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# The Economics of Penny Auctions

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The Economics of Online Penny Auctions

Colin MacDonald (2011)

Advised by Prof. Garrett Milam, PH.D.

## Introduction

The banner ad says “Macbook Pro: 90% off!” It seems too good to be true, but you click on it anyway and find yourself at a site called Swoopo.com. Front and center you see that same Macbook, along with a forty inch plasma screen and some high end digital cameras. It seems to be an auction site, and these products are in auctions that are close to ending. The prices are insane! The Macbook is around \$44 dollars with under a minute to go and the other items are similarly priced. Surely there is no way a website like this could stay in business selling such high-priced items for so little money.

But something seems strange about this website. None of the auctions have ended yet, even though they had only a few seconds remaining when you arrived at the website. Looking closer, you see that when the timer approaches zero, someone places a bid and a few seconds are added to the clock, preventing the auction from ending. Is this some kind of scam?

Swoopo is not a scam, but it is also nothing like a traditional online auction. Since its arrival in Germany in 2005, Swoopo has expanded to the international market, generated millions of dollars in revenue, and spawned hundreds of copycat websites looking to profit from an entirely new online business model.

So how does it work? I’m going to eschew the traditional explanation, (one which is readily available on the site itself) in favor of trying to explain how Swoopo works through the incentives and market structures of penny auctions in general. In doing so I will show how Swoopo borrows from traditional E-commerce, online auctions, and

economic theory to create a compelling and popular business model. I'm then going to explore the ways in which Swoopo walks the line between legal online auctions and illegal online gambling, before using data gathered from Swoopo itself to analyze which side of the line they fall on. Hold on, and get your credit card ready, this could be an expensive trip.

## The Game

In 1995, the company Netscape went public. Its browser, Navigator, was the first mass market portal to the internet. This software propelled the nascent web out of the realm of specialized users and into the offices and studies of regular consumers. With this migration came a new method for commerce. Traditional merchants began to offer some products for sale online, and web-only retailers like Amazon.com emerged as well around this time. Improvements in the security of online payment methods and banking, as well as innovations like Paypal, only accelerated this process.

Two of the most successful online merchants are Amazon and Ebay. Both of these companies have distinct business models that add up to a similar result: they consistently delivered lower prices than their now-defunct competitors and thus survived the mass extinction of e-commerce sites when the first dot com bubble burst. The availability of price comparison on the internet has collapsed the ways in which companies can differentiate themselves. Sites that offer low prices consistently gain popularity through word of mouth, and search engines like Google Products or BizRate automate the task of finding the lowest price for items. For proof that price is vitally important online, one

need look no farther than the 2009 price war between Walmart and Amazon, which Walmart started when it slashed the cover price of ten bestselling books. Amazon had no choice but to follow suit, and both companies ended up losing money on every book they sold.<sup>1</sup> New entrants into e-commerce must find some way to compete with these prices if they are to survive, a difficult task without the market share of a behemoth like Amazon or Walmart. So this was Swoopo's first challenge: deliver very low prices while managing to stay profitable.

This is a task that Ebay has accomplished in a completely different way from Amazon or Walmart. Ebay acts as an intermediary for smaller sellers, providing them with a portal and web presence and allowing them to handle pricing. Sellers like Ebay because offering items for auction instead of fixed price sale is a more efficient way to move items for the best price.<sup>2</sup> Ebay also acts as an arbiter in disputes and has its own layers of security in place to keep sellers and buyers honest.

Auctions are powerful because of their efficiency. Any sale of an item is an interaction between the price at which a merchant is willing to sell (WTS), and the price at which a consumer is willing to buy (WTP). These two levels rarely meet perfectly, resulting in consumer surplus (the buyer pays less than what they would have been willing to pay) and/or producer surplus (the merchant is able to sell for higher than their minimum price). Because the price is the same for all consumers in a traditional sale, some consumers spend less than the maximum they would have been willing to, and some don't make a purchase at all, even if their WTP exceeds the merchants WTS. The

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<sup>1</sup> Surowiecki, James. Priced To Go. The New Yorker. Nov 9<sup>th</sup>, 2009.

<sup>2</sup> Ebay does also use a fixed price system through its Buy it Now option. However, it is known mostly for its auction format.

structure of auctions has the effect of collapsing these surpluses. As the price of the item rises with each successive bid, buyers with lower WTP drop out of the auction until the consumer with the highest WTP eventually wins the item.

What Swoopo has done is merge the best ideas of Amazon and Ebay. They have created a model that lets them sell high-retail-price products with minimal overhead for prices that beat anything at traditional retailers while still retaining a high profit margin. (One economic analysis of Swoopo found that the company actually earned negative profits on about half their auctions, the other half are successful enough to result in an overall profit margin of 52%.<sup>3</sup>)

The key to this whole operation is that Swoopo charges a fee of sixty cents for every bid placed. The vast majority of Swoopo's revenue comes from these bid fees, not the final sales of items. Because of this, everything about Swoopo's organization and structure is designed to maximize the number of bids that are placed. The low prices that serve as Swoopo's lure are not available to everyone. To snag one, customers must compete among themselves by placing bids.

While Swoopo and most other penny-auction websites use the term "bid" to describe these micro-payments, the term is slightly deceptive. A bid on a penny auction site is quite different from a bid in a traditional auction. On Ebay, a buyer's bid is quite literally their willingness to pay. If I want to bid on a collectible lunchbox, I provide Ebay with the maximum amount I would be willing to part with and then Ebay keeps me in the auction up to that price. If I am eventually outbid, I have lost nothing more than my time;

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<sup>3</sup> Augenblick, Ned. *Consumer and Producer Behavior in the Market for Penny Auctions*. Unpublished Manuscript. 2009.

the only bidder to spend any money is the eventual winner. Bids on penny auction sites cost money, and the money spent on bids is unrecoverable.

The closest analog to penny auctions in economic theory is the 'all pay auction'. In an all pay auction bids are submitted in full regardless of the eventual winner. All pay auctions have been found to result in total payments greatly in excess of the value of the auctioned item.<sup>4</sup> This is true both in the classroom laboratory and in real world examples such as the allocation of bandwidth spectrum through a lobbying process.<sup>5</sup> Swoopo's success stems from their ability to translate the all pay auction into the setting of ecommerce.

Swoopo faced a number of challenges in the translation process. One of these is keeping rates of bidding high throughout the auction. In a traditional auction one would expect to see lots of bidding at the beginning when the price is low, and then gradually less and less as the price is bid higher and higher, as more and more bidders realize that the price is higher than they are willing to pay. Since Swoopo makes its money by maximizing number of bids placed, they need a way to keep people bidding steadily throughout the auction instead of trailing off at the end. They do this by keeping the bid increments very small. The most that a single bid raises the price of an item is fifteen cents, and in some auctions it is as little as a penny. On Ebay, the bid increment is unlimited, so just placing a bid is no guarantee of moving into the lead if someone else has placed a larger bid than you. On Swoopo, every time someone bids they become the bid leader until the next bidder replaces them.

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<sup>4</sup> Holt, Charles. *Markets, Games, and Strategic Behavior*. Addison Wesley. 2006

<sup>5</sup> Holt, Charles. *Markets, Games, and Strategic Behavior*. Addison Wesley. 2006

Because of this, sale prices on items stay very low, meaning that the attractiveness of placing a bid does not decline very much as the auction goes on. This is especially true when the item has a comparatively high retail price. A bidder on an \$800 iPad is unlikely to see much of a difference between a price of \$10 and a price of \$50. Additionally, the true cost of bidding is disguised somewhat by the low cost of each individual bid. In economics, prospect theory asserts that losses hurt relatively more than gains of a similar amount. When a user places a bid on Ebay, he or she sees the entire amount at once, which can be a bit daunting. Since people tend to mentally separate losses (or costs) spending \$100 in sixty cent increments has less of an emotional impact than dropping that same \$100 all at once.

Another challenge for Swoopo is keeping auction length high. The longer auctions run, the more bids will be placed and the higher profits will be. On Ebay, savvy bidders often wait until the last moment to place their bid, hoping to catch other bidders off guard and win the auction before they have time to respond and raise their bid. Since Swoopo's business model depends on encouraging lots of bidding, auction sniping would result in much lower profits. Swoopo gets around this problem by using a dynamic timer compared to Ebay's static timer. All auctions on Swoopo are scheduled for twenty-four hours. However, every time a bid is placed, a few seconds are added to the clock. When bidding ramps up, the final "ten seconds" of an auction can last for hours.

The way the timer functions is critical to the success of Swoopo's strategy. Even though auctions are scheduled for twenty-four hours, they almost always go on longer than that. There is no way to know ahead of time when an auction will end since it won't be over until all but one person stops placing bids. This means that as the timer



approaches zero, prospective bidders are required to make a choice: place a bid and hope to be the final bidder, or take no action and hope another bidder places a bid and extends the clock.

It would be difficult for most people to participate in these auctions if they were required to place each bid manually. People who don't have hours to devote to a penny auction can use an automated tool called a BidButler that Swoopo (and most other penny auction sites) provides to all bidders. Users can configure the BidButler to place bids for them under parameters that the user controls. For example, I could set my BidButler to place a bid on a certain auction every time the clock reached one second remaining. The BidButler would then ensure that I stayed in the auction as long as my account had bids remaining. The function is similar to Ebay's system of proxy bids that lets a user input their highest price and then keeps the user in the lead as long as that price is not exceeded. The BidButler allows a savvy user to avoid costly over bidding by setting it to bid only when the timer is about to expire.

It will be helpful to imagine an informal model of bidding behavior that we might expect a rational participant in a penny auction to follow. For the purposes of this example we will take a sixty-four gibabyte iPad with a retail price of \$800 and an auction price increment of one cent, a true penny auction. Since each bid costs sixty cents, I will not bid unless I believe there is a chance that the bid I place will be the winning bid. But since the sixty cent bid is relatively tiny compared to the \$800 prize I do not need to feel certain that I'm placing the winning bid, only that it exists as a real possibility. In this model we will assume that there are 10 other people who have a desire to bid on this iPad. There are three basic decisions that every bidder must make. First they have to

decide to enter the auction by placing their first bid. Second, as the timer approaches zero they must decide whether to bid or not. Third they can make the decision at any time to stop bidding and walk away from the auction. The primary distinction between decision one and decision two is that as soon as a user places their first bid, that action is visible to the other bidders and may influence their behavior.

The first thing a potential bidder must choose is when to enter the auction. There are three conditions that must all be satisfied for an individual bidder to win an auction. They must have placed the last bid. All other active bidders must make a decision following that last bid to stop bidding. (Either permanently, a stopping decision, or temporarily, because they expect another bidder to bid in their place) Finally, no new potential bidders can make a decision to enter following the last bid. It would be impossible to determine, except by random luck, the exact time that bidding will stop. However, bidders could speculate as to the range of price during which that might happen. Swoopo also posts the price that a similar item was recently sold for, assisting (or confusing) this process. Therefore, a rational bidder will wait to enter until the price reaches their estimation of that range and then enter. Each bidder will have a different estimate of this range, leading to different entry points. Bidders will also have different tolerances for risk, which will lead to divergences in entry behavior as well.

After entry, bidders must decide whether to bid or wait. There is some information available to bidders that may help them make this decision. Swoopo provides a list of all the bidders in the last fifteen minutes as well as keeping a tally of the last fifteen bids. A bidder who sees that two other bidders using BidButlers have been competing may realize that it is safe to sit out for a few minutes until the BidButlers are

expended. A similar conclusion might be reached by observing that several bidders are rapidly trying to outbid each other.

So far, our informal model has concluded that a rational bidder will enter when they feel the end is in sight, place a bid whenever they have a reasonable expectation that no one else will, and wait to bid when several other bidders are in contention, especially if one or more of the bidders is using a bidbutler. So lastly we should develop an idea of how bidders make the decision to exit the auction. A rational bidder will only exit when they feel that the auction will go on long enough to make their continued participation too costly. Essentially, a user will exit if they decide that their initial belief that the auction is nearing its end was incorrect. There are a couple of things that might suggest this. First is the entry of new, seemingly committed bidders. Since iPads can be easily resold for close to the retail price, we can assume that all of our bidders have similar valuations for the prize. The further assumption (a bid of a stretch) is that they will also have similar willingnesses to pay for this iPad. Because of this, bidders who enter late have an edge on bidders who entered earlier, even if all of them have the same willingness to pay. A rational bidder will therefore exit the bidding if they see evidence that new bidders with an advantage over them have entered. They might also be persuaded to exit if an existing bidder signals their willingness to “win at all costs” by placing several bids in rapid succession or immediately outbidding other bidders regardless of the countdown clock.

Despite the existence of this and other rational models of bidding, even a cursory glance at the data shows that there is a lot more going on when it comes to individual bidding behavior. Under this model, for example, there is no incentive to place a bid while there are still hours left on the clock. Yet many bidders seem to do just this. Other

bidders place only a few bids before dropping out, clearly not seriously pursuing the item. These departures from rationality raise a question with important implications: how much skill is involved in playing a penny auction? In the United States, games of skill played for money are legal, whereas games of chance are classified as gambling, and are not.

## The Law

With our puritan roots, gambling has never rested comfortably in America. Betting on horse races has usually been protected as a pastime of the wealthy, and states raise a sizable chunk of their revenue from lotteries, but aside from the state of Nevada and assorted Native American Reservations, card-rooms and casinos have mostly operated on the wrong side of the law. But while it is easy enough for state authorities to shut down an unlicensed betting parlor, gambling on the internet presents more of a challenge, especially when the company in charge exists outside a state's jurisdiction. Ever since 1998, the more socially conservative elements in congress had been trying to get a federal law against online gambling passed in order to help states fight extra-jurisdictional online gambling. Finally, in 2006, the stars aligned.<sup>6</sup>

Efforts to ban online gambling had previously been blocked by strong industry lobbying efforts, often led by the lobbyist Jack Abramoff. But in 2006, Abramoff was indicted on corruption and bribery charges that hit several republican members of

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<sup>6</sup> Casino Advisor. An Analysis of the UIGEA: Legal and Practical Repercussions. January 5<sup>th</sup> 2008. [www.casinoadvisor.com/uigea-article.html](http://www.casinoadvisor.com/uigea-article.html)

congress as well as President Bush.<sup>7</sup> Republicans scrambled to distance themselves from Abramoff as the 2006 midterms approached, which meant also distancing themselves from the gambling interests he represented.

However, Abramoff's toxic influence proved too difficult for many republicans to escape from. The scandal, combined with Pres. Bush's unpopularity and a strong push from democrats resulted in a major congressional power shift. At the end of 2006, republicans would lose their long held control over congress. Two house republicans, Bob Goodlatte and Jim Leach, knew they had to move quickly if they wanted to ban online gambling.

Also in 2006, Dubai World had attempted to buy several US ports. The proposed deal caused enough bipartisan backlash to put the issue of port security on the front burner for congress. In the waning days of the 2006 congressional term, the SAFE Port Act was destined for passage, supported by members of both parties. Thanks to the efforts of Goodlatte and Leach in the House and Majority Leader Bill Frist in the Senate, the Unlawful Internet Gambling Enforcement Act was attached to the act soon before it passed both chambers.

The law defines a bet or wager as “the staking or risking by any person of something of value upon the outcome of a contest of others, a sporting event, **or a game subject to chance...**” (emphasis added) including “the purchase of a chance or opportunity to win a lottery or other prize (which opportunity to win is predominantly

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<sup>7</sup> Schor, Elana. “US congressional report finds strong White House ties to corrupt lobbyist”. The Guardian. June 9<sup>th</sup> 2008.

subject to chance)''<sup>8</sup> It is important to note that as an enforcement act, the UIGEA does not extend the definition of what is gambling. In other words, if a state had a different legal test for what constituted gambling, this law would not supercede it, nor would it restrict a different state law with a broader definition of gambling.

However, forty-three states employ a 'dominance factor' in their definition of gambling that approximates the federal definition. The dominance factor means that the difference between a legal game and illegal gambling is the amount of skill involved, specifically, whether chance outweighs, or dominates, skill.

This dominance factor is the reason that playing poker online for money is illegal. Skill is often involved in playing poker, especially in games like Texas Hold'em. There is, for example, a World Series of Poker, whereas there is no world series of roulette. Many people also play poker professionally and earn tidy incomes that would be statistically very unlikely if chance were the only factor. Again, there are no professional roulette players. (To my knowledge) Probably the most important distinction between these two games is the aspect of competition. In roulette, the odds are stacked slightly in favor of the house, guaranteeing them positive earnings in the long run. In poker, the house merely takes a rake of the winnings; when players earn money, they earn it from other players, not the house. The skill involved in poker, such that it is, involves manipulating the expectations of the other players relative to your own expectations about uncertain outcomes. (Hence the saying that in poker, you don't play the hand you've been dealt so much as the opponents you've been dealt.) It stands to reason that

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<sup>8</sup> Library of Congress. H.R.4954 SAFE Port Act – TITLE VIII – Unlawful Internet Gambling Enforcement Act.

through experience, training, and mental prowess, some players would grow to be better at this than others.

So one way that we can think about elements of skill entering a game of chance is through information asymmetries. In roulette, the probabilities of all events are easily deducible to anyone at the table or (if you're really not a math person) in possession of an iPhone. But once the first two cards are dealt in hold'em, the probabilities are no longer clear because an individual player can't know what her opponents are holding. In this way we can think about skill as asymmetric elements under the player's control. In both roulette and poker, that element is betting. However, in a fair game of roulette, the fact that I place a large bet on red shouldn't communicate that I know anything special about the probability of the ball landing on red; in poker, my betting action gives other players clues about the cards I'm holding. The skill exists in how I present my information and interpret the information my opponents present.

So far the discussion has been mostly about poker and less about penny auctions. The reason is that in play style, penny auctions are much more akin to poker than they are to typical online auctions. In penny auctions, as in poker, there is a cost associated with staying in the game (or hand). To be in contention for winning a poker hand, a player must keep matching the bets of the other players even if they end up folding before all the cards are down. In penny auctions a player must be willing to place a bid every time the timer approaches zero if they want to avoid the chance of the auction going to another bidder. In poker, a player's bets reveal information about the contents of that player's hand; in penny auctions, bids reveal information about a player's willingness to pay. The analogy should by now be clear. In penny auctions, a player's WTP constitutes their

‘hand’: information that only the player knows for sure, but that other players can guess at based on prior behavior within the game. Players of both poker and penny auctions are liable to suffer from the sunk cost fallacy. Unskilled or emotional poker players have a tendency to treat the money they have put in the pot as “their money” which can only be regained by continuing to bet. Likewise, the money spent on bids in a penny auction is unrecoverable. People’s frequent inability to sense that only leads to more bidding and higher profits for swoopo.

However, there is an additional element to penny auctions that has the effect of introducing even more randomness: free entry into the game. Imagine that during the course of a single poker hand a new player could walk up and be dealt a hand without matching the bets that had already been made. Essentially, this is what penny auction sites allow. Because of this, a bidder in a penny auction is betting not only on the willingness to pay of the other bidders, but also on the willingness to pay of *potential* bidders who have yet to enter the auction. The combination of these two elements suggests a game whose result is highly influenced by chance.

We need not rely only on theoretical arguments to determine the mixture of skill and chance present in penny auctions. Substantial amounts of data exist that can be used to test this argument.

## The Data

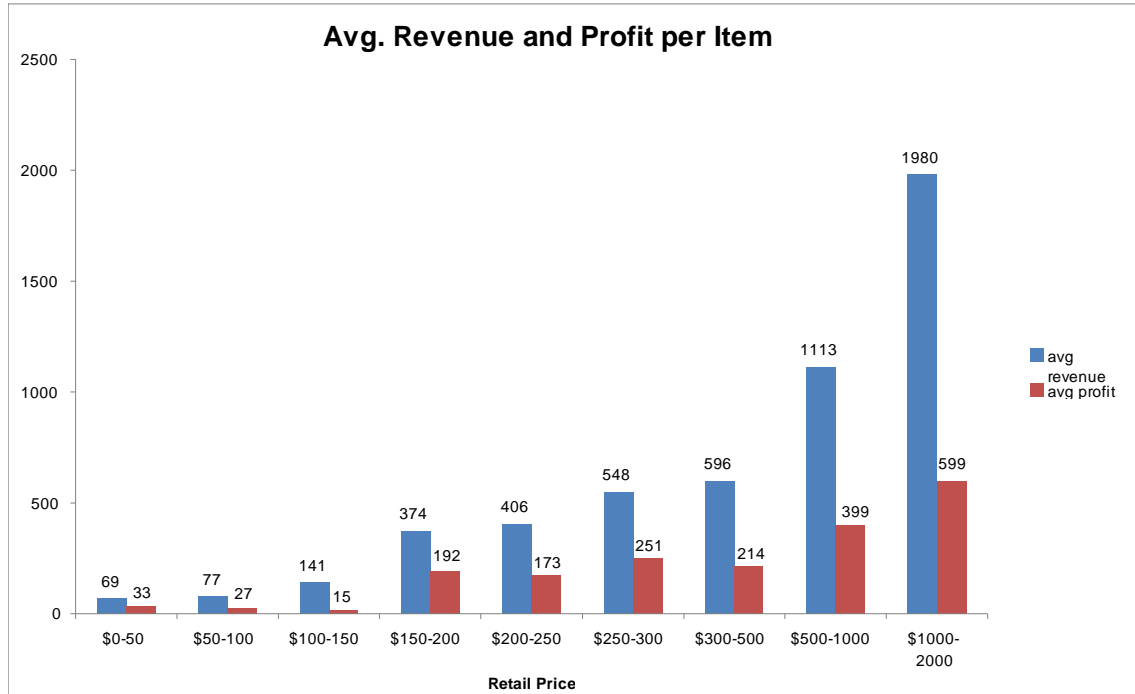
Before we try to answer the gambling question, we can look at some of the other insights that the data give us. First, how beneficial is Swoopo for the winners of the auctions? By multiplying the number of bids placed by the cost of each bid and then



adding in the final purchase price, we can calculate the total cost to an auction winner. Then, using the retail prices of each item, we can calculate the discount each winner received. The overall average discount from the retail price is 56%, but there is some variance between items. Winners of new Nikon D90s got a nearly 80% discount on average, while PS3 Slim winners got a discount in the mid 40s. About 8% of the sampled winners actually lost money, the wildest example being a user who spent 110 bids to win a free 50 bid voucher. If we eliminate those users who lost money, the average discount jumps to 63%.

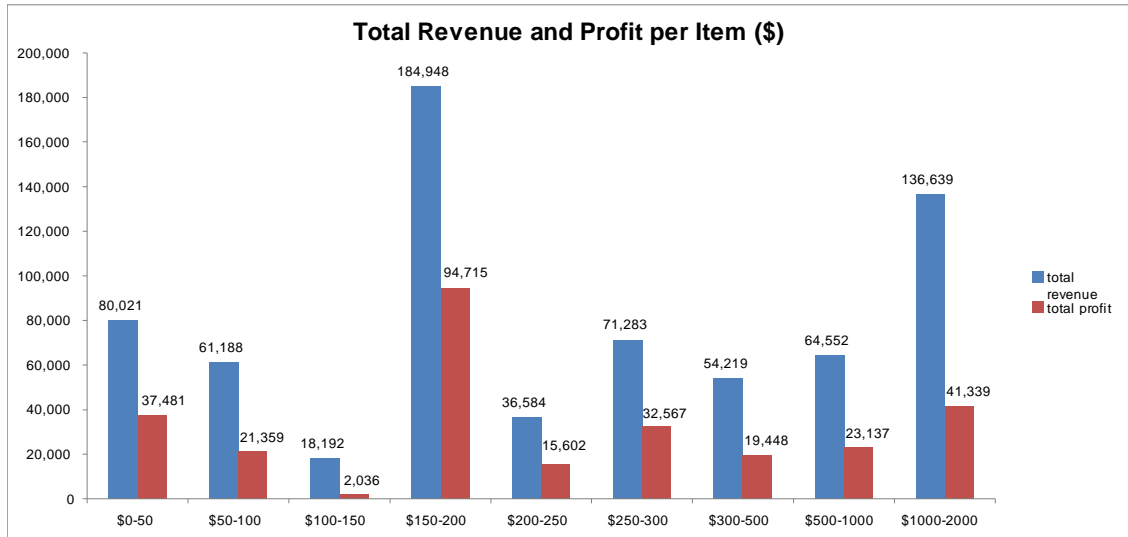
Of course, not everyone can be a winner. In fact, very few people can. Over 40,000 bidders contested the 3,000 auctions sampled for this paper, meaning less than one percent of bidders actually walked away with anything in exchange for their money.

Another interesting discovery is the money making capacity of different auctions for Swoopo. The following graph describes average revenue and profit broken down by the retail prices of the items being offered.



There is nothing too surprising to these results, although it is important to note that in each column, the average revenue per auction is significantly higher than the upper bound of the price segment. It is also interesting that the \$100-\$150 dollar range has such smaller average profits than the next segment up. Part of what accounts for these differences are the items being sold in each category. The 150-200 dollar range is dominated by 300 bid bidpaks and Nintendo Wii systems, possibly contributing to the higher profits. It is important to note that a distinguishing characteristic of many of the items Swoopo sells is the rarity with which they are otherwise discounted. Excepting Black Friday loss-leader type sales, things like iPhones, Playstations, and MacBooks are almost never sold at a discount. This makes the potential of a discount from Swoopo all the more tempting.

Compare the previous graph of average revenue and profit with a similar graph that shows total revenue and profit.



From this graph it becomes clear that the \$150-200 range is really the sweet-spot for Swoopo. In this price range they are able to offer a high number of auctions and make a large average profit on each item sold, making their total profits in this category over twice the total profits in any other price range.

With such high profits at stake, the gambling question becomes all the more important. Previous economic analyses of Swoopo have been performed that help answer this. Working from a separate dataset also collected from Swoopo, Ned Augenblick finds that experience raises the expected value of a bid. He established a cutoff point at 5000 bids. Users who had bid more than 5000 times were considered experienced bidders. Augenblick finds that experienced bidders have a higher expected value per bid than less experienced bidders.<sup>9</sup> In other words, players eventually learn how to be more effective in their bidding. He also argues that these gains in expected value result to a large degree from the use of aggressive bidding behavior, defined as immediately outbidding other

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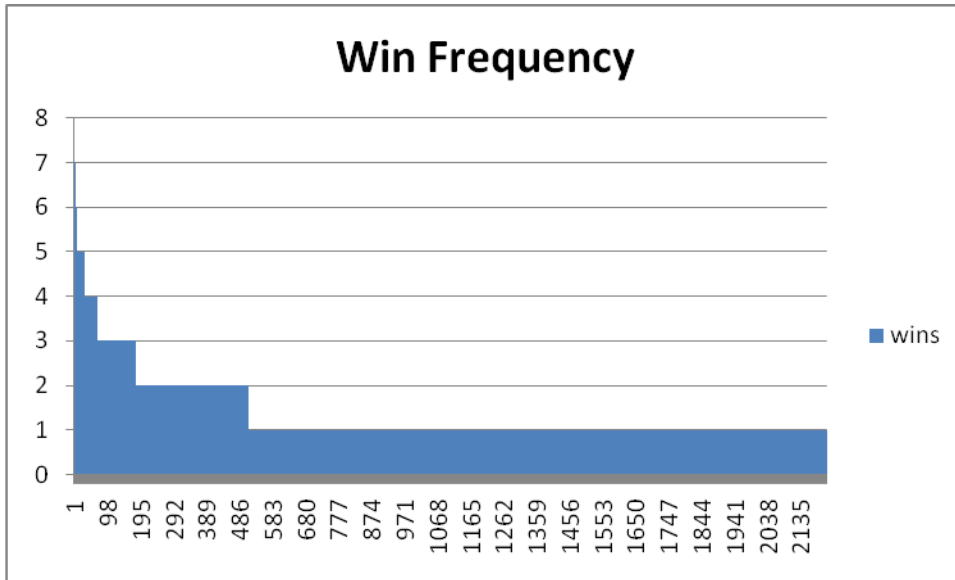
<sup>9</sup> Augenblick, Ned. *Consumer and Producer Behavior in the Market for Penny Auctions*. Unpublished Manuscript. 2009.

bidders instead of waiting until the timer is about to expire. This strategy, which is supported by anecdotal evidence from some bidders, is designed to signal a high WTP to other players, forcing them out of the bidding. If Augenblick's assertions are correct, it would be difficult to make the case that penny auctions are not a game of skill.

It should be noted that there are definite costs associated with Augenblick's concept of skill. Five thousand bids at full price would run a user around three thousand dollars, not exactly chump change. And if expected value improves with experience, this model would mean that for many of those five thousand bids, the expected value was lower than the eventual expected value. In other words, just the fact that it may be possible for some users to get a positive expected value on a bid does not mean it is easy or cheap to do so.

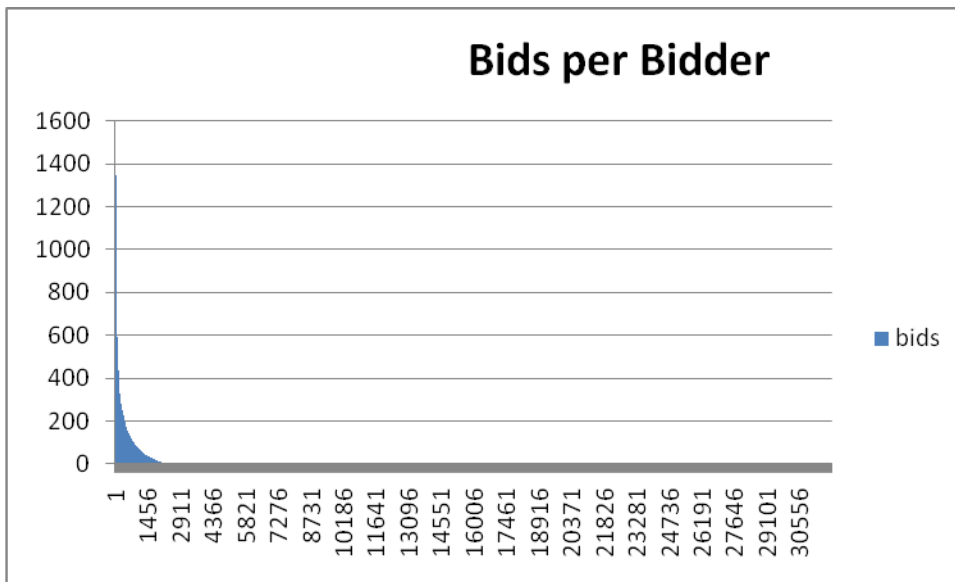
There may be another way to gain an edge in penny auctions that Augenblick's model cannot test for. Recall for a minute the informal mode of bidding behavior we constructed earlier. In this model a user begins bidding once they have a reasonable belief that the auction will soon end. Thus it follows that being able to more accurately estimate this range would lead to lower overall bidding costs because on average a user who was good at this would be able to jump in closer to the end of an auction.

Recreating Augenblick's model is beyond the scope of this paper. However, we can determine whether the summary statistics from the available data line up with Augenblick's story. Augenblick states that there is a small group of users that bid substantially more than other users, and that these users extract more wins than the average user (leading to the higher expected value). A chart of total bids will be helpful in this situation.



As evidenced by the chart, a vast majority of users place few bids, while a small minority of users are responsible for the heavy bidding.

A similar pattern emerges when we look at the total wins instead of total bids.



Most winners only win one auction in the sample, while decreasing amounts win more than one.

These statistics support Augenblick's assertion that a small number of elite users win significantly more than the average user. However, it is unclear whether or not this

fact protects penny auctions from the charge of gambling. Consider the following hypothetical example while keeping in mind the dominance principle of gambling that requires skill to predominate chance: A company runs a game that costs five dollars to play and offers the possibility of a 20 dollar prize. To play, all five users toss colored balls into a hopper containing differently sized pegs. The user whose ball exits the hopper third wins the twenty dollars. The randomness of the pegs and the length of time the balls take to exit would seem to make the outcome dependent on luck. However, the players do exert some control over when they toss the ball in, meaning that skill is not entirely out of the question as with a lottery. In fact, some players, after hundreds of repetitions, discover small tricks, perhaps subconsciously, that give them an edge over other players. Does the fact that a small minority of players are able to use skill to gain an edge mean that the game should no longer be considered gambling, even if for the vast majority of players the outcome is almost entirely random?

This question came up in a court case in Texas involving a claw game called a bulldozer in the case literature. The court ruled it a gambling device, saying:

“Even a contrivance that is predominantly a game of skill may be determined by chance. For example, assume that a novice player of Bulldozer, through a minimal exercise of skill, has a 25 percent chance of winning an award. Assume also that an experienced Bulldozer player, through the exercise of his superior skill, has a 75 percent chance of winning an award. Chance would appear to predominate over skill in the former case, while in the latter case; skill would appear to predominate over chance. Yet in either case, the outcome in each particular game played is ‘determined by chance.’ A player's level of skill may influence the degree of chance involved, but it does not eliminate the element of chance altogether. The outcome is always determined by chance because no player, through the exercise of skill alone, can control the outcome of any given trial. It is chance that finally determines the outcome of each and every trial. Thus, it is the incorporation of chance that is the essential

element of a gambling device, not the incorporation of a particular proportion of chance and skill." <sup>10</sup>

If we apply this legal standard to Augenblick's findings on penny auctions, it becomes clear that while skill may be a significant factor for a small minority of experienced players, it does not outweigh the effect of chance.

## Conclusions

While statistical evidence exists that penny auctions meet the legal standard for gambling, it is unlikely that they would be enforced as such. Additionally, the precedent cited above exists only in Texas, as the decision was not appealed. Penny auctions are new enough and different enough that a court battle would almost certainly ensue if a state were to reclassify them as gambling.

That being said, penny auctions are certainly risky for the bidders involved. Simply looking at the data tells us that less than one percent of the bidders in the sample actually won anything. Bidders who are interested in gaining a slight edge could certainly do so by examining the summary statistics of this and other data sets. Bidders should have an item in mind and then use a dataset to calculate the average sell price of that item. They should then bide their time until they see that an auction for one of these items has proceeded past that average price before they enter. A diligent bidder could perhaps first follow this strategy with bidpak auctions until they had accumulated enough low priced bids to make participation in a higher stakes auction more attractive.

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<sup>10</sup> State v. Gambling Device, 859 S.W.2d 519 (Tex.App.-Hous) (1 Dist.), 1993.

As mentioned earlier, Swoopo has become quite profitable under the penny auction model, although the same is not necessarily true for other penny auction websites. New penny auction sites must provide a lot of auctions in order to attract the large user base necessary for profitability, but without that large user base many of those auctions will end up losing money for the website.

Penny auctions show many of the attributes of a fad. They have little precedent in the marketplace and offer the possibility of high profits and low overhead. The proliferation of small penny auction sites is most likely a reaction to this that the market will soon correct for. It seems likely, however, that the larger penny auction sites, with all their issues and controversies, are here to stay.