIERONYMUS, ECONOMICS OF FUTURES TRADING FOR COMMERCIAL AND PERSONAL PROFIT 138 (1971) ("Gambling involves the creation of risks that would not otherwise exist while speculation involves the assumption of necessary and unavoidable risks of commerce[.]"); *see also* Ted S. Helwig & Christian T. Kemnitz, *Synthetic Security Transactions Under the Security Laws, Old and New*, 21 FUTURES & DERIVATIVES L. REP., Sept. 2001, at 6, 7 ("A synthetic stock trade is not a swap . . . [t]he synthetic stock transactions did not allocate risk, but instead created risk and therefore were more sales than swaps.").

b. Endogenous Risk Creation

It is useful to distinguish the bilateral risk creation examined above from other forms of risk creation. A person can undertake different actions that create risk. Choosing to open a restaurant, for example, creates the "risk" of economic gain in the form of financial profits.[89] Similarly, commuting to work creates the risk of economic loss in the form of an automobile accident.[90] In terms of the formal model above, an individual undertakes an action, a, that results in different states of nature according to a given probability distribution. The payouts associated with the states of nature define the type of risk.[91] The contract parties do not determine or otherwise set the value of these payouts.[92] When a party chooses to undertake an investment, for example, the return on the investment is not agreed to by the parties themselves but, rather, is fixed exogenously by factors beyond the control or influence of the contract parties. The parties can attempt to transfer or distribute this exogenous risk through a bilateral positive risk transfer transaction, but the magnitude of the return is exogenous to the transaction.[93]

In a bilateral risk creation transaction, the action undertaken generates the following payout distribution for each contract party: $V_X^0 = V_Y^0 = (0, 0)$.[94] The action can be undertaken either by the contract parties themselves (e.g., a card game) or by third parties acting independently of the contract parties (e.g., a sporting event). When two players choose to play a card game, for example, this action generates two distinct states of nature that are realized according to a given probability distribution: one in which Player X wins the card game and another in which Player Y wins the card game. The key assumption is that neither player experiences an economic profit or loss in either realized state of nature: one of the two players simply wins a game in which neither has a financial stake. Likewise, when two teams choose to engage in a sporting contest, this action implies two distinct states of nature: one state in which one team wins the contest and another in which the opposite team wins the contest. The

[89] *See* Bunting, *supra* note 82 (manuscript at 25 n.81).

[90] *See* Robby Berman, *Infographic: How Dangerous Is Your Daily Commute?*, BIG THINK (Apr. 20, 2018), https://bigthink.com/surprising-science/reasons-to-take-the-train-to-work-instead-of-dying/ [https://perma.cc/L9YR-HNXG].

[91] *Id.*; *see* Bunting, *supra* note 82 (manuscript at 19–20).

[92] *See supra* Part III.A

[93] *Id.*

[94] *Id.* This initial payout structure differs from a bilateral positive risk transaction or a negative risk transaction where the action taken generates either a positive payout or negative payout, respectively. *See* Bunting, *supra* note 82 (manuscript at 21–24).

contract parties do not experience an economic profit or loss in either state of nature: one of the two teams simply wins a sporting contest in which neither contract party has a financial stake.

Unlike risk transfer, both parties in a risk creation transaction increase risk by exchanging bets based upon a source of randomness that defines the initial risk endowment, transforming an initial payout distribution with zero risk into a new payout distribution with risk. In other words, the risk of economic profit or loss is not created by an action undertaken by either contract party. In a risk creation contract, an action creates "risk" only as far as it generates two probabilistic states of nature: the action produces an external source of randomness. But this randomness has no economic impact on either of the two contract parties. The defining feature of a risk-creation transaction is that the contract itself, the exchange of bets itself, creates the risk of economic profit or loss. The outcome of a card game or the spin of a roulette wheel, for example, does not, standing on its own, create a risk of economic profit or loss for any of the participants in the game. Economic risk in these games is created solely by a contract that assigns profits or losses depending upon the outcome of an external independent source of randomness that would otherwise have no economic impact on either of the two contract parties. The payouts in a bilateral risk creation transaction are defined by the terms of the contract itself and not by the underlying random event that independently defines the states of nature upon which the contractual payouts are based and which is entirely beyond the control or influence of the two contract parties. This external random event only creates economic risk for the contract parties when the parties agree to exchange bets depending upon the outcome of the event.

2. Taxonomy of Risk Creation Transactions

This subpart extends the baseline model of bilateral risk creation to include two additional variables: (1) endogenous risk, and (2) risk mitigation in the form of floating payouts. With the addition of these two variables, the broad definition of bilateral risk creation can be mapped onto the three distinct categories of regulated gambling examined in Part II.B.

a. Endogenous Risk

The three categories of regulated gambling discussed in Part II.C.2 follow directly from the baseline model of bilateral risk creation.

First, gambling can be classified according to whether the element of chance that defines the gamble is exogenous or endogenous with respect to the contract parties. Gaming, for example, is defined by endogenous risk, meaning that the probability of different states of nature is a function of the effort exerted by the contract parties themselves: a party can exert effort to increase the probability of winning the game. Wagers and lotteries, by contrast, are defined by exogenous risk A wager or lottery involves either a game of pure chance where the winner is determined purely at random or an event where the outcome is determined by the effort choices of third parties who are exogenous to the bilateral risk transaction (e.g., participants in a sporting contest).[95] In either case, unlike gaming, the likelihood of different states of nature is not a function of the contract parties' effort.

b. Risk Mitigation

Second, gambling can be classified according to whether risk mitigation exists in the form of a prize that involves a floating payout rather than a fixed payout. In this Article, a wager is defined by fixed payouts. This definition covers traditional wagers, such as a sports bet, but also includes games of pure chance, such as roulette or slot machines, that payout at fixed odds. A lottery, by contrast, is defined by floating payouts. This definition captures traditional state lotteries, but also includes parimutuel betting on sporting events common in horse racing, greyhound racing, and jai alai.[96] This same distinction applies to gaming. The two-player casino game, blackjack, for example, is a betting game with fixed payouts. As noted, wins pay out at even money, except for player blackjacks, which have traditionally paid out at fixed 3-to-2 odds.[97] The multi-player card game, poker, by contrast, is a betting game with floating payouts. As stated, the size of the winning payout floats according to the total amount bet by the players during a given hand.[98] Table 2 summarizes the preceding discussion.

[95] *See supra* notes 43 & 57 and accompanying text.
[96] *See* Tidwell et al., *supra* note 46, at 17.
[97] *See supra* notes 72–73 and accompanying text.
[98] *See supra* note 78 and accompanying text.

Table 2: Taxonomy of Bilateral Risk Creation

	Exogenous Risk	***Endogenous Risk***
Fixed Payouts	Wager	Gaming (*Blackjack*)
FloatingPayouts	Lottery	Gaming (*Poker*)

Courts have inconsistently defined the three traditional categories of regulated gambling. Some state supreme courts, for example, have held that the term, lottery, applies to all games with prize, chance, and consideration, thus rendering the term synonymous with all gambling.[99] Others have defined lottery to mean any game of pure chance, which would include the game of roulette.[100] Table 2 provides a taxonomy of bilateral risk creation in which the three traditional categories of regulated gambling are defined according to (1) whether the risk is endogenous, meaning that the outcome of the gamble is a function of the efforts of the contract parties, and (2) whether the risk is mitigated through the use of floating payouts. This classification provides a consistent logic to a categorization that has often been motivated by historical accident or by distinctions that no longer hold true given advancements in modern technology.[101]

[99] *See*, *e.g.*, *State ex rel. Six*, 186 P.3d at 187, 194 (citing *State ex rel. Stephan*, 867 P.2d 1034) (allowing Kansas to operate casinos through its State Lottery in defining lottery to include all gambling games); *State ex rel. Stephan*, 867 P.2d at 1042 (quoting State v. Nelson, 502 P.2d 841, 846 (Kan. 1972)).

[100] *See, e.g.*, *Braddock*, 506 P.2d at 826 (quoting *Smylie*, 386 P.2d at 395) (holding that any skill or judgment practiced by the participant removes the enterprise from the category of lottery); *see also* Smith, *supra* note 59, at 695 (defining roulette as a game of chance).

[101] *See, e.g.*, Andrew Harris & Mark D. Griffiths, *The Impact of Speed of Play in Gambling on Psychological and Behavioural Factors: A Critical Review*, 34 J. GAMBLING STUD. 393, 394 (2018). The Internet has, of course, significantly eroded the importance of this distinction. With roughly the same speed and degree of repetition as games played in a brick-and-mortar casino, bettors can now participate in virtual lotteries or place online wagers with virtual bookmakers; in fact, the growing availability of "prop" bets on an increasingly large number of national and international sporting events has allowed bettors to place wagers online with virtual bookmakers at roughly the same frequency as bets made in traditional casino games, such as blackjack or poker. *See* Alex M. T. Russell, Nerilee Hing, Matthew Browne, En Li & Peter Vitartas, *Who Bets on Micro Events (Microbets) in Sports?*, 35 J. GAMBLING STUD. 205, 206–207 (2019). Likewise, lotteries were viewed as categorically distinct from wagering or gaming because lotteries did not require a player to go to a specific place to participate in the game, such as a casino or racetrack—lottery tickets could be readily obtained in the local community. *See* Stone v. Mississippi, 101 U.S. 814, 818 (1880) (quoting Phalen v. Virginia, 49 U.S. (8 How.) 163, 168 (1850)). Again, the emergence of the Internet has significantly diminished the importance of this distinction. Other forms of gambling, such as sports

3. Statutory Definitions of Gambling

This section examines how states have legally defined gambling, and other relevant terms such as *thing of value*, and proposes a model statutory definition that addresses shortcomings in the current legal definitions identified by the baseline model of bilateral risk creation.

a. Existing Statutory Definitions

Several states have defined gambling by statute.[102] These statutory definitions of gambling all include the elements of consideration, chance, and prize.[103] The State of Washington, for instance, defines gambling as:

> [1] [S]taking or risking something of value [2] upon the outcome of a contest of chance or a future contingent event not under the person's control or influence, [3] upon an agreement or understanding that the person or someone else will receive something of value in the event of a certain outcome.[104]

The Washington statute defines a "thing of value" as follows:

> [A]ny money or property, any token, object or article exchangeable for money or property, or any form of credit or promise, directly or indirectly, contemplating transfer of money or property or any interest therein, or involving extension of a service, entertainment, or a privilege of playing at a game or scheme without charge.[105]

As used in this statute, "contest of chance" means "any contest, gaming scheme, or gaming device in which the outcome depends in a

wagering or gaming, are similarly no longer restricted to a few specific locations and can be played almost anywhere. *See, e.g.*, Montpas, *supra* note 19, at 164, 167–69. Using modern technology, anyone with access to the Internet can place a wager with an online bookmaker or play a game in an online casino from any location in the local community, including the home or office. *See id.*

[102] *See, e.g.*, N.Y. PENAL LAW § 225.00 (Consol. 2022).

[103] *See, e.g.*, WASH. REV. CODE § 9.46.0237 (2022).

[104] *Id.*; *see also* N.J. STAT. ANN. § 2C:37-1 (West 2022) (defining gambling as "staking or risking something of value upon the outcome of a contest of chance or a future contingent event not under the actor's control or influence, upon an agreement or understanding that he will receive something of value in the event of a certain outcome").

[105] WASH. REV. CODE § 9.46.0285 (2022).

material degree upon an element of chance, notwithstanding that skill of the contestants may also be a factor therein."[106]

Like Washington, the State of Illinois does not restrict gambling to games of pure chance. Illinois defines gambling, by statute, as follows: "A person commits gambling when he or she: (1) knowingly plays a game of chance or skill for money or other thing of value, unless excepted in subsection (b) of this Section[,]"[107] which includes "[g]ames of skill or chance where money or other things of value can be won but no payment or purchase is required to participate."[108] Under this statutory definition, games of skill and chance are included within the ambit of regulated gambling.[109] The State of Nevada likewise does not limit gambling to games of pure chance, defining gambling as "any game played with cards, dice, equipment or any mechanical or electronic device or machine for money, property, checks, credit or any representative of value[.]"[110] Like Washington, Nevada defines "representative of value"—another phrase for "thing of value"—broadly as "any instrumentality used by a patron in a game whether or not the instrumentality may be redeemed for cash."[111]

Not all state statutes expressly define the terms, "thing of value" or "representative of value."[112] The State of Maryland, for example, defines a "gaming device" as: "[A] gaming table, except a billiard table, at which a game of chance is played for money or any other thing or consideration of value; or (ii) a game or device at which money or any other thing or consideration of value is bet, wagered, or gambled."[113] Although this provision references a "thing" or "consideration of value," the Maryland statute does not provide an express definition of these terms.[114] Similarly, Illinois' statutory definition of gambling expressly references a "thing of value," but the statute does not define the term.[115]

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[106] *Id*. § 9.46.0225.

[107] 720 ILL. COMP. STAT. § 5/28-1(a)(1) (2022).

[108] *Id*. § 5/28-1(b)(13).

[109] *See id*.

[110] *See* NEV. REV. STAT. § 463.0152 (2022).

[111] *See id*. § 463.01862; WASH. REV. CODE § 9.46.0285 (2022).

[112] *See* MD. CODE ANN., CRIM. LAW § 12-101(d) (LexisNexis 2022); 720 ILL. COMP. STAT. § 5/28-2 (2022).

[113] MD. CODE ANN., CRIM. LAW § 12-101(d)(1) (LexisNexis 2022).

[114] *See id*. (The phrase, "consideration of value," suggests an expansive conception of value paralleling the broad definition of consideration found in ordinary contract law. *See* RESTATEMENT (SECOND) OF CONTRACTS § 71 (AM. L. INST. 1981)).

[115] *See* 720 ILL. COMP. STAT. § 5/28-1(a)(1) (2022). Some states have enacted a loss-recovery statute that gives the losing party in an illegal gambling contract standing to file suit against the winning counterparty to recover gambling losses. *See, e.g.*, MD. CODE ANN., CRIM. LAW

b. Model Statutory Provision

As one of its central claims, this Article contends that gambling is not currently well-defined under state or federal law.[116] The legal definition of gambling, defined as any activity with the elements of price, chance, and consideration, is overinclusive and corresponds to the more general definition of a bilateral risk transaction introduced in Part III.A. In a bilateral risk transaction, a party gives consideration—Party *X*'s bet—in exchange for an uncertain prize—Party *Y*'s bet. That is, a party risks something of value (i.e., consideration) for the opportunity to receive, with some probability (i.e., chance), something of value that can be readily converted into cash (i.e., a prize). Because this definition contains all three elements that define gambling, all bilateral risk transactions fall under the legal definition of gambling.[117] Bilateral risk transactions, however, include securities investments and indemnity agreements.[118] Thus, the legal definition of gambling, if strictly interpreted, encompasses an extremely broad scope of risk transactions that includes financial instruments not typically conceived as gambling contracts.

Indeed, the overly broad nature of this definition is reflected in the very structure of certain state statutes. Consider, for example, the Illinois statute discussed above. Subsection (a) of this statute first defines gambling broadly as "a game of chance or skill for money or other thing of value."[119] Subsection (b) then provides fifteen exceptions where participants in one of the enumerated activities

§ 12-110 (LexisNexis 2022) (providing, in relevant part, that "[a] person who loses money at a gaming device that is prohibited by this subtitle, Subtitle 2 of this title, or Title 13 of this article: (1) may recover the money as if it were a common debt; and (2) is a competent witness to prove the loss."). In the absence of a loss-recovery statute, a court will not aid or assist a party to enforce rights arising out of an illegal gambling transaction. *See, e.g.*, Wallace v. Opinham, 165 P.2d 709, 710 (Cal. Dist. Ct. App. 1946).

[116] Admittedly, the lack of clear definition at the federal level is due to a long-time policy preference to defer to the states as to what transactions should be regulated. *See* G. Robert Blakey & Harold A. Kurland, *The Development of the Federal Law of Gambling*, 63 CORNELL L. REV. 923, 958 (1978); *see also* 18 U.S.C. § 1955(b)(1)(i) (requiring a predicate violation of state law).

[117] Consider, for example, the *Howey* test, which defines an investment contract under federal securities law. *See* S.E.C. v. W.J. Howey Co., 328 U.S. 293, 299 (1946). This test provides that an investment contract is "a contract, transaction or scheme whereby a person invests his money in a common enterprise and is led to expect profits solely from the efforts of the promoter or a third party, with it being immaterial if the shares in the enterprise are evidenced by formal certificates or by nominal interests in the physical assets employed in the enterprise." *See id.* Looking to this test, and in particular the investment of money and expectation of profits prongs, the analogy becomes clear: the investment of money is the consideration; expectation corresponds to chance; and profits are the prize. *See id.*

[118] *See supra* Part III.A

[119] 720 ILL. COMP. STAT. § 5/28-1(a) (2022).

shall not be convicted of gambling, including "[a]greements to compensate for loss caused by the happening of chance including without limitation contracts of indemnity or guaranty and life or health or accident insurance."[120] Rather than provide a definition so broad that it requires a subsequent statutory carveout for all indemnity and insurance contracts, a better constructed statute would provide a more narrow definition at the outset that does not include conventional financial instruments, such as insurance or securities investments.

Importantly, what is missing in all current legal definitions of gambling is the notion of risk creation. The baseline model demonstrates that gambling ought to be treated differently than other bilateral risk transactions and grounds the justification for this distinction in the difference between risk transfer and risk creation. Risk creation is the limiting principle that narrows the broad definition of a bilateral risk transaction, which is included within the current legal definition of gambling, to comprise only those activities rightly considered gambling and must be included as a central element in any legal definition of gambling. A proper definition of gambling must contain language that distinguishes a bilateral risk transaction that *transfers* an existing risk of economic profit or loss, such as security investment or insurance contract, from a risk transaction that *creates* or amplifies risk solely through the contractual exchange of bets.

This Article proposes a model statutory definition of gambling that includes the concept of risk creation as a limiting principle to distinguish gambling from other bilateral risk transactions. Under this model provision, gambling is defined as:

> The *creation of risk* through the bilateral exchange of bets, where a bet can be defined as the (1) staking of something of value (2) upon the outcome of a future contingent event, where chance, and not a participant's skill or judgment, is the dominant or controlling factor in deciding the outcome of the event, (3) upon an agreement or understanding that the

[120] *Id*. § 5/28-1(b)(1); *see also* WASH REV. CODE § 9.46.0237 (2022) (expressly stating as a carveout to the general statutory definition that gambling "does not include . . . bona fide business transactions valid under the law of contracts, including, but not limited to, contracts for the purchase or sale at a future date of securities or commodities, and agreements to compensate for loss caused by the happening of chance, including, but not limited to, contracts of indemnity or guarantee and life, health, or accident insurance").

person, or someone else, will receive something of value in the event of a specific outcome.[121]

The inclusion of the phrase *creation of risk* in this provision relates to the condition that neither party be exposed to an existing risk of economic profit or loss with respect to the exogenous source of randomness that defines the bets exchanged, narrowing a current legal definition of gambling that is unduly broad and improperly corresponds to the more general definition of a bilateral risk transaction, which also includes securities investments and insurance.[122]

C. Derivative Contracts

This subpart applies the analytic framework developed above to derivative contracts. A derivative contract can be defined as a special type of bilateral risk transaction in which the discrete set of states of nature correspond to the different prices that a buyer must pay to acquire ownership of a specific asset in the next period; that is, the random states of nature correspond to different price realizations for a specific asset.[123] The payoffs of each contract party's initial risk endowment are defined over this support of possible prices.[124] The category of derivative contracts of interest here is a forward commitment.[125]

1. Speculation versus Gambling

The prototypical forward commitment is a forward contract.[126] A forward contract can be defined as an agreement between two parties to buy or sell an asset at a specified time in the future, referred to as the delivery date, at a price agreed upon at the time the contract is

[121] The term "something of value" should be expressly defined in the statute to include anything of economic value. *See, e.g.*, WASH REV. CODE § 9.46.0285 (2022).

[122] In terms of the formal model, each party's initial risk endowment has no exogenous risk. *See supra* Part III.A

[123] *See* Frank H. Easterbrook, *Derivative Securities and Corporate Governance*, 69 U. CHI. L. REV. 733, 734 (2002) ("'Derivatives' are instruments or contracts that are based on the price of something else.").

[124] *See id.*

[125] *See* Frank Partnoy, *Adding Derivatives to the Corporate Law Mix*, 34 GA. L. REV. 599, 604 (2000). Derivatives can be divided into two basic categories: (1) forward commitments, and (2) options. *See id.*

[126] *See id.* at 607; Frank Partnoy, *Financial Derivatives and the Costs of Regulatory Arbitrage*, 22 IOWA J. CORP. L. 211, 217 (1997).

formed, referred to as the delivery price.[127] Translating a forward contract into the language of bilateral risk transactions introduced in Part III.A, suppose that Party *X* owns an asset whose price will, for the sake of simplicity, either increase by 5 or decrease by 5. Formally, Party *X*'s initial risk endowment is V_X^0 = (-5, 5), which implies a negative payout of -5 if state, s_1, is realized and a positive payout of 5 if state, s_2, is realized. Party *X* enters a forward contract with Party *Y* in which Party *X* agrees to sell the asset to Party *Y* at the current market price at a specified delivery date. Specifically, Party *X* agrees to give a bet, B_X = (0, 5), to Party *Y* in exchange for Party *Y* agreeing to give a bet, B_Y = (5, 0), to Party *X*. Under this bilateral risk transaction, Party *X*'s new payout distribution is V_X^1 = (0, 0). Likewise, Party *Y* receives a negative payout of -5 (= 0 – 5) if state, s_1, is realized and a positive payout of 5 (= 0 + 5) if state, s_2, is realized. Party *Y*'s new payout distribution is V_Y^1 = (-5, 5). Assume that the transaction involves cash settlement.[128] Table 3 summarizes this discussion.

Table 3: Pure Price Speculation

States	V^0	B_X	B_Y	V^1
s_1	(-5, 0)	0	5	(0, -5)
s_2	(5, 0)	5	0	(0, 5)

As Table 3 demonstrates, the owner of an asset can enter a forward contract to transfer the price risk of asset ownership to a counterparty for a specified time period. Because the transaction involves cash settlement, with no physical delivery of the asset underlying the forward contract, the counterparty has engaged in

[127] *See* Partnoy, *supra* note 126, at 217. The party agreeing to buy the underlying asset in the future assumes a *long* position, and the party agreeing to sell the asset in the future assumes a *short* position. *See* Partnoy, *supra* note 125, at 604.

[128] Derivatives can be further classified by either (1) cash settlement, or (2) physical delivery. *See* Donald Lien & Yiu Kuen Tse, *A Survey on Physical Delivery Versus Cash Settlement in Future Contracts*, 15 INT'L REV. ECON. & FIN. 15, 16–17 (2006). Cash settlement does not involve physical delivery of the asset underlying the derivative contract; rather, at the conclusion of the derivatives contract, the owner of the asset transfers to the counterparty the net cash position. *See id.* Physical delivery involves physical delivery of the underlying asset on the settlement date of the contract. *See id*. The counterparty acquires ownership of the asset and assumes the accompanying risk of asset ownership post-settlement. *See id.*

pure price speculation.[129] Party Y seeks to profit solely through short-term price movements in the asset, and not through receipt of the financial returns that accrue to the owner of the underlying asset in the long term (e.g., dividends, stock buybacks).[130]

Note that Party Y's new payout distribution, V_Y^1 has more risk than Party Y's initial risk endowment, V_Y^0.[131] Party Y has created risk in entering this bilateral risk transaction, exchanging bets with a contract counterparty such that Party Y's new payout distribution has more risk. For this transaction to constitute gambling, however, under the definition given in Part III.B, *both* contract parties must engage in speculation, looking to profit from movements in the price of an asset that neither party owns (or to which neither party has financial exposure).[132] In the example above, Party X has not engaged in speculation; Party X has engaged in risk transfer. Party X owns the asset and has transferred the price risk of asset ownership to Party Y for a fixed duration of time.[133] Formally, Party X has transferred an existing risk of economic profit or loss to a speculator, where Party X's new payout distribution, V_X^1 is less risky than Party X's initial payout distribution, V_X^0.[134] As long as one of the contract parties owns the asset (or is part of a chain of risk transactions that can be traced back to the owner of the asset), then that party has engaged in risk transfer, and not speculation, and the corresponding counterparty has engaged in speculation, and not gambling, which requires both contract parties to be speculators.[135]

2. Defining Synthetic Trading Positions

This subpart examines how an investor can use a derivative contract to create a synthetic trading position. In a synthetic trading position, investors use derivative contracts to create or simulate the payoff of an asset that neither party owns.[136] In a synthetic CDO, for

[129] *Cf.* Hurt, *supra* note 47, at 378 (defining speculation with a "model [that] creates a spectrum of activity based on the element of chance involved.").

[130] *See generally* Michael J. Barclay & Clifford W. Smith, Jr., *Corporate Payout Policy: Cash Dividends Versus Open-Market Repurchases*, 22 J. FIN. ECON. 61 (1988).

[131] The risk associated with initial payout distribution, $V_Y^0 = (0, 0)$, equals 0 and is *less than* the risk associated with new payout distribution, $V_Y^1 = (-5, 5)$, which equals 10.

[132] *See supra* Part III.B.3.

[133] *See* Stout, *supra* note 7, at 735–37.

[134] The risk associated with initial payout distribution, $V_X^0 = (-5, 5)$, equals ten and is *greater than* the risk associated with new payout distribution, $V_Y^1 = (0, 0)$, which equals zero.

[135] *Cf.* Lynch, *supra* note 1, at 75–76, 94 (referring to gambling transactions as "purely speculative" transactions).

[136] *See* Russell Stanley Q. Geronimo, *Unbundled Shares: Circumventing Corporate Nationality Rules Through Swaps, Options, and Other Devices*, 19 ASIAN-PAC. L. & POL'Y J. 84, 106 (2018).

example, the contract parties do not own the underlying fixed income assets; rather, investors use credit default swaps to gain credit exposure to a portfolio of fixed income assets in which neither party has an ownership interest.[137] Under the swap contracts, the credit protection seller receives periodic cash payments, called premiums, in exchange for agreeing to compensate the credit protection buyer if the underlying asset, which the credit protection buyer does not own, experiences a default.[138]

As a more straightforward example of a synthetic trading position, suppose that an investor wants to place a bet that the price of a stock will increase in the future. The investor can "place this bet" by purchasing the stock, paying the current market price to acquire ownership of the stock from a seller. If the stock price increases as the buyer expects, then the buyer can sell the stock back to a seller at the now higher market price, pocketing the difference as the payout of this asset exchange. On the other hand, if the stock price decreases as the seller expects, then the buyer can only sell the stock at this lower market price, resulting in a net loss on the asset exchange.[139]

Alternatively, the investor can enter a bilateral risk transaction with a counterparty who does not own the stock where the counterparty agrees to pay the investor the difference between the future market price and the current market price if the stock price *increases*, and the investor agrees to pay the counterparty the difference between the current market price and the future market price if the stock price *decreases*. This bilateral risk transaction allows an investor to create or simulate the payoffs from a traditional purchase of stock without either contract party acquiring actual ownership of the stock itself.[140] Importantly, the analytic framework set forth here implies that this financial transaction is a form of

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[137] *See* Gerald P. Dwyer & Paula Tkac, *The Financial Crisis of 2008 in Fixed-Income Markets*, 28 J. INT'L MONEY & FIN. 1293, 1299 (2009).

[138] *See* David Mengle, *Credit Derivatives: An Overview*, 92 FED. RSRV. BANK ATLANTA ECON. REV., no. 4, 2007, at 1, https://www.atlantafed.org/-/media/Documents/research/publications/economic-review/2007/vol92no4_mengle.pdf [https://perma.cc/A3NK-E344]. A CDS in which the buyer does not own the underlying debt is referred to as a "naked" credit default swap. *See* Douglas B. Levene, *Credit Default Swaps and Insider Trading*, 7 VA. L. & BUS. REV. 231, 253 (2012); *see also The Effective Regulation of the Over-The-Counter Derivatives Market: Hearing Before the Subcomm. on Cap. Mkts., Ins., and Gov't Sponsored Enters. of the H. Comm. on Fin. Servs.*, 111th Cong. 34 (2009) (statement of Robert Pickel, Chief Executive Officer, International Swaps and Derivatives Association, Inc.) (estimating that roughly eighty percent of CDS protection was naked at start of the 2008 crisis).

[139] The number of times that these two parties can enter into this transaction is limited by the number of shares of stock in the investor's possession.

[140] *See* Geronimo, *supra* note 136, at 106.

bilateral risk creation or gambling—specifically, a wager between two parties, where the external random event is the realization of the price of a stock that neither owns.[141] No different than betting on the outcome of a sporting contest or the spin of a roulette wheel or whether a stock price will be odd at the close of the next day's trading session, the parties make a wager where one party wins and the other loses depending upon expected movements in the price of an asset that neither owns.[142]

IV. CURRENT REGULATORY ENVIRONMENT

The analytic framework developed in Part III highlights two main regulatory concerns in connection with bilateral risk transactions: (1) moral hazard or fraud, and (2) risk mitigation. This part first examines how the current regulatory framework addresses these two fundamental concerns and explores potential regulatory gaps suggested by the baseline model introduced in Part III. Part IV argues that the regulation of gambling is defined less by these concerns and more by the element of risk creation that distinguishes gambling from other bilateral risk transactions, such as securities investments or insurance. As part of this discussion, Part IV examines the regulation of synthetic trading positions and contends that this trading, as a form of legalized gambling, should receive heightened regulatory scrutiny. Finally, the Article concludes with a brief discussion of cryptocurrency and explores the contention that trading in cryptocurrency constitutes unregulated gambling.

A. Gambling

Under general principles of contract law, a gambling contract is legally enforceable only if the specific category of gambling activity covered in the contract is permitted under state law.[143] A legally enforceable gambling contract also normally requires (except for social gambling where legal) that the gambling operator is

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[141] *See* Mengle, *supra* note 138, at 1. Traditionally, the law has referred to this as a "difference contract" and has deemed this contract to be illegal gambling. *See* Thomas Lee Hazen, *Rational Investment, Speculation, or Gambling?—Derivative Securities and Financial Futures and Their Effects on the Underlying Capital Markets*, 86 Nw. U. L. REV. 987, 1015 (1992).

[142] *See, e.g.*, Andrew Leonard, *Credit Default Swaps: What Are They Good For?*, SALON (Apr. 20, 2010, 11:21 PM), https://www.salon.com/2010/04/20/naked_credit_default_swaps/ [https://perma.cc/QV8D-SW39].

[143] *See* Roy Kreitner, *Speculations of Contract, or How Contract Law Stopped Worrying and Learned to Love Risk,* 100 COLUM. L. REV. 1096, 1096 & 1096 n.1 (2000) (citing 3 SAMUEL WILLISTON, THE LAW OF CONTRACTS §§ 1664a, 1668 (1st ed. 1920)).

licensed.[144] In general, all persons engaged in the operation of gambling must have a license.[145] To obtain a license, an applicant must submit to an investigation by the state gambling control board, which generally consists of a review of civil and criminal court records, conversations with business and personal associates, and an examination of business methods.[146] The level of regulatory scrutiny increases as a party's involvement in the gambling sector increases.[147]

1. Risk Transaction Elements

The analytic framework developed in Part III.B.2 highlights two main regulatory concerns in connection with bilateral risk transactions: (1) fraud or moral hazard, and (2) risk mitigation.

a. Incentive Effects

A bilateral risk transaction with endogenous risk implicates the related incentive problems of fraud and moral hazard.

i. Fraud

If the profitability of a transaction depends upon the unobservable effort of a contract party, meaning that the transaction can be characterized by endogenous risk, then this contract party can commit fraud or other forms of deceit by intentionally misrepresenting to the contract counterparty the true level of effort undertaken. In the securities markets, the primary means by which

144 *See, e.g.*, CONN. GEN. STAT. § 52-553 (2022) ("All wagers, and all contracts and securities of which the whole or any part of the consideration is money . . . shall be void, provided nothing in this section shall . . . apply to any wager or contract otherwise authorized by law.").

145 *See* Shannon Bybee, *The Legal Status of Gaming and Its Impact on Licensing*, 2 GAMING RSCH. & REV. J. 61, 63 (1995).

146 *See id*. at 64; Randall E. Sayre, *The Investigations Division of the State Gaming Control Board: An Introduction to the Investigative Process*, 1 GAMING RSCH. & REV. J. 95, 97 (1994); Tom Sterling, Information Services Group, Inc., *Background Investigations* (Dec. 15, 2004) (PowerPoint presentation), https://gamingcontrolboard.pa.gov/files/meetings/Meeting_Presentation_20041215_background_investigations_Tom_Sterling.pdf [https://perma.cc/9WWN-8FNT].

147 *See* ANTHONY N. CABOT, CASINO GAMING: POLICY, ECONOMICS AND REGULATION 246–47 (1996). Five general groups participate in gaming, and each is treated differently with respect to licensing. *See id*. at 248. Group I includes owners and operators. *See id*. Group II includes manufacturers of gaming equipment and "key" casino employees. *See id*. Group III includes non-gaming equipment manufacturers, other casino employees, lessors, junket representatives, gaming schools, unions, and some lenders. *See id*. Group IV includes providers of non-casino goods and services and non-gaming employees. *See id*. Finally, Group V contains all other individuals who do not fit into the preceding groups. *See id*.

financial regulators prohibit this type of fraud is the mandated disclosure of material financial information to investors, under the guidance of state and federal administrative agencies.[148] The principal regulatory philosophy of securities regulation is full and fair disclosure, rather than a more merit-based command-and-control approach in which regulators determine if the quality of a given issue of securities is adequate for sale.[149] Mandated disclosure of material non-public information enables investors, and not the government, to make informed judgments about whether to purchase a company's securities.[150]

Unlike the regulation of securities investments, the primary protection for gamblers is found in legal requirements that gambling operators provide games that are both honest and fair.[151] Honesty and fairness are two distinct concepts.[152] An *honest* game is a game in which the chance elements are random, where randomness can be defined as "the observed unpredictability and absence of pattern in a set of elements or events that have definite probabilities of occurrence."[153] Gaming regulators enforce this honesty requirement, for example, by ensuring that gaming devices, such as computerized slot machines, satisfy stringent confidence standards for randomness.[154]

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[148] *See* Cynthia A. Williams, *The Securities and Exchange Commission and Corporate Social Transparency*, 112 HARV. L. REV. 1197, 1207, 1210 (1999); Matthew C. Turk & Karen E. Woody, *The Leidos Mixup and the Misunderstood Duty to Disclose in Securities Law*, 75 WASH. & LEE L. REV. 957, 969 (2018).

[149] *See 2 Accounting Reform and Investor Protection: Hearings Before the S. Comm. on Banking, Housing and Urban Affairs*, 107th Cong. 1105 (2002) (statement of Harvey L. Pitt, Chairman, Securities and Exchange Commission).

[150] *See id.* at 1106; Hillary A. Sale, *Disclosure's Purpose*, 107 GEO. L.J. 1045, 1047–48 (2019). Although the SEC requires that the information provided be accurate, the SEC does not guarantee the veracity of public filings; instead, an investor who purchases securities and incurs financial losses has important remedial rights if the investor can prove incomplete or inaccurate disclosure of material information. *See* Brian A. Lavelle, *Evaluating the Risk and Risk-Adjusted Performance of Micro-Cap Mutual Funds*, 6 J. STOCK & FOREX TRADING 1, 2 (2018).

[151] *See* Anthony N. Cabot & Robert C. Hannum, *Gaming Regulation and Mathematics: A Marriage of Necessity*, 35 J. MARSHALL L. REV. 333, 334–35 (2002). In Nevada, for example, the primary regulatory policy objective is to "instill public confidence and trust that the games are honest and fair." Keith Copher, Chief of Enforcement, Nevada Gaming Control Board, Address at the Casino Regulatory Compliance Conference in Las Vegas, Nevada (Aug. 17, 2000).

[152] Cabot & Hannum, *supra* note 151, at 334.

[153] *See id.*; NEV. GAMING COMM'N REG. § 14.010(30) (2023); *see also* COLO. CODE REGS. § 207-1:30-1221(5) (2023) (stating "'randomness' means the unpredictability and absence of pattern in the outcome of an event or sequence of events[.]").

[154] *See* Kurt Eggert, *Truth in Gaming: Toward Consumer Protection in the Gambling Industry*, 63 MD. L. REV. 217, 251 (2004).

Fairness, by contrast, refers to the advantage that a gambling operator enjoys over the players and is often measured by the hold percentage (or how much of each dollar wagered is kept by the gambling operator).[155] "For example, it is not fair if a gambling operator retains, on average, ninety percent of every dollar bet by players."[156] Rejecting a regulatory approach based upon mandatory disclosure in which gambling operators would be required to inform players of the true hold percentages of specific forms of gambling, regulators have, instead, adopted a command-and-control approach in which state regulators determine the payout rate or hold percentage that is fair to the consumer.[157] These regulations often place an upper (and lower) bound on the hold percentage for specific games.[158] In Nevada, for instance, the state gaming commission, to ensure fairness, requires all gaming devices to have no greater than a twenty-five percent hold percentage.[159]

Notably, gambling operators rarely operate at the mandated maximum hold percentage.[160] In Nevada, for example, the average hold percentage across all gambling operators is approximately four percent, far below the twenty-five percent maximum set by the state regulatory authorities.[161] That these regulatory caps do not appear to meaningfully constrain the behavior of gambling operators suggests that this fairness requirement is not particularly important as a consumer protection measure; indeed, as some have argued, these regulations are perhaps better described as the product of regulatory capture and are primarily designed to protect gambling operators, and not players.[162]

ii. Moral Hazard

In addition to fraud, asymmetric information with respect to effort can lead to a moral hazard problem in which the non-observability of effort significantly increases the cost of resolving, through private

[155] *See id.* at 220; Cabot & Hannum, *supra* note 151, at 335.
[156] Cabot & Hannum, *supra* note 151, at 335.
[157] *See* Eggert, *supra* note 154, at 245–46, 251.
[158] *See id.* at 251; Cabot & Hannum, *supra* note 151, at 335.
[159] *See* Eggert, *supra* note 154, at 251–52 (discussing NEV. ADMIN. CODE § 14.040(1) (2002)).
[160] *See* Eggert, *supra* note 154, at 251–52.
[161] *See id.* at 252.
[162] *See id.* at 251. In response, some scholars have argued for greater mandated disclosure as a better form of consumer protection against fraud and other types of incentive problems that can arise because of information asymmetries. *See id.* at 252–61; *see also* Ryan Grandeau, *Securing the Best Odds: Why Congress Should Regulate Sports Gambling Based on Securities-Style Mandatory Disclosure*, 41 CARDOZO L. REV. 1229, 1254–55 (2020).

contract, specific conflicts of interest with respect to optimal effort.[163] Unlike securities investments or insurance contracts, however, the potential misalignment of incentives, where a contract party fails to exert optimal effort, arises in only a subset of gambling activity. To start, moral hazard is not present in gaming, where a player must win the game to collect the prize, such as in poker or blackjack. In these games, a player does not have an economic incentive to decrease the probability of winning by exerting less than optimal effort in unobservable ways or otherwise *fixing* the outcome of the game to increase the probability of losing. Because a player receives a payout *only if* the contest is won, no misalignment can exist between a player's effort and the outcome of the contest—the two are perfectly aligned.

Likewise, no agency cost problem exists in games of pure chance where the outcome is determined purely at random. A player cannot decrease the probability of winning by exerting less than optimal effort in unobservable ways or otherwise "fixing" the outcome of the game to increase the probability of losing, because the outcome of a game of pure chance is, by definition, not a function of either contract party's effort.[164] Because a player receives a payout that is independent of effort, no misalignment can exist between a player's effort and the outcome of the game—the two are perfectly uncorrelated.

A potential misalignment arises only in games of chance where a player can place a bet to lose the contest in which the player participates or has been promised a benefit by someone who has placed a bet that pays out if the contest in which the player participates is lost.[165] In these games, a player has an economic incentive not to exert optimal effort; specifically, a player can place a bet that payouts only if the player loses the game, or have someone place this bet on the player's behalf, and then intentionally fail to give full effort, increasing the likelihood that the bet will payout.[166] Recognizing a subcategory of games that depends upon the effort of third parties who are exogenous to the risk creation contract, this

[163] *See generally* Brahmadev Panda & N. M. Leepsa, *Agency Theory: Review of Theory and Evidence on Problems and Perspectives*, 10 INDIAN J. CORP. GOVERNANCE 74 (2017).

[164] *See* State v. Lindsay, 2 A.2d 201, 203 (Vt. 1938). A game of dice, for example, is a game of exogenous risk, meaning a party cannot exert costly effort to impact the probability of winning the game.

[165] *See* Jeffrey Standen, *The Law of Sports Wagering in the United States*, OXFORD HANDBOOKS ONLINE (July 7, 2016), https://academic.oup.com/edited-volume/41331/chapter/352336221 [https://perma.cc/6LJJ-2GH9].

[166] *See id*.; Balsam, *supra* note 60, at 8; Ian Preston & Stefan Szymanski, *Cheating in Contests*, 19 OXFORD REV. ECON. POL'Y 612, 613 (2003).

discussion suggests a further breakdown of the exogenous risk column in Table 2 as follows:

Table 4: Expanded Taxonomy of Bilateral Risk Creation

	Fully Exogenous Risk	***Partially Exogenous Risk***	***Endogenous Risk***
Fixed Payouts	Wager (*Roulette*)	Wager (*Sports Betting*)	Gaming (*Blackjack*)
Floating Payouts	Lottery (*State Lotteries*)	Lottery (*Horse Racing*)	Gaming (*Poker*)

Table 4 modifies the first column in Table 2 to create a distinction between *fully* exogenous risk, which involves games of pure chance, such as roulette or slot machines, and *partially* exogenous risk, which involves games of chance where the outcome is substantially determined by the effort of players who are not permitted to place a bet on the outcome of the game, such as a sporting contest. Both forms of risk are exogenous in that neither party to the gambling contract can exert effort to alter the probability of winning the game.[167] But unlike games with fully exogenous risk (i.e., games of pure chance) where the outcome is independent of effort, the outcome of games with partially exogenous risk is a function of effort exerted by certain third parties, such as athletes, who are exogenous to the risk creation contract.

Rules have been set up to address the clear conflict of interest present in betting on games with partially exogenous risk, such as sporting events. To start, a participant intentionally fixing the outcome of a contest constitutes fraud and can be prosecuted under several different state and federal laws, including wire fraud,[168] conspiracy to commit wire fraud,[169] honest services fraud involving

[167] *See supra* notes 43, 57 & 95 and accompanying text.
[168] *See* 18 U.S.C. § 1343.
[169] *See* 18 U.S.C. § 1349.

bribery and/or kickbacks,[170] or bribery in a sporting contest.[171] Because bribery, deceit, corruption, point-shaving, and other forms of manipulation are more likely in amateur or college sports where the risk of losing a lucrative professional contract does not provide an economic disincentive to fix the outcome of a sporting contest, ten states have enacted some form of prohibition on betting on collegiate or amateur sporting events.[172] All states prohibit betting on high-school sporting contests.[173]

In addition, all states prohibit betting by athletes, coaches, and referees participating in a sporting contest.[174] Indiana, for example, expressly excludes from its statutory definition of an acceptable bet "[a]n athlete who is: (i) under contract with a member club of the sports-governing body in the case of a team sport; or (ii) eligible to participate in events conducted by the sports governing body in the case of an individual sport."[175] Most states "extend the prohibition to others who may have influence over a particular team, competitor or event, including managers, athletic trainers,[176] and medical professionals."[177] Further, many private sports associations have specific league rules against participants betting on sanctioned events, including bets by a player to win the sporting contest in which the player is involved. Major League Baseball, for example, prohibits any bet on a baseball game in which the bettor is involved and makes no distinction between betting for, or against, one's own team.[178] The

[170] *See* 18 U.S.C. § 1346.

[171] *See* 18 U.S.C. § 224; *see generally* Gregory Day, John T. Holden & Brian M. Mills, *Fraud on Any Market*, 97 IND. L.J. 659 (2022) (discussing how the "fraud-on-the-market doctrine would benefit most types of investable markets like sports gambling").

[172] *See* Jill R. Dorson, *What's the Point of Banning Betting on In-State College Sports Teams?*, SPORTSHANDLE (Apr. 6, 2020), https://sportshandle.com/why-ban-college-sports-betting/ [https://perma.cc/T7VG-B77L]; Tyler Campman, Note, *Addressing Match Fixing and Corruption in Collegiate Athletics In Light of* NCAA v. Murphy, 36 ARIZ. J. INT'L & COMPAR. L. 480–81 (2019).

[173] *See, e.g.*, COLO. CODE REGS. §207-2:5.3 (2023); 230 ILL. COMP. STAT. 45/25-25(h) (2023); *see also* Jake Bland, *Gambling on Video Games: The Global Esports Betting Market and the Dawn of Legalized Esports Gambling in the United States*, 29 U. MIAMI INT'L & COMPAR. L. REV. 1, 34 (2022).

[174] *See, e.g.*, COLO. CODE REGS. § 207-2:6.11(1)(b) (2023); Scott Scherer & Melissa Thevenot, *The Common Denominators of U.S. Sports Betting Regulation and Those States Swimming Against the Tide*, NEV. GAMING LAW., Sept. 2020, at 45.

[175] IND. CODE § 4-38-9-3(5)(D) (2022).

[176] *See, e.g.*, COLO. CODE REGS. § 207-2:6.11(1)(c) (2023).

[177] ILL. ADM. CODE tit. 11, §1900.1120(a)(5) (2022); *see also* Scherer & Thevenot, *supra* note 174, at 45 (citing IND. CODE § 4-38-9-3(5)(F) (2022) ("Indiana expressly extends its statutory prohibition to a 'relative living in the same household' with any of the above.").

[178] *See* OFF. OF THE COMM'R OF BASEBALL, OFFICIAL BASEBALL RULES 310 (2021). The Major League Rule 21 reads in part: "(d) GAMBLING. Any player, umpire, or Club or League official or employee, who shall bet any sum whatsoever upon any baseball game in connection with which the bettor has a duty to perform, shall be declared permanently ineligible." *Id.*

National Collegiate Athletic Association ("NCAA") has a similar rule that applies to all student athletes and staff members of an institution's athletics department.[179]

Unfortunately, a general lack of enforcement has undercut the effectiveness of these rules. The gaming industry, for example, successfully lobbied against legislation that included a provision that would have established a national body for so-called "integrity monitoring," defined as "the detection of match-fixing, inside-information leaks, athlete exploitation, and officials on the take."[180] Introduced in the United States Senate in December 2018, the bill, which had bipartisan sponsorship from the late Senator Orrin Hatch (R-Utah) and Senator Chuck Schumer (D-N.Y.), "included a mandate for a national sports wagering clearinghouse that would have maintained records of sports betting data and suspicious transactions and alerted federal or state law enforcement of suspect trends or anomalies."[181] Under certain circumstances, observed correlations between unusual betting and possible anomalies in actions by athletes, officials, or others can indicate that an individual has taken steps to improperly affect the outcome of a contest.[182] The 2018 bill envisioned the creation of a federal entity with the capacity to conduct investigations across multiple jurisdictions, and monitor market integrity. In addition, this proposed entity could analyze raw betting data, athlete performance data, officiating patterns, social media feeds and other information in order to assess whether a given sports bet was legitimate or was the result of a player's voluntary choice, either alone or in conjunction with others, to fix the outcome of the contest.[183]

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[179] *See* NAT'L COLLEGIATE ATHLETIC ASS'N, 2022-23 NCAA DIVISION 1 MANUAL 23 (2022), https://web3.ncaa.org/lsdbi/reports/getReport/90008 [https://perma.cc/YT4K-J4KZ]. Rule 10.4 states that an individual in violation of an NCAA rule shall be declared ineligible for further intercollegiate competition, subject to appeal. *See id.* at 24.

[180] *See* Paula Lavigne, *Who's in Charge of Finding and Catching Cheaters in Sports Gambling? It's Complicated*, ESPN (Apr. 1, 2022), https://www.espn.com/chalk/story/_/id/33629960/charge-finding-catching-cheaters-sports-gambling-complicated [https://perma.cc/F3KR-ZSK8].

[181] *See* Lavigne, *supra* note 206; *see also* Wayne Parry, *AP NewsBreak: Feds Eye Move to Regulate Legal Sports Betting*, ASSOCIATED PRESS (Dec. 19, 2018), https://apnews.com/article/a3e2b43f3931436e8156f54471ad5fc3 [https://perma.cc/CQK6-TB3E].

[182] *See* Richard H. McLaren, *Corruption: Its Impact on Fair Play*, 19 MARQ. SPORTS L. REV. 15, 24 (2008); Lavigne, *supra* note 180. *But see* Adam Hosmer-Henner, *Preventing Game Fixing: Sports Books as Information Markets*, 14 GAMING L. REV. & ECON. 31, 36–37 (2010) (discussing the inherent difficulty of sportsbooks' capacity to detect game-fixing, which is determined, in part, by the individual sport and other factors).

[183] Lavigne, *supra* note 180; *see also* Parry, *supra* note 181. Some states have implemented state-level integrity monitoring. The State of Tennessee, for example, "requires sportsbooks to be a member of an integrity monitoring association" and to report suspicious activity within

b. Risk Mitigation

As the analytic framework highlights, a second major regulatory concern related to bilateral risk transactions is the risk that a contract counterparty will not pay a losing bet. As an initial matter, note that this risk is not present in games with floating payouts. Unlike other forms of risk transfer where the counterparty may not have the funds required to pay a losing bet, such as insurance where an insurer might lack sufficient capital to pay the claims of policyholders as these claims (or "bets") come due, the existence of such funds is guaranteed in a game with floating payouts, where, by definition, the prize is formed from players' bets.[184] In the card game, poker, for example, a winning hand is guaranteed to pay out if the bets paid into the pot by the other players take the form of money or something of value that can be readily converted into money.[185]

Insolvency risk is present in games with floating payouts *only if* players make bets financed by the extension of credit. Accordingly, certain states have banned gambling operators from offering credit advances to patrons.[186] The State of Florida, for example, has enacted legislation stating, in relevant part, that "[a] slot machine licensee may not make any loan, provide credit, or advance cash in order to enable a person to play a slot machine."[187] Likewise, the State of Arkansas has passed an administrative regulation mandating that "an operator shall neither extend credit to an authorized player for use in interactive gaming nor allow the deposit of funds into an interactive gaming account for use in interactive gaming that are derived from the extension of credit by affiliates or agents of the operator."[188] These rules sensibly minimize

twenty-four hours to the Tennessee Sports Wagering Advisory Council, "an agency with regulatory authority but no[t] law enforcement power." *See* TENN. CODE ANN. §§ 4-49-106, 49-115–49-116 (2022); Lavigne, *supra* note 180. These state-level regulators commonly rely on private integrity monitoring firms and sportsbooks who are legally required to report suspicious activity to identify patterns of illegal activity. *See* Lavigne, *supra* note 180; *see also* John T. Holden, *Regulating Sports Wagering*, 105 IOWA L. REV. 575, 615 (2020) (discussing how "the demand for sport organizations to monitor the integrity of events has created a cottage industry of for-profit private companies that provide integrity monitoring services" to sportsbooks).

[184] *See* Bunting, *supra* note 82 (manuscript at 51–52); *supra* notes 49–50 and accompanying text.

[185] *See* SFETCU, *supra* note 79, at 218–19.

[186] *See, e.g.*, FLA. STAT. § 551.121(2) (2022).

[187] *Id.*; *see also* 4 PA. CONS. STAT. § 1504 (2022) ("[S]lot machine licensees shall not extend credit.").

[188] 006-06-19 ARK. CODE R. § 5.120(3) (LexisNexis 2022). Some states only require only that gambling operators exercise caution and good judgment. *See, e.g.*, 10 DEL. ADMIN. CODE § 204–6.1.10 (2023) (requiring licensed video lottery agents to exercise caution and good judgment in extending credit for sports lottery play).

counterparty risk by requiring bets take the form of cash rather than a promise to pay in the future that can be broken.

To minimize counterparty risk, a gambling operator can also offer a game in a banked format, with the gambling operator distributing individual counterparty risk across a large number of players.[189] Games with floating payouts cannot be offered in a banked format because the prize is paid out from bets made by the players, and not the House.[190] For this reason, bets in games with floating payouts often take the form of cash, and players are typically not permitted to gamble on credit.[191] Games with fixed payouts, however, can be offered in a banked format.[192] Provided the House is sufficiently well-capitalized to cover its net position across all players, this betting format reduces counterparty risk. In the case of sports betting, for example, a sportsbook operates like the central clearing counterparties that facilitate trading in derivative markets.[193] In these markets, a central clearing counterparty reduces individual counterparty risk by netting offsetting transactions between multiple counterparties and by guaranteeing the performance of a derivative contract if one of the parties fails to perform under the contract.[194] As a clearinghouse shifts counterparty risk onto itself, however, the clearinghouse must be sufficiently well-capitalized to ensure its solvency in the event of a significant adverse outcome.[195]

To guarantee the solvency of gambling operators who operate as central clearing counterparties in wagering markets, states have established minimum reserve requirements.[196] In Indiana, for example, sports wagering operators must maintain a reserve of at least $500,000 or the amount necessary to ensure the ability to cover

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189 *See supra* Part II.B (defining banked games).

190 *See supra* note 50 and accompanying text.

191 *See supra* notes 187–91 and accompanying text; *supra* Part II.B.1.

192 *See supra* Part II.B.3.

193 *See* Steven L. Schwarcz, *Central Clearing of Financial Contracts: Theory and Regulatory Implications*, 167 U. PA. L. REV. 1327, 1329–30 (2019).

194 *See* PETER NORMAN, THE RISK CONTROLLERS: CENTRAL COUNTERPARTY CLEARING IN GLOBALISED FINANCIAL MARKETS 7 (2011) ("By becoming the buyer to every seller and the seller to every buyer, the CCP assures completion of the trade if a trading partner defaults."); Richard Squire, *Clearinghouses as Liquidity Partitioning*, 99 CORNELL L. REV. 857, 862 (2014) ("The clearinghouse interposes itself between the parties, serving as the counterparty to each. Instead of selling the cattle future to Buyer, Seller sells it to the clearinghouse, which sells an identical future to Buyer.").

195 *See* DAVID MURPHY, OTC DERIVATIVES: BILATERAL TRADING AND CENTRAL CLEARING: AN INTRODUCTION TO REGULATORY POLICY, MARKET IMPACT AND SYSTEMIC RISK 151 (2013); Schwarcz, *supra* note 193, at 1358.

196 *See, e.g.*, W. VA. CODE R. § 179-9-3.4 (2022); N.Y. COMP. CODES R. & REGS. tit. 9, § 5329.24 (2022).

the outstanding sports wagering liability—whichever is greater.[197] Both New Jersey and West Virginia have similar statutory reserve requirements.[198] Iowa and New York require operators only to maintain a reserve in the amount necessary to cover the outstanding sports pool liability.[199] In addition, private gambling operators have also taken steps to protect against the risk of not having sufficient capital to pay out a winning bet. Casinos, for example, commonly cap the total amount payable on a winning bet such that the amount payable bears a reasonable relationship to the total amount of money in play.[200] To reduce their expected liability, casinos can also engage in layoff wagering, placing a wager with another sportsbook or bookmaker to help level unbalanced betting action.[201]

The Sports Wagering Market Integrity Act of 2018[202] would have required *all* sports wagering operators to maintain minimum reserves.[203] Such statutory reserve requirements are a sensible regulatory measure to reduce the risk of insolvency of individual sportsbooks or casinos that address the counterparty risk highlighted by the analytic framework set forth above. More intrusive government intervention is likely unnecessary, however, because gambling operators, unlike large financial institutions, operate

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[197] *See* 68 IND. ADMIN. CODE 15-3-3 (2022).

[198] *See* N.J. ADMIN. CODE § 13:69N-1.2(d) (2023); W. VA. CODE R. § 179-9-3.4 (2022).

[199] *See* IOWA ADMIN. CODE r. 491-13.2(6) (2022); N.Y. COMP. CODES R. & REGS. tit. 9, § 5329.24 (2022).

[200] *See id.* If a player does win more than the gambling operator has on hand, then the player has "broken the bank." *See* E. J. Carter, *Breaking the Bank: Gambling Casinos, Finance Capitalism, and German Unification*, 39 CENT. EUR. HISTORY 185, 198–199 (2006). Although this outcome is rare, bettors have broken the bank. Blackjack player, Don Johnson, for example, broke the bank in 2011, winning approximately $6 million at Atlantic City's Tropicana casino. *See* Mark Bowden, *The Man Who Broke Atlantic City*, ATL. (Feb. 27, 2012), https://www.theatlantic.com/magazine/archive/2012/04/the-man-who-broke-atlantic-city/308900/ [https://perma.cc/6GDU-RLN9]. Similarly, Caesars Sportsbook (then William Hill) lost more than one million dollars when Los Angeles Angels star Shohei Ohtani, was named American League MVP in 2021. *See* David Purdum, *U.S. Sportsbook Hit with Seven-Figure Loss After Los Angeles Angels' Shohei Ohtani Named American League MVP*, ESPN (Nov. 18, 2021), https://www.espn.com/chalk/story/_/id/32660064/us-sportsbook-facing-seven-figure-loss-los-angeles-angels-shohei-ohtani-wins-american-league-mvp-award [https://perma.cc/Z83B-PVUE].

[201] *See* Koleman S. Strumpf, Illegal Sports Bookmakers 25 (Feb. 2003) (unpublished manuscript), https://users.wfu.edu/strumpks/papers/Bookie4b.pdf [https://perma.cc/APL8-85HV].

[202] S. 3793, 115th Cong. (2018).

[203] *Id.* at § 103(b)(6)(E) (requiring that "a sports wagering operator shall maintain a reserve in an amount not less than the sum of (i) the amounts held by the sports wagering operator for the account of patrons; (ii) the amounts accepted by the sports wagering operator as sports wagers on contingencies the outcomes of which have not been determined; and (iii) the amounts owed but unpaid by the sports wagering operator on winning wagers during the period for honoring winning wagers established by State law or the sports wagering operator").

largely independent of each other and are typically not interconnected such that the collapse of a single operator puts at risk the collapse of the entire industry.[204] Unlike the financial sector, the type of systemic risk that would justify enhanced monitoring of gambling operators or other forms of stress-testing is not present in most gambling markets.[205]

2. Risk Creation

The business of gambling is a highly regulated industry. As the discussion above illustrates, however, the two main regulatory concerns connected with risk transactions, namely, (1) moral hazard or fraud, and (2) risk mitigation, do not appear to justify the enhanced regulatory treatment of gambling. Moral hazard arises in only a limited subset of gambling categories, specifically, games with partially exogenous risk, such as sports betting.[206] Likewise, risk mitigation can be straightforwardly achieved by restricting the extent to which players (or a gambling operator) can gamble on credit.[207] This subpart argues that the difference in regulatory treatment between gambling and other forms of bilateral risk transactions, such as securities investments or insurance, principally derives from the key distinguishing feature of gambling: that gambling involves risk creation, and not risk transfer.[208]

a. Rational Motivations

Contrary to what others have argued,[209] the analytic framework developed in Part III confirms that gambling ought to be treated differently than other bilateral risk transactions and grounds the justification for this distinction in the difference between risk transfer and risk creation. Gambling involves the creation and

[204] *See* Jack Jones, *What is a Layoff and Why do Sportsbooks Make These Types of Bets?*, BETFIRM (Feb. 14, 2009), https://www.betfirm.com/sportsbooks-vegas/#:~:text=The%20gambling%20use%20of%20the,a%20specific%20bet%20taking%20place [https://perma.cc/D4YA-EAH6]. *But see* Dominic Cortis & Luke Spiteri, *iGaming Versus Banking: Differences and Similarities*, 14 J. GAMBLING BUS. & ECON. 15, 20–21 (2021).

[205] *See id.*

[206] *See* Panda & Leepsa, *supra* note 163, at 82; Standen, *supra* note 165.

[207] *See generally* discussion *supra* Part IV.A.1.b.

[208] *See* Shaheen Borna & James Lowry, *Gambling and Speculation*, 6 J. BUS. ETHICS 219, 220 (1987) ("[A] characteristic of gambling risk is that it is an artificial risk, i.e., a risk created by the gambling transaction itself.").

[209] *See* Hazen, *supra* note 1, at 375; *see also* Dave Aron & Matt Jones, *States' Big Gamble on Sports Betting*, 12 UNLV GAMING L.J. 53, 58 (2021) (contending that sports bets can be characterized as binary options or other types of swaps, which are regulated by the CFTC).

consumption of risk.[210] Accordingly, the regulation of gambling, at heart, hinges on how the voluntary consumption of risk is perceived. Historically, the consumption of risk in the form of gambling was viewed as a vice or sin: gambling was a sign of moral weakness and deserving of punishment.[211] This view, however, has changed significantly over time.

Today, gambling is generally perceived as a form of entertainment,[212] with large publicly traded corporations having taken over the ownership of gambling establishments, removing the stigma of organized crime.[213] People gamble because they want to be entertained.[214] Under this view, the slot machine player, for example, wants to play as long as possible on a given sum of money purely for the excitement of the game.[215] As a distinct form of entertainment, many social or recreational gamblers do not experience "long-term or permanent problems related to gambling."[216] For this group, gambling takes place "for a limited amount of time, with predetermined acceptable losses."[217] "This type of gambling behavior, known as social gambling, is [believed] to represent approximately [eighty to eighty-five] percent" of the total gambling population.[218]

In addition to entertainment, researchers have posited another important explanation for why people gamble. Even though almost all commercial gambling opportunities are losing propositions, "a substantial percentage of gamblers still rate 'winning money' as an important motivation for gambling."[219] Under this view, gambling

[210] *See* Borna & Lowry, *supra* note 208, at 220.
[211] *See* I. Nelson Rose, *Compulsive Gambling and the Law: From Sin to Vice to Disease*, 4 J. GAMBLING BEHAV. 240, 240–41 (1988).
[212] *See* John Conlisk, *The Utility of Gambling*, 6 J. RISK & UNCERTAINTY 255, 258 (1993); Eggert, *supra* note 154, at 222.
[213] *See* William R. Eadington, *The Economics of Casino Gambling*, 13 J. ECON. PERSPS. 173, 175 (1999).
[214] *See* Edward J. McCaffery, *Why People Play Lotteries and Why It Matters*, 1994 WIS. L. REV. 71, 89 ("[P]eople play lotteries for fun."); *see also* David Ramsay Steele, *Gambling is Productive and Rational*, *in* LEGALIZED GAMBLING FOR AND AGAINST 224, 228 (Rod L. Evans & Mark Hance eds., 1998) ("Recreational gambling is no less productive than tenpin bowling, ballroom dancing, or barbershop singing—all group pastimes that people pursue because they enjoy them.").
[215] *See* Paul Delfabbro, *The Stubborn Logic of Regular Gamblers: Obstacles and Dilemmas in Cognitive Gambling Research*, 20 J. GAMBLING STUD. 1, 12 (2004).
[216] *See* Timothy W. Fong, *The Biopsychosocial Consequences of Pathological Gambling*, 2 PSYCHIATRY 22, 24 (2005).
[217] *Id*.
[218] *Id*.; *see* Howard J. Shaffer & David A. Korn, *Gambling and Related Mental Disorders: A Public Health Analysis*, 23 ANN. REV. PUB. HEALTH 171, 196 (2002).
[219] Paul H. Delfabbro & Anthony H. Winefield, *Predictors of Irrational Thinking in Regular Slot Machine Gamblers*, 134 J. PSYCH. 117, 117 (2000).

can be explained by the rational desire of some people to change their economic station in life, and the willingness to make risky, even significantly unfair, bets at a chance for this change.[220] People desire large amounts of sudden wealth to elevate themselves into a higher social status, and gambling offers, especially for those who are unaware of, or have limited access to, other investment vehicles, a unique opportunity to satisfy these aspirational desires.[221]

Even if motivated by rational wants, not all individuals who gamble as a means of making money will fully understand the extent to which they play at a significant disadvantage relative to advantage gamblers.[222] This lack of information may justify some form of public regulation. An advantage gambler uses legal methods, in contrast to cheating, to gain an edge or advantage over other gamblers.[223] An advantage gambler might expend significant time and effort, for example, assembling a large database of historical information on a sports league, including data on player injuries, trades, and off-the-field incidents.[224] Using this information, the advantage gambler employs state-of-the-art empirical methods to identify mispriced bets offered by gambling operators.[225] Understanding full well how advantage gamblers take money from their pockets, many private sportsbooks in the United States, including DraftKings,[226] have severely cut the betting limits of advantage gamblers, known as "sharps," or have banned sharp players altogether, a common practice in the United Kingdom.[227]

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[220] *See* Milton Friedman & L.J. Savage, *The Utility Analysis of Choices Involving Risk*, 56 J. POL. ECON. 279, 298–99 (1948); Harry Markowitz, *The Utility of Wealth*, 60 J. POL. ECON. 151, 154 (1952); *see also* Ng Yew Kwang, *Why Do People Buy Lottery Tickets? Choices Involving Risk and the Indivisibility of Expenditure*, 73 J. POL. ECON. 530, 530, 535 (1965) (arguing that indivisibilities in certain expenditure items can explain convex "kinks" in Friedman-Savage and Markowitz utility functions).

[221] *See* McCaffery, *supra* note 214, at 94–99, 107–08.

[222] *See* Daniel Kahneman & Amos Tversky, *Prospect Theory: An Analysis of Decision Under Risk*, 47 ECONOMETRICA 263, 285–86 (1979).

[223] *See* Pistor v. Garcia, 791 F.3d 1104, 1108 (9th Cir. 2015) (citing Tsao v. Desert Palace, Inc., 698 F.3d 1128, 1131 (9th Cir. 2012)).

[224] *See generally* MICHAEL KONIK, THE SMART MONEY: HOW THE WORLD'S BEST SPORTS BETTORS BEAT THE BOOKIES OUT OF MILLIONS (2006).

[225] *See id.*

[226] *See* Jason Robins, DraftKings CEO, Address to the Goldman Sachs Travel and Leisure Conference (June 6, 2022), https://seekingalpha.com/article/4516695-draftkings-inc-dkng-ceo-jason-robins-presents-goldman-sachs-2022-travel-and-leisure [https://perma.cc/W6MS-49DF] (stating that DraftKings is "trying to get smart at eliminating the sharp action").

[227] *See* David Purdum, *Won and Done? Sportsbooks Banning the Smart Money*, ABC NEWS (Aug. 21, 2018, 10:16 AM), https://abcnews.go.com/Sports/won-sportsbooks-banning-smart-money/story?id=57307967 [https://perma.cc/54WK-BPZX] ("Banning or limiting sophisticated players has been a regular part of Las Vegas sports betting for decades, and, like in the U.K., there's absolutely nothing illegal about it."); *see also* David Hill, *Requiem for a Sports Bettor*,

b. Irrational Motivations

"The next level of gambling involvement[, beyond social gambling,] can be described as problem gambling: those who gamble despite problems in their lives caused by gambling."[228] These individuals "may include gamblers who lose more money than intended, who spend a significant amount of time gambling, or who choose gambling as their primary form of recreation, often at the expense of other activities (e.g., only taking vacations at gambling destinations)."[229] "Conceptually, this category [resembles] alcohol abuse and is thought to represent gamblers who are at risk of becoming pathological gamblers."[230] "Current epidemiological research suggests that two to three percent of the U.S. adult population fit into this category."[231]

"The most destructive form of gambling involvement is pathological gambling . . . ."[232] Pathological gambling, also known as compulsive gambling, "is a recognized mental disorder characterized by a pattern of continued gambling despite negative physical, psychological, and social consequences."[233] In particular, DSM-V characterizes pathological gambling as a unique addictive disorder, defining "gambling disorder" as "persistent and recurrent problematic gambling behavior leading to clinically significant impairment or distress."[234] For a diagnosis of this disorder, a person must exhibit, within a twelve-month period, four or more of nine diagnostic criteria, some of which are similar to substance dependence, such as tolerance, withdrawal, and the repeated inability to reduce the frequency of the behavior, in addition to the gambling not being "better explained by a manic episode."[235] "The prevalence of lifetime pathological gambling has been estimated at

RINGER (Jun. 5, 2019, 6:20 AM), https://www.theringer.com/2019/6/5/18644504/sports-betting-bettors-sharps-kicked-out-spanky-william-hill-new-jersey [https://perma.cc/NRH5-6QF5]. ("Today he's known as a sharp player by every major bookmaker in the world. Which means his bets are often limited. For some bookmakers, it means his action isn't welcome at all.")

[228] Fong, *supra* note 216, at 24.

[229] *Id*.

[230] *Id*.

[231] *Id*.

[232] *Id*.

[233] *Id*. The American Psychiatric Association classifies gambling disorder as a non-substance-related disorder within the larger category of substance-related and addictive disorders, including alcohol use and various drug use disorders. *See* AM. PSYCHIATRIC ASS'N, SUBSTANCE-RELATED AND ADDICTIVE DISORDERS 1 (2013), https://www.psychiatry.org/file%20library/psychiatrists/practice/dsm/apa_dsm-5-substance-use-disorder.pdf [https://perma.cc/CY5K-9T8Q].

[234] AM. PSYCHIATRIC ASS'N, DIAGNOSTIC AND STATISTICAL MANUAL OF MENTAL DISORDERS 585 (5th ed. 2013).

[235] *See id*.

0.5% of the adult population in the United States, with comparable or slightly higher estimates in other countries."[236] Pathological gamblers often engage in defective gambling strategies, misjudging their inability to control random events and evaluate losses.[237]

Gambling operators plainly stand to profit from problem or pathological gambling. Although studies suggest that the percentage of problem and pathological gamblers is comparatively small, commentators have argued that the relatively small percentage of such gamblers accounts for a far higher percentage of gambling operators' income.[238] To ensure that patrons gamble responsibly as a form of entertainment, and not as the result of self-destructive mental disorders, states have enacted a broad slate of rules and regulations that constitute a more rigorous form of consumer protection than found in the regulation of securities investments or insurance.[239] All states with regulated gambling, for example, have established self-exclusion programs under which players can exclude themselves from gambling establishments.[240] In Missouri, for example, "[a]ny person who has been self-excluded is guilty of trespassing in the first degree if such person enters an excursion gambling boat."[241] Some state laws further prohibit gambling

[236] Marc N. Potenza, Iris M. Balodis, Jeffrey Derevensky, Jon E. Grant, Nancy M. Petry, Antonio Verdejo-Garcia & Sarah W. Yip, *Gambling Disorder*, 5 NATURE REVS. DISEASE PRIMERS 1, 2 (2019).

[237] Anthony D. Miyazaki, Anne M. Brumbaugh & David E. Sprott, *Promoting and Countering Consumer Misconceptions of Random Events: The Case of Perceived Control and State-Sponsored Lotteries*, 20 J. PUB. POL'Y & MKTG. 254, 255 (2001).

[238] DEAN GERSTEIN, SALLY MURPHY, MARIANNA TOCE, JOHN HOFFMANN, AMANDA PALMER, ROBERT JOHNSON, CINDY LARISON, LUCIAN CHUCHRO, TRACY BUIE, LASZLO ENGELMAN, MARY ANN HILL, RACHEL VOLBERG, HENRICK HARWOOD & ADAM TUCKER, GAMBLING IMPACT AND BEHAVIOR STUDY 33–34 (1999), https://www.norc.org/PDFs/publications/GIBSFinalReportApril1999.pdf [https://perma.cc/3GNA-7RAJ] (stating that "[i]n casino play, problem and pathological gamblers account for 22.1 percent of past-year losses"); *see also* TIMOTHY P. RYAN & JANET F. SPEYRER, GAMBLING IN LOUISIANA: A BENEFIT/COST ANALYSIS 99 (1999) (concluding that, in Louisiana, almost thirty percent of all riverboat casino spending comes from problem and pathological gamblers, as does over forty-two percent of all Indian reservation casino spending).

[239] *See generally* AM. GAMING ASS'N, RESPONSIBLE GAMING: REGULATIONS AND STATUTES GUIDE (2022), https://www.americangaming.org/wp-content/uploads/2019/09/AGA-Responsible-Gaming-Regs-Book_FINAL.pdf [https://perma.cc/4A37-EGTW] (collecting statutes and regulations addressing responsible gaming including self-exclusion programs, advertising restrictions, wager and time limits, credit restrictions, employee training, and restrictions on alcoholic beverages).

[240] *See id.* at 3, 4.

[241] MO. REV. STAT. § 313.813 (2022).

operators from engaging in direct promotional outreach or marketing to self-excluded individuals.[242]

States have also required gambling operators to post signs to help players identify problem or pathological gambling.[243] The State of Illinois, for example, requires licensed gambling operators to post signs at various locations within a gambling facility explaining how to obtain assistance with gambling problems.[244] In addition, certain states require casino employees, who work on the gaming floor or who have customer interaction, to receive training on problem or pathological gambling, including instruction on the complex question of how to identify such at-risk gamblers.[245] Many states require that gambling advertising include a responsible gaming message, including a toll-free helpline number.[246]

Recognizing that certain gambling behavior can be the product of an addictive disorder, states have enacted specific types of credit restrictions designed to prevent a player from betting more than that player can afford to pay.[247] The State of Maine, for example, has enacted legislation stating that a gambling operator "may not allow the use of a credit card . . . by a person to play a slot machine or table game."[248] Similarly, several states have established mandatory wagering limits or have required gambling operators to provide a mechanism through which players can establish self-imposed limits on deposits, losses, wagers, or time spent gambling.[249] The State of New Hampshire, for example, requires its gaming commission to provide "[w]ager limits for daily, weekly, and monthly amounts consistent with best practices in addressing problem gambling."[250] In a related effort to ensure that patrons gamble in a rational frame of mind, many states limit alcohol service on the gaming floor[251] or to

[242] *See, e.g.*, 006.06.19 ARK. CODE R. § 5.130 (LexisNexis 2022) ("Operators must take all reasonable steps to prevent any marketing material from being sent to an individual who has self-excluded.").

[243] *See* AM. GAMING ASS'N, *supra* note 239, at 4.

[244] *See* 230 ILL. COMP. STAT. ANN. 10/13.1(a) (2022).

[245] *See, e.g.*, IOWA ADMIN. CODE r. 491-5.4(12) (2022) ("Training of key employees to identify and report suspected problem gamblers[.]").

[246] *See, e.g.*, D.C. Mun. Regs. tit. 30, § 2128.1(e) (2022).

[247] *See, e.g.*, IOWA CODE § 99F.9 (2022).

[248] ME. STAT. tit. 8, § 1031 (2022); *see also* IOWA CODE § 99F.9 (2022) ("A licensee shall not accept a credit card . . . to purchase coins, tokens, or other forms of credit to be wagered on gambling games.")

[249] *See, e.g.*, N.H. REV. STAT. ANN. § 287-I:7(iv) (2022); N.Y. RAC. PARI-MUT. WAG. & BREED. LAW § 1367-a(4)(a)(xii) (Consol. 2022); MICH. COMP. LAWS § 432.312(4) (2022).

[250] *See* N.H. REV. STAT. ANN. § 287-I:7 (2022).

[251] *See, e.g.*, FLA. STAT. § 551.121(1) (2022) (prohibiting gambling operators from serving complimentary or reduced-cost alcoholic beverages to persons playing a slot machine).

patrons who are visibly intoxicated.[252] More generally, some states have set aside public funds to support treatment for problem or pathological gambling and research to advance responsible gambling.[253] The State of Nevada, for instance, has created a revolving account, created in the state general fund, to support programs for the prevention and treatment of problem gambling.[254]

Although the gambling industry claims, in response to this regulatory oversight, that little of its profits derive directly from gambling addiction and that it prefers not to deal with these types of patrons,[255] problem or pathological gambling can have severe personal and social consequences.[256] Given the obvious link between profits and gambling addiction, gambling operators cannot be safely relied upon to police or otherwise monitor themselves. Accordingly, the broad slate of rules and regulations surveyed above represents a sensible public response to certain mental disorders connected to the creation and consumption of risk.[257] Unlike the regulation of other types of risk transactions, one of the central motivations for strict regulation of gambling is thus a paternalistic one centered on the prevention of self-harm.[258] Risk creation differentiates gambling from other bilateral risk transactions.[259] Thus, the heightened

[252] *See, e.g.*, 205 MASS. CODE REGS. 136.07(7)(f) (2022); LA. STAT. ANN. § 27:27.1(c)(5) (2022); *see also* Jon E. Grant, Matt. G. Kushner & Suck Won Kim, *Pathological Gambling and Alcohol Use Disorder*, 26 ALCOHOL RSCH. & HEALTH 142, 147 (2002) (finding that problematic gambling is comparatively more common among people with alcohol use disorders).

[253] *See, e.g.*, W. VA. CODE § 29-22A-19 (2022); WASH. REV. CODE § 41.05.750 (2022).

[254] NEV. REV. STAT. § 458A.090 (2022). Some have argued, however, that states, including Nevada, underfund these support programs. *See, e.g.*, Dana Gentry, *'Gut-Wrenching' Cuts to a Problem Gambling Program That Was Never Flush*, NEV. CURRENT (Feb. 9, 2021, 6:17 AM), https://www.nevadacurrent.com/2021/02/09/gut-wrenching-cuts-to-a-problem-gambling-program-that-was-never-flush/ [https://perma.cc/2T4M-8H7K] ("Department of Health and Human Services director Lisa Sherych told lawmakers the state was 'requesting to reduce problem gambling services,' to about $2 million a year, resulting in a 'decreased capacity for providers to provide adequate availability of services to the problem gamblers in Nevada.'").

[255] *See* Eggert, *supra* note 154, at 226; Cory Aronovitz, *The Regulation of Commercial Gaming*, 5 CHAP. L. REV. 181, 200 (2002). *But see, e.g.*, John Rosengren, *How Casinos Enable Gambling Addicts*, ATL. (Dec. 2016), https://www.theatlantic.com/magazine/archive/2016/12/losing-it-all/505814/ [https://perma.cc/BL6R-QFNL] ("A significant portion of casino revenue now comes from a small percentage of customers, most of them likely addicts, playing machines that are designed explicitly to lull them into a trancelike state that the industry refers to as 'continuous gaming productivity.'"); Stephen Marche, *America's Gambling Addiction is Metastasizing*, ATL. (Nov. 26, 2021), https://www.theatlantic.com/ideas/archive/2021/11/world-our-casino/620791/ [https://perma.cc/N5SH-AQNW] ("Gambling relies on addiction for its business model to function; everybody knows that.").

[256] *See* Eggert, *supra* note 154, at 228; Rosengren, *supra* note 255.

[257] *See* Eggert, *supra* note 154, at 224–25; Borna & Lowry, *supra* note 208, at 220.

[258] *See* Colin Camerer, Samuel Issacharoff, George Loewenstein, Ted O'Donoghue & Matthew Rabin, *Regulation for Conservatives: Behavioral Economics and the Case for "Asymmetric Paternalism"*, 151 U. PA. L. REV. 1211, 1245 (2003).

[259] *See* Borna & Lowry, *supra* note 235, at 220.

regulatory scrutiny given to risk creation or gambling can be sensibly explained as a recognition of the fact that gambling is, for some, the unfortunate byproduct of a self-destructive mental disorder or disease that must be restricted in certain respects to prevent irrational behavior contrary to a person's long-run best interests.

c. Laughing at the Gods

In addition to problem or pathological gambling, the analytic framework introduced in Part III suggests a more abstract justification for heightened regulation of gambling compared to other risk transactions, such as securities investments or insurance; specifically, the normative prescription that a person ought not gratuitously create risk. Although risk creation may provide some entertainment value, and may afford some enjoyment akin to the consumption of any other economic good, gamblers are nonetheless participating in a game, one that is often unfair or otherwise biased in favor of the House.[260] Much of the human struggle has been devoted to reducing risk, to bringing some semblance of order or structure to an otherwise chaotic existence, a bitter fight against the inexorable entropic increase of the universe.[261] For example, humans have built safer automobiles to reduce the risk of accident.[262] Humans have invented vaccines to reduce the risk of infectious disease.[263] Humans have constructed social welfare systems to mitigate the risk of economic misfortune.[264] More broadly, humans have prayed to God believing the cosmos to possess some ultimately coherent purpose, refusing to accept a conception of the human condition as mere randomness.[265] In some respects, risk creation in

[260] *See* Shaffer & Korn, *supra* note 218, at 175; Levitt, *supra* note 57, at 224. Gambling might also have positive health benefits, providing a means of social interaction for adults, especially older adults who have fewer recreational alternatives. *See* Shaffer & Korn, *supra* note 218, at 188; David A. Korn & Howard J. Shaffer, *Gambling and the Health of the Public: Adopting a Public Health Perspective*, 15 J. GAMBLING STUD. 289, 294–95 (1999).

[261] *See* ROBERT L. FLOOD & EWART R. CARSON, DEALING WITH COMPLEXITY: AN INTRODUCTION TO THE THEORY AND APPLICATION OF SYSTEMS SCIENCE 14 (1988) (defining entropy as the overall tendency of every system to move from an ordered state to a disordered one).

[262] *See* Daniel A. Crane, Kyle D. Logue & Bryce C. Pilz, *A Survey of Legal Issues Arising from the Development of Autonomous and Connected Vehicles*, 23 MICH. TELECOMMS. & TECH. L. REV. 191, 205-06 (2017).

[263] *See* Charlene M. C. Rodrigues & Stanley A. Plotkin, *Impact of Vaccines: Health, Economic and Social Perspectives*, 11 FRONTIERS MICROBIOLOGY, July 14, 2020, at 1.

[264] *See* Nicholas Barr, *Shifting Tides*, FIN. & DEV., Dec. 2018, at 17.

[265] *See* Ryan Gillespie, *Cosmic Meaning, Awe, and Absurdity in the Secular Age: A Critique of Religious Non-Theism*, 111 HARV. THEOLOGICAL REV. 461, 462 (2018) ("Contemporary notions of a meaningful life . . . are often caught between two worlds: a deep human yearning for cosmic

the form of gambling defiantly flies in the face of all this: gambling represents an overt and conscious embrace of that which humans have fought so anxiously to tame, an improvident rebellion against the harsh vicissitudes of a world that can often appear haphazard, indiscriminate, and absurd. And, for this reason alone perhaps, the law ought to treat risk creation differently than risk transfer.

B. Synthetic Trading Positions

As an illustrative application of the analytic framework set forth above, this subpart uses this framework to make the case that the government must regulate synthetic trading positions as a form of socially undesirable gambling and examines the definitional challenges that regulators can expect in attempting to distinguish synthetic trading positions from other socially desirable forms of bilateral risk transfer.

1. Synthetic Trading Positions as a Form of Gambling

Synthetic trading positions do not constitute a violation of state or federal securities law unless the synthetic position is constructed with the intent of manipulating the price of a security.[266] Like derivatives more generally, the regulation of synthetic trading positions is primarily focused on risk mitigation.[267] One of the principal risks identified by financial regulators with respect to synthetic positions is a failure on the part of a short seller to deliver a security to a buyer when delivery of the security is due.[268] To reduce the likelihood of such failures to deliver, the SEC enacted Regulation SHO, which requires broker-dealers to "locate securities to borrow" before executing a short sale in any equity security.[269]

Although regulators have correctly recognized the counterparty risk implied by synthetic trading positions in enacting Regulation SHO and other similar rules or regulations, regulators have,

meaning, on the one hand, and a seemingly random, impersonal, contingent universe on the other hand.").

[266] *See, e.g.*, Jennifer O'Hare, *Synthetic CDOs, Conflicts of Interest, and Securities Fraud*, 48 U. RICH. L. REV. 667, 688–89 (2014); N.Y. GEN. BUS. LAW § 339-B (Consol. 2022).

[267] *See id.* at 714, 719.

[268] *See* Mark Jickling, Cong. Rsch. Serv., RS22099, Regulation of Naked Short Selling 2 (2005).

[269] Short Sales, 69 Fed. Reg. 48,008, 48,008 (Aug. 6, 2004) (codified at 17 C.F.R. pts. 240–42). The locate requirement is met where the broker-dealer has "[r]easonable grounds to believe that the security can be borrowed so that it can be delivered on the date delivery is due." *See* 17 C.F.R. § 242.203(b)(1)(ii) (2022). Regulation SHO also requires firms that clear and settle trades to take action to close out failures to deliver by borrowing or purchasing securities of like kind and quantity. *See* 17 C.F.R. § 242.204(a) (2022).

nonetheless, been consistently unwilling to condemn synthetic positions more broadly as a socially harmful form of gambling.[270] In fact, the SEC has expressed its support for synthetic instruments, stating that trading in these products can be beneficial in contributing to market liquidity: without speculators buying and selling synthetic products, financial entities seeking to hedge risk might be unable to locate a ready and willing counterparty.[271] The contention is that the addition of speculators in derivatives markets gives those looking to hedge (or transfer) risk a greater number of potential counterparties.[272]

As the analytic framework highlights, the preceding justification blurs an important distinction between risk transfer and risk creation. If an economic actor assumes a risk as part of its ordinary course of business and seeks to "hedge" or transfer that risk to a party better positioned to bear the risk, then this party can use a derivative instrument to engage in socially beneficial risk transfer: the additional liquidity provided by speculators is valuable because additional counterparties allow for more frequent socially positive risk transfer.[273] If the actor does not bear any existing risk of economic profit or loss, however, then the derivative instrument is synthetic and constitutes bilateral risk creation or gambling between two speculators.[274] The added liquidity provided by speculators, in this case, only serves to facilitate risk creation, with the parties contracting with each other to "create risk where [none] existed before."[275] Accordingly, in addition to reducing failures to deliver, the

[270] *See* Lynn A. Stout, *Betting the Bank: How Derivatives Trading Under Conditions of Uncertainly Can Increase Risks and Erode Returns in Financial Markets*, 21 J. CORP. L. 53, 66–67, 66 n.52 (1995). Although commentators have noted the similarity between derivatives trading and gambling, many have hesitated to conclude that the two can be equivalent. *See id.* at 68. Still, commentators have stated that speculative trading in derivatives might be analogized to "disagreement-based 'trading' on the outcomes of horse races, poker games, and athletic contests." *See id.* at 66. Professor Stout, for example, ultimately concludes that gambling includes an element of entertainment utility that "probably differs significantly from the market for speculative trading." Stout, *supra* note 7, at 712 n.31. Professor Lynch makes the connection explicit, concluding that purely speculative derivative contracts "are simply gambles, nothing but bets between two parties on the outcome of something over which they have no control." Lynch, *supra* note 1, at 94.

[271] *See Investor Bulletin*, *supra* note 12; *see also* Lynch, *supra* note 1, at 118–19 (stating that the "addition of speculators into the derivatives marketplace gives hedgers more potential counterparties").

[272] *See* Hazen, *supra* note 1, at 429 ("[T]he markets utilize speculators to help provide liquidity to these risk-shifting markets.").

[273] *See* Culp, *supra* note 1, at 58; Lynch, *supra* note 1, at 78.

[274] *See* Lynch, *supra* note 1, at 70–71, 75–76, 94.

[275] *See id.* at 93. The creation of synthetic trading positions might reduce liquidity for potential hedgers by sopping up counterparties who would have otherwise contracted with hedgers. *Id.* at 119.

analytic framework substantiates an important additional justification for enhanced regulatory scrutiny of synthetic trading positions—that such risk transactions constitute legalized gambling.[276]

Above, the heightened regulatory scrutiny given risk creation or gambling was attributed to the fact that risk creation is, for some, the unfortunate consequence of a self-destructive mental disorder or disease. Arguably, trading by sophisticated financial actors is less likely to be the product of such mental disorders.[277] Trading in an irrational manner, characterized by a lack of impulse control, is unlikely to be profitable in the long run and can be expected to result in job loss eventually.[278] Rather, the justification for heightened regulatory scrutiny of synthetic trading positions as a form of gambling relates to systemic risk in financial markets, where "systemic risk" can be defined as the risk that "the failure of a single market participant [would have] a disproportionate effect on the overall market."[279]

In traditional gambling markets, gambling operators are typically not interconnected such that the entire market is put at risk of collapse if a single operator fails.[280] If a casino is busted, then its customers will suffer, but additional risk of default is unlikely to spread to other casinos. The financial sector is different. If a financial firm enters a synthetic trading position, then the firm "not only exposes itself to [the risk of a] possible collapse but also exposes its creditors, its contractual counterparties, and other related entities to financial collapse [as well].[281] When such trading is done by

[276] *See* discussion *supra* Part IV.A.1.b; Lynch, *supra* note 1, at 94–96; Hazen, *supra* note 1, at 395 ("This article takes the position that there is still some merit to the gambling/investment analogy."); *see also* Wolfgang Münchau, Opinion, *Time to Outlaw Naked Credit Default Swaps*, FIN. TIMES (Feb. 28, 2010), https://www.ft.com/content/7b56f5b2-24a3-11df-8be0-00144feab49a [https://perma.cc/LV3H-SD7M] ("A naked CDS purchase means that you take out insurance on bonds without actually owning them. It is a purely speculative gamble. There is not one social or economic benefit.").

[277] *Cf.* Riccardo Guglielmo, Lucia Ioime & Luigi Janiri, *Is Pathological Trading an Overlooked Form of Addiction?*, 8 ADDICT HEALTH 207, 208–09 (2016) (arguing that pathological trading is an important public health problem that deserves greater attention of the scientific community).

[278] *See id.* at 207–08.

[279] *See* THE PRESIDENT'S WORKING GRP. ON FIN. MKTS., OVER-THE-COUNTER DERIVATIVES MARKETS AND THE COMMODITY EXCHANGE ACT 14 (1999), https://home.treasury.gov/system/files/236/Over-the-Counter-Derivatives-Market-Commodity-Exchange-Act.pdf [https://perma.cc/SSU6-EHDP].

[280] *See* Jones, *supra* note 204.

[281] *See* Lynch, *supra* note 1, at 102; *see also* FRANK PARTNOY, INFECTIOUS GREED: HOW DECEIT AND RISK CORRUPTED THE FINANCIAL MARKETS 229 (2003) ("Derivatives tighten the connections among various markets . . . [raising] the prospect of a system-wide breakdown.").

systemically important financial entities, this trading increases systemic risk in financial markets.[282] Unlike non-synthetic derivative instruments, however, the increase in systemic risk is not offset by the social benefits of risk transfer.[283] Hence, the justification for greater regulatory scrutiny of synthetic instruments is not a paternalistic desire to protect financial actors from themselves, as is true of other forms of gambling, but a recognition of the fact that synthetic trading positions magnify systemic risk in the financial sector in a socially undesirable manner.[284]

Over time, derivatives have increased the complexity of the financial sector.[285] This expanding complexity has provided cover for trading in synthetic instruments that, as discussed, constitute a form of gambling no different than placing a wager on the outcome of a sporting event. Indeed, this particular feature of derivative contracts explains, perhaps more than any other, why chairman and CEO of Berkshire Hathaway, Warren Buffett, famously referred to derivatives as "financial weapons of mass destruction."[286] With respect to risk creation, the line between business and finance has become improperly blurred.[287] Risk creation ought to remain the exclusive domain of business, with entrepreneurs undertaking risky projects in the hope that the investment will succeed, and that the creation of a novel product or service will, in turn, substantially improve the lives of others. Governments must structure the legal and regulatory environment to encourage positive expected value investments, such as the opening of a restaurant or the construction

[282] Lynch, *supra* note 1, at 101; *see* O'Hare, *supra* note 266, at 679–80 (describing how the use of synthetic trading positions by systemically important institutions led to the housing market crash).

[283] *See* Lynch, *supra* note 1, at 74.

[284] *See id.* at 98, 125–26; *see also supra* text accompanying note 246 (describing gambling laws as paternalistic). Merely characterizing synthetic trading positions as a form of gambling, and not as a security, commodity, or other regulated financial instrument, may invite additional positive regulatory scrutiny as many federal gambling laws exclude, from their definitions of gambling, transactions that fall under the jurisdiction of other financial regulators. *See, e.g.*, 31 U.S.C. § 5362(1)(E).

[285] *See* Prasanna Gai, Andrew Haldane & Sujit Kapadia, *Complexity, Concentration and Contagion*, 58 J. MONETARY ECON. 453, 456 (2011).

[286] *See* Letter from Warren E. Buffett, Chairman of the Bd., Berkshire Hathaway Inc., to Shareholders of Berkshire Hathaway Inc. 13–15 (Feb. 21, 2003), https://www.berkshirehathaway.com/letters/2002pdf.pdf [https://perma.cc/8UHV-HJH4]; *see also* Peter Foster, *George Soros Urges Governments to Outlaw "Toxic" Credit Default Swaps*, TEL. (June 12, 2009, 12:19 PM), http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/5514341/George-Soros-urges-governmentsto-outlaw-toxic-credit-default-swaps.html [https://perma.cc/8DPZ-S4DT].

[287] *See* Stout, *supra* note 270, at 66 (stating that the development of derivatives may have caused social harm "by adding risk to the marketplace" and "by diverting scarce resources from more productive forms of investment").

of an apartment complex. Although these business undertakings create risk to the extent that a percentage of ventures will succeed and others fail, this type of risk creation is a necessary feature of socially beneficial business activity.

The financial system, on the other hand, does not exist to create risk. The financial system exists to transfer risk created by ordinary business activity to other entities that can bear this risk more efficiently—or, in some cases, to destroy or fully hedge this risk—but never to create risk itself.[288] Risk creation is antithetical to one of the core social functions of the financial sector: helping companies minimize or otherwise manage the risks that arise out of ordinary business conduct.[289] Capital markets allow companies to transfer this socially beneficial risk to investors, who, in this way, indirectly participate in productive business activity.[290] Capital markets are not casinos and should not permit investors to engage in unregulated gambling, placing bets on expected movements in asset prices no different than placing a wager on the outcome of a sporting contest.[291] Not only is this type of unregulated risk creation contrary to the broader social mission of the financial sector, but it renders the financial system less sound, amplifies volatility, and, ultimately, leaves the economy susceptible to financial crisis and, in turn, protracted economic recession.[292]

2. A Regulatory Challenge

In seeking to regulate synthetic trading positions, a financial regulator must be able to differentiate between risk transfer and risk creation.[293] To do so, the regulator must know the initial risk

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[288] *See, e.g.*, Culp, *supra* note 1, at 58 ("Perhaps the archetypical social function provided by derivatives is risk transfer."); *see also* Bunting, *supra* note 82 (manuscript at 28–29) (defining risk destruction).

[289] *See* Borna & Lowry, *supra* note 208, at 221 ("The critical concern . . . is not whether the element of risk is present in a given type of business activity; rather it is the impact of a given transaction on the aggregate level of risk which the community or society in general has to bear."); *see generally* MARTIN NEIL BAILY & DOUGLAS J. ELLIOTT, THE ROLE OF FINANCE IN THE ECONOMY: IMPLICATIONS FOR STRUCTURAL REFORM OF THE FINANCIAL SECTOR (2013), https://www.brookings.edu/wp-content/uploads/2016/06/11-finance-role-in-economy-baily-elliott.pdf [https://perma.cc/6RPS-QNDB] (discussing the importance the financial sector in minimizing and managing risks for homeowners and businesses).

[290] *See* Ronald J. Gilson & Charles K. Whitehead, *Deconstructing Equity: Public Ownership, Agency Costs, and Complete Capital Markets*, 108 COLUM. L. REV. 231, 248 (2008).

[291] *See* JOHN MAYNARD KEYNES, THE GENERAL THEORY OF EMPLOYMENT, INTEREST AND MONEY 159 (1936) ("It is usually agreed that casinos should, in the public interest, be inaccessible and expensive. And perhaps the same is true of Stock Exchanges.").

[292] *See* O'Hare, *supra* note 266, at 680–81.

[293] *See* Bunting, *supra* note 82 (manuscript at 65).

endowments of both contract parties in a bilateral risk transaction to determine if one of the contract parties is transferring an existing risk of economic profit or loss.[294] This information, however, might not be available to a regulator. One can easily identify a bet placed on the spin of a roulette wheel or on the outcome of a hand of blackjack as gambling because the participants in these games are unlikely to have any preexisting economic exposure to the outcome of a roulette wheel or a hand of blackjack. The participants in these games are not seeking to transfer an existing risk of economic profit or loss; instead, such risk is *created* by virtue of participation in the game itself.[295] But suppose that a party has previously bet on red. And now that very same party also places a bet on black. This second bet is no longer gambling; it is risk transfer. The party is, in effect, closing out a position—at a net loss. The complex task facing financial regulators is to determine whether a given trade is a naked bet on black or whether that party has also made a corresponding bet on red.

To amplify using the analytic framework developed above, suppose that Party X has an initial risk endowment with negative risk, V_X^0 = (-10, 0), which implies a negative payout of -10 if state, s_1, is realized and a payout of 0 if state, s_2, is realized. Assume that Party X enters into a risk transaction with Party Y in which Party X agrees to give a bet, B_X = (0, 10), to Party Y in exchange for Party Y agreeing to give a bet, B_Y = (10, 0), to Party X.[296] Under this bilateral risk transaction, Party X receives a payout of 0 (= -10 + 10) if state, s_1, is realized ,and a negative payout of -10 (= -10 + 0) if state, s_2, is realized. Party X's new payout distribution is V_X^1 = (0, -10). Party X has swapped the payouts associated with each state of nature, incurring a loss of -10 now in state, s_2, and not in state, s_1. Table 5 summarizes this discussion.

[294] *See id.* (manuscript at 66).
[295] *See* Borna & Lowry, *supra* note 208, at 220.
[296] *See id.* at 21 (defining a bilateral risk exchange transaction).

Table 5: Risk Exchange

States	V^0	B_X	B_Y	V^1
s_1	(-10, 0)	0	10	(0, -10)
s_2	(0,0)	10	0	(-10, 10)

In this example, the risk exchange has not reduced Party *X*'s exposure to risk. Instead, the risk transaction has merely transferred an economic loss from state, s_1, to state, s_2. Party *Y*'s exposure to risk, however, has significantly increased from V_Y^0 = (0, 0) to V_Y^1 = (-10, 10).[297] Indeed, this transaction has increased the total risk borne by the two contract parties, suggesting that a component of this transaction involves risk creation. To see this more clearly, consider the following two distinct bilateral risk transactions:

Negative Risk Transfer

States	V^0	B_X	B_Y	V^1
s_1	(-10, 0)	0	5	(-5, -5)
s_2	(0, 0)	5	0	(-5, 5)

and

Risk Creation

States	V^0	B_X	B_Y	V^1
s_1	(-5, -5)	0	5	(0, -10)
s_2	(-5, 5)	5	0	(-10, 10)

[297] The risk associated with initial payout distribution, V_Y^0 = (0, 0), equals zero and is *less than* the risk associated with new payout distribution, V_Y^1 = (-10, 10), which equals twenty.

First, Party X enters into a negative risk transfer contract, transforming an initial payout distribution, V_X^0 = (-10, 0), with risk, into a new payout distribution, V_X^1 = (-5, -5), with zero risk.[298] An existing risk of economic loss has been transferred to Party Y, whose initial risk endowment, V_Y^0 = (0, 0), with zero risk, has been transformed into a new payout distribution, V_Y^1 = (-5, 5), with risk. Second, Party X enters a risk-creation transaction, doubling the total risk borne by both contract parties. Specifically, Party X's risk endowment, V_X^0 = (-5, -5), which has zero risk, is transformed into a new payout distribution, V_X^1 = (0, -10), which is no longer risk-free. Likewise, Party Y's risk endowment, V_Y^0 = (-5, 5), is transformed into a new payout distribution, V_Y^1 = (-10, 10), with even higher risk.[299] In this way, the contract parties can replicate the risk exchange contract above with a properly chosen combination of risk transfer and risk creation contracts.

Importantly, the preceding example, albeit a simplification, concretely illustrates a thorny threshold issue encountered in the regulation of synthetic instruments. Some trading positions are clearly synthetic. A simple collateralized debt obligation in which the underlying credit exposures are taken using a credit default swap rather than by having a vehicle buy assets, such as bonds, can be straightforwardly identified as a synthetic trading position.[300] Other transactions, however, such as the risk exchange transaction above where only one component of the position is synthetic, are more difficult to identify as synthetic. Unlike a collateralized debt obligation created solely with credit default swaps, a risk exchange transaction is not synthetic on its face. To correctly identify which part of a risk exchange transaction corresponds to negative risk transfer and which part corresponds to risk creation requires knowledge of the existing initial risk endowments of both contract parties.[301] Only with this information in hand can a regulator cleanly divide the risk transaction into its risk transfer and risk creation (or synthetic) components respectively, as in the example above.[302] In

[298] The risk associated with initial payout distribution, V_X^0 = (-10, 0), equals ten and is *greater than* the risk associated with new payout distribution, V_X^1 = (-5, -5), which equals zero.

[299] The original payout distribution, V_Y^0 = (-5, 5), has risk equal to 5 + 5 = 10. The new payout distribution,
V_Y^1 = (-10, 10), has risk equal to 10 + 10 = 20 > 10.

[300] *See* Bunting, *supra* note 82 (manuscript at 41).

[301] *See id.* (manuscript at 65).

[302] The insurable interest requirement in insurance law similarly differentiates insurance contracts from gambling. *See, e.g.*, Stout, *supra* note 7, at 728 (discussing indemnity contracts); Kreitner, *supra* note 143, at 1116–28 (discussing life insurance policies and the assignability of policies).

other words, to limit or prohibit this type of synthetic trading position, a regulatory authority must be able to correctly identify the threshold that sharply divides risk transfer from risk creation. In the example above, this threshold is 5: any payout to Party *X* in state, s_1, in excess of this threshold amount constitutes risk creation.[303] In practice, however, the value of this threshold might be unknown, even to the contract parties themselves.[304]

C. Cryptocurrency

As a second application of the analytic framework set forth in Part III, this subpart demonstrates how this framework can be employed to make the purely theoretical case that trading in cryptocurrency constitutes unregulated gambling.

1. Defining Cryptocurrency

A cryptocurrency can be loosely defined as a digital currency that is intended to function as a medium of exchange on a computer network.[305] Unlike traditional fiat currencies, cryptocurrencies such as Bitcoin and Ether do not rely upon a centralized authority such as a government or bank to uphold or maintain the value of the currency; instead, the network as a whole is involved in authorizing transactions and generating new currency.[306] Individual coin ownership records are stored in a digital distributed ledger, such as a blockchain, which is a computerized database using strong cryptography to secure transaction records, to control the creation of additional coins, and to verify the transfer of coin ownership.[307]

[303] This assumes a zero payout in state, s_2.

[304] To address this lack of information, in a legal environment where synthetic contracts are not legally enforceable, a party alleged to have engaged in synthetic trading can be made to bear the burden of proof in establishing ownership of, or economic exposure to, the underlying asset that defines the bilateral risk transaction. The burden of proof can be placed upon the defendant-contract party to establish that the purpose of the transaction was to transfer an existing risk of economic loss and that the transaction was narrowly structured such that the relevant payouts under the risk transaction does not exceed the economic loss.

[305] *See Virtual Currency Regulation*, WASH. STATE DEP'T OF FIN. INSTS. (2014), http://www.dfi.wa.gov/documents/money-transmitters/virtual-currency-regulation.pdf [https://perma.cc/2968-3ADG].

[306] *See* Stephanie Lo & J. Christina Wang, *Bitcoin as Money?*, FED. RSRV. BANK OF BOS. CURRENT POL'Y PERSPS. 2 (Sept. 4, 2014), https://www.bostonfed.org/economic/current-policy-perspectives/2014/cpp1404.pdf [https://perma.cc/UGY9-7B6H].

[307] *See* Eric D. Chason, *How Bitcoin Functions as Property Law*, 49 SETON HALL L. REV. 129, 139 (2018). Some cryptocurrency schemes use validators to maintain the currency. Under a proof-of-work system, such as Bitcoin, the safety, integrity, and balance of ledgers is maintained by a community of mutually distrustful parties referred to as miners, who use their computers to help validate and timestamp transactions, adding them to the ledger in

Cryptocurrencies are themselves simply a strings of digits and characters and can be transferred over the Internet.[308] Importantly, the network records where each coin is located so that a holder of cryptocurrency cannot "double-spend" a single coin by attempting to transmit the identical code to different members of the cryptocurrency network.[309] Most cryptocurrencies are designed to gradually decrease the production of currency, placing a cap on the total amount of currency that can be in circulation.[310] As of May 2018, there were over 1,800 different cryptocurrencies in existence.[311]

Although the name *cryptocurrency* suggests otherwise, most agree that cryptocurrencies are not a currency.[312] First, cryptocurrency is hampered as a medium of exchange, a primary feature of a currency, by its slow network and high transfer costs.[313] Given the relatively limited number of transactions that can be processed at a given moment, a cryptocurrency network can quickly become congested, with transactions taking more than a day to execute under certain circumstances, and the corresponding size of the transaction fees can make ordinary retail transactions uneconomical.[314] Second,

accordance with a particular timestamping scheme. *See* H. T. M. Gamage, H. D. Weerasinghe & N. G. J. Dias, *A Survey on Blockchain Technology Concepts, Applications, and Issues*, 1 SN COMPUT. SCI., Apr. 6, 2020, at 5–6; Chason, *supra*, at 157–58. Under a proof-of-stake system, such as Ethereum, transactions are validated by holders of the associated cryptocurrency, sometimes grouped together in stake pools. *See* Gamage et al., *supra*, at 6.

[308] *See* ANDREAS M. ANTONOPOULOS, MASTERING BITCOIN 70 (2015). A holder of cryptocurrency can also convert cryptocurrency into dollars or other fiat currencies on various cryptocurrency exchanges. *See* Daniel Dupuis & Kimberley Gleason, *Money Laundering with Cryptocurrency: Open Doors and the Regulatory Dialectic*, 28 J. FIN. CRIME 60, 65–66 (2021).

[309] *See* SATOSHI NAKAMOTO, BITCOIN: A PEER-TO-PEER ELECTRONIC CASH SYSTEM 1–2 (2008), https://bitcoin.org/bitcoin.pdf [https://perma.cc/48LH-ZBTL] ("What is needed is an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party."); *see generally* Leslie Lamport, Robert Shostak & Marshall Pease, *The Byzantine Generals Problem*, 4 ACM TRANSACTIONS PROGRAMMING LANGUAGES & SYS. 382 (1982).

[310] *See* Simon Barber, Xavier Boyen, Elaine Shi & Ersin Uzun, *Bitter to Better — How to Make Bitcoin a Better Currency*, *in* 16 INT'L CONF. ON FIN. CRYPTOGRAPHY & DATA SECURITY 399, 403 (2012). "Computer users can 'mine' bitcoins by instructing their computers to solve complex problems generated by the bitcoin network." Eric Posner, *Fool's Gold*, SLATE (Apr. 11, 2013, 11:11 AM), https://slate.com/news-and-politics/2013/04/bitcoin-is-a-ponzi-scheme-the-internet-currency-will-collapse.html [https://perma.cc/W5A6-BW4C]. **"**As more bitcoins are produced, the problems become more complex, requiring more computer power to solve them, and this limits the total number of bitcoins that can be created over time." *Id.*

[311] Mamta Badkar, *Fed's Bullard: Cryptocurrencies Creating "Non-Uniform" Currency in U.S.*, FIN. TIMES (May 14, 2018), https://www.ft.com/content/29dcb760-5787-11e8-b8b2-d6ceb45fa9d0 [https://perma.cc/4KEN-N7XA**].**

[312] *See, e.g.*, David Yermack, *Is Bitcoin a Real Currency? An Economic Appraisal*, *in* HANDBOOK OF DIGITAL CURRENCY 31, 32–33 (David Lee Kuo Chuen ed., 2015).

[313] *See id.* at 33.

[314] *See* Rasim Ozcan, *Decentralized Finance*, *in* FINANCIAL ECOSYSTEM AND STRATEGY IN THE DIGITAL ERA 57, 67–69 (Umit Hacioglu & Tamer Aksoy eds., 2021); Jesse Zhou, *Bitcoin*

cryptocurrency is currently of little use as a store of value, another important feature of a currency, because of its significant volatility.[315] Cryptocurrency is one of the most volatile non-derivative financial instruments on the market.[316] In one day, for example, Bitcoin's value dropped by more than thirty percent.[317]

Furthermore, as others have noted, a currency cannot succeed if the supply of that currency, like Bitcoin, is fixed.[318] "A currency is used to enter [economic] transactions; the more transactions . . ., the more [currency is required].[319] "As the economy grows, a fixed-supply currency becomes [more valuable] in terms of goods and services," and people can be expected to hoard the currency, correctly anticipating its price to continue to rise.[320] Once this type of hoarding takes hold, circulation slows, or ends altogether, and the cryptocurrency no longer operates as a viable currency.[321] As this currency becomes scarce, economic actors are forced to accept substitute cryptocurrencies.[322] "But if there are no constraints on substitute digital currencies -- and there aren't -- then the value of bitcoins will plummet as the subs begin to circulate."[323] With no limit

Transactions Are Slow and Costly. Let's Explain Why., MEDIUM (Apr. 16, 2021), https://medium.com/geekculture/bitcoin-transactions-are-slow-and-costly-lets-explain-why-a3f6f2e326db [https://perma.cc/542Y-GPXJ]. As of April 2020, the average Bitcoin transaction fee was $21, which is an order of magnitude higher than traditional payment methods. *See* Zhou, *supra*.

[315] *See* Dirk G. Baur, KiHoon Hong & Adrian D. Lee, *Bitcoin: Medium of Exchange or Speculative Assets?*, 54 J. INT'L FIN. MKTS., INSTS. & MONEY 177, 187 (2018); *see also* Prateek Bedi & Tripti Nashier, *On the Investment Credentials of Bitcoin: A Cross-Currency Perspective*, 51 RSCH. INT'L BUS. & FIN. 1, 10 (2020) ("Overall, Bitcoin's price has exhibited extreme volatility, particularly in the recent couple of years, making it a risky and peculiar investment alternative.").

[316] Yuhao Dong & Raouf Boutaba, *Melmint: Trustless Stable Cryptocurrency*, 1 CRYPTOECONOMIC SYS. 1, 3 (2020) ("Bitcoin on average fluctuates by more than 3% every day, orders of magnitude higher than fiat currencies, even though it has by far the most market liquidity of any cryptocurrency.").

[317] *See* Nils Pratley, *The 30% One-Day Fall in Bitcoin's Value Looks Like a Turning Point*, GUARDIAN (May 19, 2021, 3:10 PM), https://www.theguardian.com/business/nils-pratley-on-finance/2021/may/19/the-30-one-day-fall-in-bitcoins-value-looks-like-a-turning-point [https://perma.cc/UNK6-6ADP].

[318] *See* Felix Salmon, *The Bitcoin Bubble and the Future of Currency*, MEDIUM (Apr. 3, 2013), https://felixsalmon.medium.com/the-bitcoin-bubble-and-the-future-of-currency-2b5ef79482cb [https://perma.cc/WLJ2-USA9].

[319] *See id.* (explaining that if Bitcoin succeeds and the quantity of economic transactions increase, Bitcoin will still fail because the number of bitcoins in circulation is fixed); Posner, *supra* note 310.

[320] *See* Salmon, *supra* note 318; Posner, *supra* note 310.

[321] *See* Salmon, *supra* note 318; Posner, *supra* note 310.

[322] *See* Posner, *supra* note 310.

[323] *See* Arthur J. Rolnick & Warren E. Weber, *Gresham's Law or Gresham's Fallacy?*, 94 J. POL. ECON. 185, 186 (1986) (postulating that bad money would drive good money to a premium,

in place, personal holdings of the original cryptocurrency become worthless, and the demand for this currency, as well as for other virtual currencies, inevitably collapses.[324]

In the United States, cryptocurrencies, such as Bitcoin and Ether, are legally considered commodities under the Commodities Exchange Act (CEA).[325] The CFTC first defined Bitcoin and other virtual currencies as "commodities" in a 2015 enforcement action, *In re Coinflip, Inc*.[326] In its settlement order, the CFTC stated that individuals who had created a platform for the purchase and sale of Bitcoin options were, in fact, operating a facility for the trading or processing of swaps without being registered as a swap execution facility or designated contract market.[327] In doing so, the CFTC applied the broad definition of commodity, as laid out in the CEA, and found that the scope of that definition included Bitcoin: "The definition of a 'commodity' is broad. . . . Bitcoin and other virtual currencies are encompassed in the definition and properly defined as commodities."[328]

In March 2018, *Commodity Futures Trading Commission v. McDonnell*[329] confirmed the CFTC's jurisdiction over digital currency.[330] In entering a preliminary injunction order against

rather than driving good money out of circulation as predicted under Gresham's Law); Posner, *supra* note 310.

[324] *See* Rolnick & Weber, *supra* note 323, at 186; Posner, *supra* note 310.

[325] *See* Lindsay Sain Jones, *Beyond the Hype: A Practical Approach to CryptoReg*, 25 VA. J.L. & TECH. 176, 211 (2022). Although its regulatory oversight authority over commodity cash markets is limited, the U.S. Commodity Futures Trading Commission (CFTC) maintains general anti-fraud and manipulation enforcement authority over virtual currency markets as a commodity in interstate commerce. *See* U.S. COMMODITY FUTURES TRADING COMM'N, CFTC BACKGROUNDER ON OVERSIGHT OF AND APPROACH TO VIRTUAL CURRENCY FUTURES MARKETS 1–2 (2018), http://www.cftc.gov/idc/groups/public/@newsroom/documents/file/backgrounder_virtualcurrency01.pdf [https://perma.cc/736C-4BMN]. For an argument on whether cryptocurrencies should be considered securities, see M. Todd Henderson & Max Raskin, *A Regulatory Classification of Digital Assets: Toward an Operational* Howey *Test for Cryptocurrencies, ICOs, and Other Digital Assets*, COLUM. BUS. L. REV. 444 (2019) (proposing two judicial tests to determine whether a cryptocurrency or other digital asset is a security).

[326] *In re* Coinflip, Inc., CFTC No. 15-29, at 3 (Sept. 17, 2015), https://www.cftc.gov/sites/default/files/idc/groups/public/@lrenforcementactions/documents/legalpleading/enfcoinfliprorder09172015.pdf [https://perma.cc/3GH9-VK5P].

[327] *See id*. at 2.

[328] *See id*. at 3. In October 2019, CFTC Chairman Heath Tarbert stated his view that Ether, the world's second-largest cryptocurrency by market capitalization, is a commodity and would, therefore, also fall under the CFTC's jurisdiction together with Bitcoin. Press Release, CFTC, In Case You Missed It: Chairman Tarbert Comments on Cryptocurrency Regulation at Yahoo! Finance All Markets Summit (Oct. 10, 2019), https://www.cftc.gov/PressRoom/PressReleases/8051-19 [https://perma.cc/P2JP-KNEY].

[329] Commodity Futures Trading Comm'n v. McDonnell, 287 F. Supp. 3d 213 (E.D.N.Y. 2018).

[330] *See id*. at 236.

Patrick McDonnell and his company, CabbageTech, for allegedly operating "a deceptive and fraudulent virtual currency scheme," Judge Jack B. Weinstein of the United States District Court for the Eastern District of New York held, as the first federal court to address the issue, that digital currencies are "goods exchanged in a market for a uniform quality and value."[331] As such, Judge Weinstein reasoned that digital currencies "fall well-within" the CEA's broad definition of a commodity that includes "all other goods and articles . . . and all services, rights, and interests . . . in which contracts for future delivery are presently or in the future dealt in."[332]

2. Trading in Cryptocurrency as a Form of Gambling

Was the court correct? Is cryptocurrency an economic good? Some have argued that cryptocurrency should be viewed as a distinct asset class that cannot be defined using existing regulatory definitions.[333] This final subpart examines the contention that this distinct class is, in fact, the theoretical equivalent of a casino chip. Specifically, using the analytic framework set forth in Part III, this subpart explores the contention that trading in cryptocurrency markets constitutes unregulated gambling.

a. No Existing Risk of Economic Profit or Loss

The market price of an economic good is a function of *external* or exogenous market forces of supply and demand.[334] In the case of corn, for example, consumer demand for corn might increase, pushing up the price of corn. Or, alternatively, improvements in farming technology might reduce the cost of corn production, pushing down the price of corn in an exogenous manner that does not derive from

[331] *See id*. at 216, 228, 230–31 (internal quotation marks omitted).

[332] *Id*. at 217, 228. In September 2018, a Massachusetts district court confirmed the CFTC's authority to regulate virtual currencies as a "commodity" under the CEA, even if no futures contracts exist with respect to the relevant virtual currency. *See* Commodity Futures Trading Comm'n v. My Big Coin Pay, Inc., 334 F. Supp. 3d 492, 498 & n.9 (D. Mass. 2018).

[333] *See, e.g.*, Tom Wilson, *Is it a Currency? A Commodity? Bitcoin Has an Identity Crisis*, REUTERS (Mar. 3, 2020, 2:08 AM), https://www.reuters.com/article/us-crypto-currencies/is-it-a-currency-a-commodity-bitcoin-has-an-identity-crisis-idUSKBN20Q0LK [https://perma.cc/3A4P-E3MZ]; Aaron Brown, *Are Cryptocurrencies an Asset Class? Yes and No*, BLOOMBERG (Nov. 7, 2017, 5:00 AM), https://www.bloomberg.com/opinion/articles/2017-11-07/are-cryptocurrencies-an-asset-class-yes-and-no?leadSource=uverify%20wall [https://perma.cc/HUG6-PRQG].

[334] *See* LIONEL ROBBINS, AN ESSAY ON THE NATURE AND SIGNIFICANCE OF ECONOMIC SCIENCE 15 (1932) (emphasis added) (defining economics as "the science which studies human behaviour as a relationship between ends and scarce means which have *alternative uses*").

the actions of financial market participants. Similarly, in the case of a securities investment, the bankruptcy of a competitor might increase the expected profitability of a company, pushing up the price of the corporation's stock as investors are more likely to receive a financial benefit in the form of dividends or stock buybacks.[335] Even the price of a currency as a medium of exchange is subject to external forces of supply and demand.[336] If the demand for Mexican imports decreases in the United States, for example, then the demand for Mexican pesos will decrease as well, pushing the price of the peso downwards relative to the U.S. dollar.

The market price of an economic good is also a function of *internal* or endogenous market forces, determined by market participants' heterogeneous beliefs about the composition of buy or sell orders (or bets) in the future.[337] An investor, motivated by endogenous market forces, may enter a trade based solely upon a belief about how other market participants will value the good in the future. If a speculator, for instance, believes that more buyers will be in the market next period, bidding the price upwards, then the speculator will buy the good—or use a derivative contract to take a long position in the case of pure price speculation—to benefit from investors' increased willingness to ascribe value to the good. In this case, changes in market price are solely a function of internal market forces, with price increasing endogenously only because market participants believe that other market participants will be willing to pay an even higher price for the good in the future.[338] In a market where the price is driven solely by internal market forces, the good has no independent value outside of the financial market in which the good trades: as discussed below, the good has value only insofar as it serves as a necessary source of randomness to allow people to engage in unregulated gambling.

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[335] *See generally* Barclay & Smith, *supra* note 130 (explaining that a company will issue dividends or make buybacks if it makes a profit).

[336] *See* Phillip Cagan, *The Demand for Currency Relative to the Total Money Supply*, 66 J. POL. ECON. 303, 305 (1958).

[337] *See, e.g.*, J. Hirshleifer, *Speculation and Equilibrium: Information, Risk, and Markets*, 89 Q.J. ECON. 519, 520, 538 (1975) (setting forth a formal theory of trading based on differential beliefs); *see also* J. Hirshleifer, *The Theory of Speculation under Alternative Regimes of Markets*, 32 J. FIN. 975, 975 (1977) (comparing risk transfer hypothesis of John Maynard Keynes and John R. Hicks, in which "hedgers are divesting themselves of price risks" and Holbrook Working's knowledgeable forecasting hypothesis in which "what may look like risk-transfer behavior is only the interaction of traders with more and less optimistic beliefs about approaching developments that will affect prices").

[338] *See* Yukun Liu & Aleh Tsyvinski, *Risks and Returns of Cryptocurrency*, 34 REV. FIN. STUD. 2689, 2711 (2021) (showing that cryptocurrency returns can be predicted by factors that are specific to cryptocurrency markets).

A true economic good can generate an economic profit or loss independent of the market in which the good trades: in the case of a true economic good, an individual can derive utility from ownership of the good even if the owner is forced to hold onto the good and cannot resell it in the market.[339] Corn, for example, can be consumed as food. Lumber can be used to build a house. Stock in a company transfers corporate profits to investors in the form of dividend payments or buybacks.[340] Even gold can be turned into jewelry, used in artwork, or dusted on gourmet foods. The claim examined here is that cryptocurrencies have no such independent value: their price is entirely determined by internal market forces.[341] Cryptocurrency cannot be consumed; cryptocurrency has no industrial applications unlike other traditional stores of value, such as silver or gold.[342] Cryptocurrency is limited in its capacity to operate as a currency and is rarely used as a medium of exchange in economic transactions.[343] In short, the price of cryptocurrency is not determined by external market forces of supply and demand and is solely a function of the willingness of market participants to ascribe value to the good. As well-respected investor Howard Marks puts it, "digital currencies are nothing but an unfounded fad (or perhaps even a pyramid scheme), based on a willingness to ascribe value to something that has little or none beyond what people will pay for it."[344]

To put this statement in terms of the analytic framework set forth in Part III, the initial risk endowment of an owner of cryptocurrency can be expressed as follows: $V^0 = (0, 0)$. That is, an owner of

339 *See* Gary Lawson, *Efficiency and Individualism*, 42 DUKE L.J. 53, 71–72 (1992).

340 *See* Barclay & Smith, *supra* note 130, at 61.

341 *See* Liu & Tsyvinski, *supra* note 338, at 2724–25.

342 *See* Tanaya Macheel, *Warren Buffett Gives His Most Expansive Explanation for Why He Doesn't Believe in Bitcoin*, CNBC (May 2, 2022, 12:51 PM), https://www.cnbc.com/2022/04/30/warren-buffett-gives-his-most-expansive-explanation-for-why-he-doesnt-believe-in-bitcoin.html [https://perma.cc/T9KY-Z3JB] (explaining Warren Buffett's perspective that bitcoin—a cryptocurrency—does not "produce anything" tangible like farms with food or apartments with rent).

343 *See supra* Part IV.C.1; Olga Kharif, *Bitcoin Is Rallying Again, but It's Still Not Used to Buy Much of Anything*, L.A. TIMES (May 31, 2019, 1:48 PM), https://www.latimes.com/business/la-fi-bitcoin-rally-blockchain-speculation-20190531-story.html [https://perma.cc/GN3B-R4BR].

344 Tae Kim, *Billionaire Investor Marks, Who Called the Dotcom Bubble, Says Bitcoin Is a "Pyramid Scheme"*, CNBC (July 27, 2017, 11:39 AM), https://www.cnbc.com/2017/07/26/billionaire-investor-marks-who-called-the-dotcom-bubble-says-bitcoin-is-a-pyramid-scheme.html [https://perma.cc/9RP2-5EFP]; *see also* Steven Crabill, *Is Bitcoin a Good Investment? Billionaire Paulson Says Crypto "Worthless" Bubble*, BLOOMBERG (Aug. 30, 2021, 12:01 AM), https://www.bloomberg.com/news/articles/2021-08-30/is-bitcoin-a-good-investment-billionaire-paulson-says-crypto-worthless-bubble [https://perma.cc/4M56-MRBK] (describing cryptocurrency as a "limited supply of nothing" and stating that "[c]ryptocurrencies, regardless of where they're trading today, will eventually prove to be worthless").

cryptocurrency does not bear any existing risk of economic profit or loss that is exogenous or external to the market in which the "asset" trades.

b. Market Price as an Exogenous Source of Randomness

For a risk transaction to constitute risk creation or gambling, recall that the bets exchanged must be defined with respect to an exogenous source of randomness to which neither party has economic exposure, such as the spin of a roulette wheel or the outcome of a sporting contest.[345] Here, the claim is that this exogenous source of randomness *is* the market price of cryptocurrency itself. As discussed, market participants are assumed to have no existing risk of economic profit or loss with respect to the market price of cryptocurrency. Market participants create this risk by placing bets on the market price of cryptocurrency in the next period with payoff solely depending upon whether this price increases or decreases.

To amplify, consider a highly stylized example of a market for cryptocurrency. Suppose that the market is populated with a large number of market participants, each with plenty of cryptocurrency to trade. In each period, a trader must decide either to buy or to sell one unit of cryptocurrency. To make this decision, suppose that a trader flips a fair coin that has an equal chance of landing either side up. If the coin lands heads up, then the trader places an order to *buy* one unit of cryptocurrency in the next period; if the coin lands tails up, then the trader places an order to *sell* one unit of cryptocurrency in the next period. All market participants behave in an identical manner. The market price of cryptocurrency is a function of these individual decisions. Specifically, if the number of buy orders exceeds the number of sell orders, then the price is bid upwards. In this case, the sell bet has paid off: the trader sells an asset that has appreciated in value over time because of increased market demand. Conversely, if the number of sell orders exceeds the number of buy orders, then the price adjusts downwards. In this case, the sell bet is a losing one: the trader sells an asset that has depreciated in value over time because of increased market supply. Because each individual decision is random, changes in the market price of cryptocurrency are also random.[346]

[345] *See supra* Part III.B.1.b.

[346] *See* MORRIS H. DEGROOT & MARK J. SCHERVISH, PROBABILITY AND STATISTICS 347–48 (4th ed. 2012).

In terms of the analytic framework developed in Part III, a trader places a bet with payouts defined over the following two random states of nature:

s_1 = more buyers than sellers in the market

s_2 = more sellers than buyers in the market

where a sell bet wins if state s_1 s realized and loses if state s_2 s realized. Market participants use expected changes in the market price of cryptocurrency as an exogenous source of randomness to define bets. As explained in Part III, risk creation requires an exogenous source of randomness.[347] The market price of cryptocurrency serves as the necessary source of randomness to allow people to create and consume risk. The market price of cryptocurrency in the next period is random and beyond the control of the market participants and can be used to define a bet exactly like more conventional sources of randomness, such as the spin of a roulette wheel or the outcome of a sporting contest. Betting on expected market price allows the owners of cryptocurrency to participate in what is, in effect, a lottery, with market participants placing bets on whether a "randomly drawn" market price will increase or decrease in the next period.

As an external source of randomness, market price obfuscates the true nature of the risk transaction, shielding cryptocurrency markets from the heightened regulatory scrutiny that would typically accompany other forms of risk creation or gambling.[348] The word *market* implies the existence of an economic good whose price is a function of external changes in market supply or demand.[349] Trading in cryptocurrency differs from conventional financial markets, however, because the "good" traded, as modeled here, possesses no real economic value other than as a means to engage in unregulated gambling.[350] In this model, cryptocurrency is merely a vehicle

[347] *See supra* Part III.B.1.b.

[348] *See supra* Part IV.A.2.

[349] *See* Will Kenton, *Market: What It Means in Economics, Types and Common Features*, INVESTOPEDIA (Oct. 30, 2021), https://www.investopedia.com/terms/m/market.asp [https://perma.cc/VNP9-84HM].

[350] *See supra* Part IV.C.2.a; Kevin Davis, Opinion, *Why Crypto Is Gambling and Not Investing*, AUSTRALIAN FIN. REV. (Jan. 24, 2022, 1:21 PM), https://www.afr.com/policy/economy/why-crypto-is-gambling-and-not-investing-20220123-p59qkm [https://perma.cc/7WRS-PVH7] ("The only possible value of crypto items is that some other gambler may be willing to purchase them at a higher price.").

designed to enable risk creation, and not to transfer existing external risks of asset ownership to other parties better able, or more willing, to bear these risks.[351] *All* participants in this market are engaged in price speculation, randomly placing bets on expected movements in the market price of cryptocurrency. And because a bilateral risk transaction in which both parties are speculators constitutes bilateral risk creation, trading in cryptocurrency is, under this argument, a form of unregulated gambling.

c. Regulation of Cryptocurrency

The contention that trading in cryptocurrency constitutes unregulated gambling is purely theoretical, of course, and relies upon a highly stylized model of cryptocurrency markets. In truth, the proper categorization of cryptocurrency remains an open empirical question. Moreover, cryptocurrency is still in its infancy and may yet have practical financial applications, including as a hedge against inflation.[352] Even if trading in cryptocurrency proves no more than mere gambling, however, and if, as some commentators have argued, cryptocurrency is not a security or a commodity,[353] this conclusion does not imply a need for strict public regulation. The government does not need to strictly regulate all forms of gambling. A friendly game of poker, for instance, played in a residence where the host does not receive a cut of players' winnings and in which no player can place a bet on credit, does not require strict regulatory oversight. Financial regulators must determine whether this unique form of risk creation is likely to have a broader negative social impact that warrants some form of regulatory intervention.

In this case, trading in cryptocurrency appears to implicate two main justifications for heightened regulatory scrutiny of gambling. First, much of the trading in cryptocurrency markets is not conducted by sophisticated parties who have a high net-worth worth and substantial experience in financial markets.[354] Rather, according to researchers from NORC, the average cryptocurrency trader is under

[351] *See supra* Part III.B.1.b; Davies, *supra* note 2 (noting that cryptocurrency's "[p]arallels with gaming are becoming harder to ignore" with illustrative comparisons to gambling addiction).

[352] *See* Sangyup Choi & Junhyeok Shin, *Bitcoin: An Inflation Hedge but Not a Safe Haven*, 46 FIN. RSCH. LETTERS, May 2022, at 1, 4 ("Bitcoin prices increase significantly after a positive inflation shock, suggesting that Bitcoin could be a useful hedge against inflation.").

[353] *See supra* note 333 and accompanying text.

[354] *See* Press Release, NORC at the University of Chicago, More Than One in Ten Americans Surveyed Invest in Cryptocurrencies (July 22, 2021), https://www.norc.org/NewsEventsPublications/PressReleases/Pages/more-than-one-in-ten-americans-surveyed-invest-in-cryptocurrencies.aspx [https://perma.cc/FJR9-L9FA].

forty, and only fifty-five percent have a college degree.[355] Over one-third have household incomes under $60,000 annually.[356] Indicative of these socio-economic demographic characteristics, cryptocurrency is aggressively marketed, just like more traditional forms of gambling, to a broad audience of retail investors through wide-reaching media platforms such as television advertisements, including four commercials aired during the broadcast of the 2022 Super Bowl.[357] To the extent that investors in cryptocurrency roughly comprise the same broad demographic group as participants in more traditional forms of gambling, some percentage of these investors are likely to suffer from the same mental disorders that result in problem or pathological gambling.[358] These disorders, in turn, justify a more rigorous form of consumer protection than is found in the regulation of other bilateral risk transactions.[359]

Second, in addition to retail investors, a significant number of large financial institutions now trade in cryptocurrency markets.[360] In 2021, institutional clients traded $1.14 trillion in cryptocurrencies on the exchange Coinbase Global.[361] A survey of three hundred institutional investors conducted by State Street in 2021 found that more than eighty percent were now allowed to have exposure to cryptocurrencies.[362] Large funds with assets of $500 billion or more under management were the most bullish about the future of cryptocurrency, and nearly two-thirds had staff dedicated to the cryptocurrency market.[363] Many of these firms are systemically important, meaning that large changes in the price of cryptocurrency

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[355] *Id.*

[356] *Id.*

[357] *See* Anthony Tellez, *Crypto Ads Are a Super Bowl Talker, with Floating QR Codes and Larry David*, NPR (Feb. 14, 2022, 1:42 PM), https://www.npr.org/2022/02/14/1080237873/superbowl-ads-crypto-bitcoin [https://perma.cc/CHN8-WYKJ].

[358] *See* Benjamin Johnson, Steven Co, Tianze Sun, Carmen C.W. Lim, Daniel Stjepanović, Janni Leung, John B. Saunders & Gary C.K. Chan, *Cryptocurrency Trading and Its Associations with Gambling and Mental Health: A Scoping Review*, 136 ADDICTIVE BEHAVS., Jan. 2023, at 1; *see also supra* Part IV.A.2.b.

[359] *See supra* Part IV.A.2.b.

[360] *See* Lawrence Wintermeyer, *Institutional Money is Pouring into the Crypto Market and Its Only Going to Grow*, FORBES (Aug. 12, 2021, 4:10 PM), https://www.forbes.com/sites/lawrencewintermeyer/2021/08/12/institutional-money-is-pouring-into-the-crypto-market-and-its-only-going-to-grow/?sh=278492561459 [https://perma.cc/MR6Y-6Z3T].

[361] Paul Vigna, *Wall Street Takes Lead in Crypto Investments*, WALL STREET J. (Feb. 27, 2022, 11:03 AM), https://www.wsj.com/articles/wall-street-takes-lead-in-crypto-investments-11645927004 [https://perma.cc/A56K-CQR5].

[362] *See* State Street Digital, *Digital Assets Survey* (Oct. 2021) (PowerPoint presentation), https://www.statestreet.com/content/dam/statestreet/documents/Articles/Topline_Survey_Presentation.pdf [https://perma.cc/BA9F-MFLN].

[363] *See id.*

that put these firms at risk of insolvency can negatively impact other major financial institutions and the markets in which these institutions trade, including securities, fixed income, and real estate markets.

In this respect, the market for cryptocurrency resembles the market for synthetic CDOs in the early part of the twenty-first century when synthetics were the dominant form of CDOs in the United States.[364] Like synthetic financial instruments, trading in cryptocurrency can be viewed as a form of unregulated gambling that magnifies systemic risk in the financial sector in a socially undesirable manner.[365] To avoid repeating the mistakes of the past, financial regulators must take steps to ensure that a potential collapse of cryptocurrency markets does cause broader harm to the financial system and result, as in 2008, in a severe and protracted economic downturn. To date, the regulatory safeguards related to risky assets, implemented in the aftermath of the financial crisis of 2008, have worked to successfully shield the financial sector from potential contagion effects triggered by a significant decline in the market price of cryptocurrencies or other crypto-related assets.[366]

V. CONCLUSION

In an important article that has been somewhat overlooked in the legal literature, Professor Lynch argues that derivative counterparties can be divided into two mutually exclusive categories: (1) hedgers, defined as those motivated to hedge an existing risk of economic profit or loss, and (2) speculators, defined as those who are not motivated to hedge such risks.[367] This Article extended this key insight by noting that all gambling contracts, not just derivative contracts, can be defined using this analytical framework. Specifically, this Article has defined a gambling transaction as a contract where neither party transfers an existing risk of economic profit or loss, but, instead, where both parties create such risk by exchanging bets that are defined with respect to an external source of randomness that produces no risk of economic profit or loss to

[364] *See* GREGORY ZUCKERMAN, THE GREATEST TRADE EVER: THE BEHIND-THE-SCENES STORY OF HOW JOHN PAULSON DEFIED WALL STREET AND MADE FINANCIAL HISTORY 176 (2009).

[365] *See* Lynch, *supra* note 1, at 75–76, 94.

[366] *See, e.g.*, Emily Flitter, *How Wall Street Escaped the Crypto Meltdown*, N.Y. TIMES (July 5, 2022), https://www.nytimes.com/2022/07/05/business/economy/wall-st-cryptocurrency-prices.html [https://perma.cc/ZSK4-DY2B] (describing how financial regulators in the United States have warned banks to avoid placing crypto assets on their balance sheets).

[367] *See* Lynch, *supra* note 1, at 75–76.

either contract party, such as the spin of a roulette wheel or the outcome of a sporting event or the price of a financial asset that neither party owns in the case of a purely speculative derivative contract.