Arbitraging Several Dozen Online Casinos

The Vicious Subsidy

The growth of gambling in the United States is unrelenting. This blog regularly plugs prediction markets, ESPN now shows moneylines, and even relatively conservative areas of investing blur the line through options sold to retail and event contracts. I dislike this for several reasons. The first bookies promote poor thinking in their customers to make better marks. Secondly, crypto used to mean cryptography and I already had a hard enough time justifying weird number puzzles to normal people.

But the biggest reason it bothers me is that so much of society is already focused on money. Not positively either, a large portion of my friends and family struggle to pay the bills or put off important things like retiring or having children for a lack of funds. Even if I do alright, a lot of people don't. Making even more of life a pecuniary proposition rubs salt in social wounds.

But if the game happens anyway, I should get good at the game. There are many complicated and sophisticated approaches to making money at gambling. You can get very good at your chosen wager, like so many famous poker players. You can get better at modeling the world, as Edward Thorpe [0] and Bill Benter [1] famously did. Or you can cheat. I would lose my day job if I cheated, but the first two are viable. It takes wits, nerve, and statistically normal luck, but there's still good money to be made in gambling. What I did not realize is that there is an additional option. You can show up and casinos will pay you to play.

[0] https://en.wikipedia.org/wiki/Edward_O._Thorp#Applied_research_in_casinos

[1] https://en.wikipedia.org/wiki/Bill_Benter

So while most stories about gamblers focus on their risk taking or cleverness, this review focuses on bottom feeding. Nothing here requires any skill, the most sophisticated mathematical operation needed is division, and the most exciting action is a credit card application. But the money is real. With no upfront capital, you can make about $18 per day. The median American makes $42,220 per year [2], which is $116 per day. So an extra $18 is a significant amount. If you have a credit card you can push that number up to at least $30000 per year, which is approaching minimal financial independence[3]. Double that number for a married couple. That money goes very far in the cheap seats of America.

[2] https://fred.stlouisfed.org/series/MEPAINUSA672N

[3] https://www.reddit.com/r/leanfire/, their baseline assumption is $25k. So $30k should be enough for a decent life.

Finally, I wish to talk about the low hanging fruit of gambling profits because it is very strange to me that there is a moderately sized pile of money lying in the street. Online gambling is evidently profitable, despite the fact that the house is literally offering to buy everyone in America roughly a used car every year. How much money do gamblers in aggregate have to be losing to make this possible? How bad are normal people at math? Did I just get lucky or is it skill?

Stylization

The facts here are stylized. I have chosen to omit details on both my personal earnings from online gambling activity and how these arbitrages work in detail. Such as games chosen, sites used, scripts written, or other tricks of the trade. I did this for two reasons:

1. Arbitrages are rivalrous. If you make the money, the odds of me making the money go down. I will still probably regret advertising that this opportunity exists, but there are already more detailed guides on the net, if not on sites with as large or as competent of an audience. Figuring out how to do this yourself is just a matter of finding websites and reading sales pitches, but I will not do that for you.

2. Some of you shouldn't be doing this, you have better things to do with your time. My hobbies already included several adjacent things and I have to itemize my taxes to deduct charitable donations anyway, so I had minimal additional costs. I also already know how to program computers and solve software problems, so automating is easy enough.

A Legal Fiction

To begin, we need to identify our targets. These are sweeps casinos. In the United States, a sweepstake differs from a lottery by fulfilling no more than two of the following conditions:

A: It is a game of chance.
B: It has a valuable prize.
C: You have to pay to enter.

Since casinos don't like skilled customers and gamblers want their bets to be meaningful, C is most commonly dropped. Sweepstakes as a marketing gimmick, such as the famous McDonald's Monopoly game, are quite common. But those kinds of sweepstakes aren't trivially exploitable.

Sweepstakes Casinos exist to offer online, onshore gambling in the United States by exploiting a simple loophole. Instead of operating as a normally regulated gambling provider, they offer games where the prizes have no cash value. You can purchase in-game currency which cannot

be exchanged for valuable prizes (normally called Gold Coins or GC) and are also given, free of charge, a promotional currency that can be exchanged for cash (Sweeps Coins or SC) after it is played in a game. The prices for GC are highly variable, but the amount of free SC is pegged to the amount of real USD you paid for your GC. So the SC is legally not the main concern, but in practice it is the only thing I or almost all players care about. The GC is just there as a fig leaf.

For example, a sweeps casino will sell 100,000 GC and 100 SC for $99.99. After purchase, the 100 SC are not redeemable. To cash out, redeemable SC must be won in a game. So if you put all 100 SC on black in roulette and win, you can cash out $200. Redeemable SC can also be played in a game, but all casino games have negative expected value. If you want to make money, you want to play each SC the fewest times possible, ideally once.

Will this legal fiction hold up in court? Maybe, since the law is increasingly determined by who got there first. Whether they will get big enough to capture the Uber exemption is an open question for another time. I expect the entirely legal online casinos to eventually outcompete their sweeps counterparts, for the simple reason that they pay more tax revenue. If the lottery is a tax on fools, our publicans will not abide being undercut forever. But for review purposes, the sweeps casinos pay this year and that's good enough.

Meet Alice

We have to assume a few things about a hypothetical customer of a sweeps casino with a few particular traits. Let's call her Alice.

A: Alice is American. Alice lives in the US, is a US citizen, and can freely access US financial services.
B: Alice is unexceptional. Alice has no notable skills, can do arithmetic, browse the internet, and keep records.
C: Alice plays for keeps. Alice does not enjoy gambling, but does like to get paid.

Alice is a useful basis of comparison. Everything I describe will be well within the reach of a person with minimal computer skills. I don't count as an Alice, since I know too much about math, but you should think of a minimally technically competent person. Consider her something like the "reasonable person" standard.

Free Edge

Alice has no connections or special insight. Nevertheless, she has several sources of advantage over the house. The house gives them to her, in the form of several mathematically demonstrable edges.

Edge 1: No Purchase Necessary

Her first money making method exists to maintain the sweeps casino's legal fiction. Almost all casinos give a "Daily Bonus" which includes SC. This is to clearly emphasize that they do not require money to play their games, it is only highly recommended. Alice will log into her account each day and collect her bonuses. She will store these up for a while, play through a game, and cash out.

The size of these bonuses vary between .05-1.15 SC. Cashing out normally requires 50 or 100 SC, so it can take up to 2000 days (or 5 years, 5 months) to get enough free SC to cash out in the extreme cases, not accounting for losses in games. Still, the average site pays .5 SC, so [if you frequent 36 casinos] this is ~$18 per day. Alice can collect 15% of the median American's earnings, with minimal time and effort. This money also excludes additional seasonal or holiday bonuses, which can add up quickly around Christmas time.

Edge 2: Discount Dollars

Alice isn't content with her minimal income and wants more. To do this, she engages in the dark art of statistical arbitrage.

Her plan is simple. A casino offers her a deal where she can purchase 100 SC for $75. She has no special skills, but the casino offers a game where she will win, on average, 95% of what she plays [4].

i. She buys the package for $75 via credit card and receives 100 SC.
ii. She plays 100 SC and wins 95 SC.
iii. She cashes out 95 SC for $95.
iv. She pays a $75 credit card bill.
v. She now has $20 more, more than one day's worth of daily bonuses.

[4] This stat is called Return to Player in the industry, but is equivalent to Expected Value. It is included in the info tab of almost all games, everyone playing knows the odds.

In my experience, the amounts of discounted SC here vary. Sales are concentrated around holidays, weekly "Happy Hours", and other events. The sizes of the discounts are also concentrated in the 5-15% off range instead of the 25% off in the example. But I netted $36 per day in the last month on this.

Edge 3: Hey Big Spender

Once Alice started spending money, casinos started noticing her. Online gambling, like online gaming, is built around whales. A few, high value customers dominate casino returns. As a paying customer, Alice is statistically more likely to be one of these whales and therefore receives some extra perks. A few free dollars here, an extra discount package there, these incentives can add up.

The discount packages are already folded into my daily discounts, but the additional rewards add another $4 to the daily total.

Edge 4: What's in Your Wallet?
Finally, Alice totals her bill at the end of the month and notices that her gambling did something weird. If you use a credit card at a physical casino, it almost always codes as a cash advance and does not receive credit card rewards. But as "I can't believe it's not gambling", the sweepstakes casino purchases are treated like any other in-app purchase. So she got a small rebate, call it 2% (or more, if you can get the right cards).

In total, I net about $35 [5] per day with a suboptimal [6] card setup. This includes purchasing some undiscounted packages where, after accounting for the credit card reward, I still have an edge. I am rate limited by my credit limit, payment processing times, settlement times, and a desire to limit counterparty risk.

[5] Pure cash back, not airline miles. If you travel a lot or game the rewards system, you could get more out of this.

[6] For some reason, the credit card companies think I may be taking advantage of them.

Sources of Loss, Variance, and Annoyance

Online casinos offer many kinds of games. Most of these are bad for arbitrageurs, for reasons that make them good for the target audience.

First, casino games often celebrate wins, even if they are less than the amount staked. Each win can play animations, sounds, and other effects that can't always be disabled. This takes valuable time, but can mostly be ignored or run in the background. Alice wants no fuss, she does not enjoy this.

Second, games have uneven payouts. Gamblers seem inherently attracted to the possibility of winning a lot of money, which economists call a preference for lottery like payouts. The ideal game for a skilless arbitrageur has a very small edge and zero variance. Remember, talentless edge is capped to the upside. You expect to make at most 10% off a 10% discount. So a great game would be a machine that takes in $100 and gives out $99. Meanwhile, a slot machine takes in $1, gives back nothing two thirds of the time, a quarter a quarter of the time, and a range of dollar bills for the remainder. That uncertainty is annoying and it can make it much harder to profit, especially in the short run.

Variance can be overcome by betting more, since the central limit theorem turns high variance games into normal distributions eventually. But that requires betting small amounts frequently, which takes time. Alice is here for the long run and wants to get there as quickly as possible. So she'll make those bets, but would prefer not to.

Third, games require engagement. Some slot machines have "bonus rounds" that require input to trigger. Or blackjack, where the player can make "meaningful" choices, even though the

optimal decision is known [7]. These are all terribly inconvenient and some websites have semi-effective anti-botting measures that make them worse. Alice cannot deploy bots, since she is skill free, so she'll have to play games herself.

[7] A few casinos let you autoplay basic strategy Blackjack, which makes it much better.

So, here is a ordered subjective list of the notable games in my experience, along with their expected value

Baccarat: 98.94%[8]
Baccarat, No Commission [9]: 98.76%
French Roulette: 98.65%[10]
Blackjack: 99.34%[11]
European Roulette: 97.3% [12]
Plinko: 97.1%, variants can be lower
Other Traditional Games (Sic Bo, Top Card, Teen Patti, etc) 94-96.7%
Dice [13]: 95%, can be lower
Slots: 85%-97.2%, can rank above Dice and Plinko

[8] Betting only on Banker

[9] Betting only on Player

[10] Only on even money bets with the la partage rule https://en.wikipedia.org/wiki/En_prison, which returns half of stake on a 0.

[11] Assuming basic strategy, https://en.wikipedia.org/wiki/Blackjack#Basic_strategy, Blackjack pays 3 to 2, Soft 17s, and 8 decks, along with a few other minor rules.

[12] All bets have the same EV, but arbitrageurs will favor outside bets https://en.wikipedia.org/wiki/Roulette#Outside_bets to maximize board coverage with minimal capital, which decreases variance.

[13] Though called dice, this is a random number generator where you are trying to get a number below a player chosen threshold. All the payouts have identical EV, accounting for discretization.

The traditional casino games are clearly better than slots for the arbitrageur. Baccarat and French Roulette both offer high payouts with very little required engagement. This renders both of them superior to Blackjack in my opinion. That last .4% of payout isn't worth the hassle and increased variance.

I would also like to take a moment to praise Roulette as a triumph of game design. The house edge on roulette is entirely attributable to the "0" spot on the wheel and all 37 numbers can each

be bet on with the same 35 to 1 odds. This allows for both the degenerate gambler and conservative arbitrageur to play the same game at the same time with vastly different amounts of variance. One can try to cover the board with as many bets as possible to minimize the chance of losing anything, while the other will stick everything on one number for that sweet pseudo jackpot.

Uncompensated Risk

There are two main sources of uncompensated risk for an arbitrageur. You can screw up and the casino can screw up.

You can screw up by entering suboptimal instructions. Setting a game to autoplay 1 SC instead of .1 SC can cost serious money when you do it 1000 times. But, theoretically, this doesn't exist. Execution is a real part of arbitrage, but one that is hard to manage. Skill issue, etc. These don't count as skills, so Alice won't be concerned with them.

The casino can screw up by not paying you. Technical glitches (coins not awarded with purchased packages, failed games, unclear rules) can normally be resolved by complaining to the bot until you get routed to an underpaid support worker who just wants you to go away. Alice will be polite, but insistent, and document everything.

The more serious issue is if the casino stops existing or never existed. Since your coins don't technically have cash value, cutting and running is a potential problem. This is unlikely for any given casino, since they are (ideally) going concerns, but is an unavoidable risk. You start by not paying casinos which lack a history of paying out. Hopefully casinos would pay out winnings the next day, but several take one or two weeks. Anything more than a month is a serious problem.

Counterparty risk is a good reason why an arbitrageur would bother talking to other gamblers. If the jackpot winners aren't getting paid, the casino isn't good for the money and Alice can pass. This isn't foolproof, but nothing is.

I have realized this counterparty risk. A casino stopped paying out with a few hundred dollars of my winnings unpaid. This is, of course, undesirable. But there are additional options for recovery. Since I always pay by card, I was able to dispute the charges and recover what I put in. I had to fill a whole lot of digital forms and even mail some letters, but I got my money back. Counterparty risk is the largest risk and can only be managed by limiting trust to counterparties. This, more than my credit limits, determines how much I can make off credit card rewards.

Paying Dead Money

So that covers the strategy. You can make about $95 ($18 from daily bonuses, $36 from discounts, $4 from additional VIP rewards, and $35 from credit card rewards) per day. That adds up to 82% of the median American's annual earnings. This takes, generously, an hour a day, if you do all the collecting and playing manually. A household can double this number. The median American household earns $80,610, so a couple can earn 86% of what a typical household earns in the US off gambling incentives, excluding benefits such as PTO, health insurance, etc.

I am excluding any gambling where skill could be beneficial from this estimate. Sports betting is off the table here, as is advantage play in other games. But since your typical American doesn't beat the house, sports betting rewards, incentives, and other subsidies could provide additional income in any realistic scenario. Similarly, poker, prediction markets, and other advantage gambling is not unrealistic for a moderately skilled (rather than zero skilled) individual. Your takeaway should not be that "gamblers can make a living", it should be "any US citizen who can browse the internet and use the financial system can make tens of thousands of dollars a year with minimal effort".

What if you had a UBI and nobody came?

This is the part of the review where we wildly extrapolate what we've learned to the rest of society. Here are some conclusions.

1. For a large chunk of America, they could earn more money by doing less.
About 40% of American households earn less in a year than a subset of gambling companies will pay them to show up and do as little as possible. This isn't a free lunch, but the required labor is very low. It takes under half an hour a day, call it an hour if you are bad at computer things. No physically stressful labor and you don't have to get dressed. You do have to itemize your taxes (if you are spending money on discounted coins), and that could affect whether an individual qualifies means tested benefits such as SNAP [14]. But some of these sites are offshore and don't properly report winnings to the IRS. I pay my taxes (I'm a good boy), but I know some people don't.

[14] Credit card rewards are not taxable income, so a large chunk of that income may not qualify. I am not an accountant or lawyer, take this opinion with a grain of salt.

Of course, a mousetrap offers a pretty good meal for the mice. The chunk of cheese sitting right on that trigger is an excellent source of calories. The issue is eating it without the snap.

2. Something prevents most of the populace from collecting their money.
Clearly Alice is not representative of Americans. We can now ask what parts are miscalibrated. Free money exists for a reason. There have to be some sort of costs associated with picking money up off the sidewalk that keep it there.

i. Ignorance. Most people don't know you can do this. Gambling still has a stigma and most people don't go looking for online casinos to make money. So ignorance is an easy answer. Slow or intermittent rural internet could also be a problem. Some of these casinos have been around for a decade or more, but proliferation takes time. This knowledge limitation doesn't really lower the bar for Alice in the long term, she would eventually learn there's a buck in this racket.

Of course, Alice could not know because society suppresses information about gambling, even if profitable. In this view, the recent growth of the industry is a historical abnormality and typical social dynamics discourage discussing it, especially in elite circles. Most people mistrust a financial advisor who claims "the solution to your budget shortfall is to go into credit card debt to fund a slot habit", even if that is demonstrably true. But why these social dynamics exist is the next question.

ii. Discipline. The vast majority of the bets that casinos offer will lose money over the long term. People just won't limit themselves to playing the absolute minimum amount and gamble more than they should. That is what the casino expects and it seems to work. But the fact that it works is interesting.

iii. Instability. Because you aren't supposed to be arbitraging, any given casino can stop paying at any time. They could drop table games and you're stuck with slots or stop offering redeemable SC altogether. The portfolio of casinos is more resilient, but perhaps it just isn't worth the effort to sign up for dozens of predatory, unofficial, pseudo-gig economy apps. This would prevent Alice from centering her personal finances exclusively on casino arbitrage, but would not prevent people with full or part time jobs or other financial support from picking up extra cash.

iv. Downside Aversion. Alice is converting a lottery-like activity (jackpots) into a bond-like stream of payments ($95 per day). All of the risk of arbitraging is to the downside, since a casino could vanish or Alice could fat finger a bet. But the payouts are small, paid over long periods. To paraphrase, everybody wants a Lambo, ain't nobody wants to clip them tedious coupons. Since the best case is making a little bit of money and the worst is losing a lot, Alice must have atypical preferences.

v. Numeracy. The population of numberers is bad by the numbers. We can use the PIAAC (Program for International Assessment of Adult Competencies) [15] to get a grip on this. If arbitraging casinos requires Alice "to identify and act on mathematical information and ideas embedded in a range of common contexts where the mathematical content is fairly explicit or visual with relatively few distractors", that's a level 2 task and 34% of Americans cannot do it. If the information is "less explicit, embedded in contexts that are not always familiar and represented in more complex ways", that's level 3 and 62% of Americans can't. Levels 4 and 5 exclude 88% and 98% of Americans respectively. My guess, figuring how to do this out is a level 3 task, executing a solved problem a 2. But I am a professional numberer, so my intuition is

likely wrong. In either case, a significant fraction of adults cannot be expected to do basic arithmetic.

[15] Category descriptions: https://en.wikipedia.org/wiki/Programme_for_the_International_Assessment_of_Adult_Competencies#Description_of_PIAAC_numeracy_discrete_achievement_levels. Results for 2023 survey: https://nces.ed.gov/surveys/piaac/ideuspiaac/report.aspx?p=1%C3%81LNP%C3%811%C3%8120133%C3%8020173%C3%8020233%C3%81PVNUM%C3%81BMNUM%C3%81USI%C3%81RP%C3%82RP%C3%81Y%C3%82J%C3%810%C3%810%C3%8137%C3%81N&Lang=1033

vi. Social Pressure. The purpose of employment is not only money, but also social status and respect. Answering “What do you do?” with “Pick cheese out of mousetraps” is unlikely to one up anyone at parties. Of course, Alice doesn’t have to tell people. She can honestly say “I’m a financial analyst and investor specialized in alternative investments”, then deflect further questions. But that may take social skills she does not have. America’s social environment where most people work may not have caught up to the fiscal realities. Of course, if she has a day job she can just answer with that. I personally don’t tell people I do this, the rewards are low and the risks are high.

3. Minimally disciplined and numerate Americans have a high income floor.
I should emphasize again how little effort collecting any of this money takes. You can work most of it out in about an hour. Executing it is a chore that takes a small amount of time each day. I have put more work into writing this than I have into collecting the money for the past month.

So, if you are an American, can count, and are willing to work (generously) 4 hours a week, you can make about $166 per hour. Therefore, Americans who will take low financial risks, do elementary school math, and chores are so rare they command a massive, implicit premium on their time.

Matt Levine's wonderful Money Stuff [16] newsletter sometimes talks about Astrophysicists; STEM PhDs, Technologists, and Quantitative Traders all basically do the same job. They look at data, model things, and make decisions. The math they do isn't always fun or interesting. In my experience, interestingness and profitability are uncorrelated for mathematics. But quantitative skills nevertheless convert to cash. They're what make skilled edge, positive expected value bets that the house doesn't just give you, possible.

[16] https://www.bloomberg.com/account/newsletters/money-stuff

But showing up is enough to make money. The low end of the Astrophysicist continuum is sparse. If you combine extremely small amounts of risk taking, discipline, and the ability to count in our society, you can keep a roof over your head. This is what a society's garbage time looks like. Some minimally productive individuals don't have to do anything challenging to live decent lives.

Unintuitively, this lowers my estimation of the skills of people who actually get rich from risk taking and numbers. Capitalism is begging them to do so. Our institutions are beating down the doors for someone, anyone who wants risk and rigor. If the distribution of talent is constant in a population, we are lowering the average skill of the Astrophysicist class to expand the total size of the pool. If talent is not constant and we are increasing the total number of Astrophysicists, that has to have opportunity costs at a societal level. Time spent coding is time not spent composing poetry, encouraging gambling discourages something else.

Simultaneously, gambling is at best zero sum, unproductive entertainment. All of my profits must be someone else's losses. Perhaps it increases knowledge of how to build statistical models, but solving basic strategy Blackjack is not an open question on the frontiers of human knowledge. The gambling industry removing a larger fraction of Astrophysicist effort means that effort is not going to actual Astrophysics. My intuition is that financial services and big tech are less marginally helpful for long term societal benefit than actual Astrophysics, but that is far less certain. If that is true, we have a system that takes more bucks, but gives less bang.

I believe this situation is unstable. You may utilize the apocalypse of your choosing, but the odds that we have arrived at an infinite frontier of milk and honey are low. So I will be taking the money and saving it for later.

But this subsidy hastens the end. Society requires the disciplined and numerate, at least for now. Offering them and only them to trade tedium for cash is not a great way of solving problems. Vice has found a way to remove a few more virtues.