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Penny wise, player foolish? Slot-hold regulation and consumer preference

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ABSTRACT

Casino gambling is a heavily-regulated consumer service available to the public, with state oversight of a variety of business functions, including the "pricing" of slot machines via mandated minimum hold percentages. But states typically define minimum slot-hold percentages that are well below those actually found on slot floors. State-mandated minimum paybacks are almost entirely irrelevant; industry standards honed by competition keep average payback rates high above the state minimums in all jurisdictions, with no direct correlation between the state-mandated minimums and actual payback rates: the market, instead, determines the "cost" of playing slots.

1. Introduction

Casino gambling, chiefly because of social concerns and its historical connection to organized crime, is a heavily regulated consumer service (Lowenhar, Lonoff, & Smith, 1991; Olsen, 1976). In the name of both player protection and fiscal oversight, state regulators mandate a variety of controls on casino operations. Depending on the jurisdiction, casinos may have state-mandated constraints placed on their size, operating hours, credit policies, and many other elements usually left to the discretion of managers in other industries. Yet in one crucial area, slot-hold percentage, states typically exercise only minimal control. Many states mandate minimum slot-hold percentages well below those actually found on slot floors. Casinos raise and lower slot-hold percentages—in practical terms, the "cost" of playing machines—at will.

Slot-hold percentages are rising perceptibly suggesting to some that players need protection from rapacious casino managers seeking to wring every last cent of profit from the games. But analyzing the past several years of slot-hold percentage data in several Nevada markets reveals that players themselves, by choosing to play machines with higher hold percentages over those with lower ones, are actually responsible for the increase in average slot machine hold. Additional regulatory oversight to protect players may actually stifle innovation and decrease the enjoyment of the playing experience for the majority of slot players.

This study takes a historical look at an economic and political question: of what utility are state-mandated minimum payback percentages? The prevailing industry opinion, expressed by Cabot (1996), is that they are not of much use. No analysis yet published, however, proves or disproves Cabot's hypothesis. Comparing minimum holdback requirements among states with historical results, and looking at disparate and changing payback rates at several different casinos in a single jurisdiction, Atlantic City, New Jersey, one may hazard an answer to that question, which raises additional questions for the nature of casino regulation. Does a more comprehensive legal framework guarantee the best "deal" for customers? Or does the market provide that "deal" if left free from direct intervention?

2. Slot-hold percentage: A definition

Casinos make money by offering gamblers the chance to win money at negative expectation games. A player may come out ahead at any single gambling session, but over the long haul, gamblers lose more than they win. Any casino game that does not have a negative expectation poses a serious financial liability for a casino.

Most table games, like craps, roulette, and blackjack, have a negative expectation because of a discrepancy between the true chances of winnings and the odds offered players. For example, the pass line bet at craps pays even money, but the player has about a 48.6 percent chance of winning the bet. That 1.4 percent divergence between the odds and the payout is the house advantage.

Slot machines have a similar edge for the house. Called the theoretical win or theoretical hold percentage, this number, unlike the hold for table games with constant rules, can fluctuate. When slot machines were predominantly mechanical devices in which the player pulled a lever that set reels into motion, slot mechanics adjusted the hold percentage of games by adding and removing symbol from reel strips. More symbols meant a greater chance to win, while fewer meant a smaller proportion of hits.

With the advent of games controlled by EP-ROMs, slots were liberated from the physical limitations of reels. Using a random number

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generator, the top jackpot could be programmed to hit (on average) much less frequently than a random spin of three wheels would permit, allowing for much larger top jackpots. Yet the same principle remained: in order to make money, casinos had to offer slot machines that paid back, in total, less than they took in.

The slot-hold percentages is the portion of monies played that the house retains. Depending on the denomination and type of game, average slot-hold varies greatly. Changing the slot-hold is one of the ways that casino managers can adjust their "prices" to attract players or maximize revenues.

The *Gaming Revenue Report*, issued monthly by the Nevada Gaming Control Board, records the total average slot-hold of a reporting area as its "win percentage." This is merely the term for the actual percentage of the amount of money inserted in all the reporting area's slot machine that the casinos retained.

In industry parlance, slot-holds range from "loose" to "tight," with loose slots having lower win percentages (for casinos) and tight slots having higher ones (Friedman, 1982). This informal characterization is completely subjective: no agreed-upon point represents the divergence between a "loose" and "tight" slot, no formal divide between profitability for casinos and opportunity for players. What is held to be "tight" in one jurisdiction might be considered "loose" in another.

One of the chief vectors that slot-hold varies along is denomination. In general, the higher the denomination, the lower the slot-hold percentage. Nevada statewide results for 2009 (Nevada Gaming Control Board, 2010) show the pattern (Table 1).

In this example, the hold percentage for penny slots is nearly double that for dollar slot machines. This isn't because dollar slot machines are less expensive to make than pennies, but, in theory, because the pennies, with smaller amounts wagered, need a higher "takeout" to make them equally profitable.

In addition, some categories of slots, such as full-pay video poker machines, have extremely low hold percentages, while others, like Megabucks and other wide area jackpots, have relatively high hold percentages. The latter games offer a life-changing jackpot—often running into the millions—as an incentive to play while the former, though they generally lack such stupendous payouts, are unparalleled time-fillers. In general, the choice is between high volatility—the promise of great reward with the assumption of greater risk—and low volatility, with high volatility machines usually having higher hold percentages. Either way, the machines will take in more money than they pay out over the long run, but in the short run, anything is possible.

Slot makers generally do not post their games' payback percentages for players to see. Video Poker machines have play tables that display the credits returned for each combination dealt, and with the aid of strategy guides players can determine the optimal payback of a video poker machine. For example a "9/6" "Jacks or Better" game that pays 9 credits for each credit wagered for a full house and 6 for a flush will return, under perfect play strategy, 99.54% of each dollar wagered (over time). One that pays back only 8 credits for a full house and 5 for a flush (an "8/5" machine) has a theoretical payback of 97.30% (Burton, n.d.).

Table 1
2009 Statewide Nevada average slot-hold, by denomination.

Slot denomination	Slot-hold %
1 cent	10.10%
5 cent	6.96%
25 cent	5.79%
1 dollar	5.26%
Megabucks	10.45%
5 dollar	4.89%
25 dollar	3.96%
100 dollar	3.98%

Source: Nevada Gaming Control Board (2010).

3. Slot-hold in perspective

Scholarship on the management and regulation of casino gaming is a relatively recent phenomenon, but does give some sense of the place of regulation *vis a vis* slot win percentage. The first book written about the science of casino management, Bill Friedman's *Casino Management* (1974), devotes three chapters to two government regulations: one on gaming taxes, one on gaming licensure, and one on license revocation and other punitive measures. At the time, Nevada was the only American jurisdiction with legal casino gaming (Friedman, 1974). In Friedman's analysis, the government's primary role is to collect appropriate gaming taxes, by collecting annual and quarterly license fees, collecting taxes on gross gaming revenue, and by ensuring that all gaming devices have the correct IRS tax stamp (Friedman, 1974, pp. 307–15).

Writing specifically about slot-hold, Friedman reports that "the large gambling establishments in each of Nevada's major tourist areas have approximately the same average casino advantage [hold percentage], but *this standardization has been reached through intense competition* rather than agreement" (Friedman, 1974, p. 238; emphasis is mine). Further, he states that Nevada has "never established a maximum casino advantage for slot machines (or any other form of casino gambling)," though Gaming Commission regulations required that a payoff schedule—not the odds of winning, but merely a list of winning combinations and their payoffs—be posted on each machine, and that if a payoff schedule advertised a symbol existed on a particular reel, that symbol must in fact exist on that reel (Friedman, 1974, p. 238).

Friedman occupies an interesting vantage point. In 1970, he began teaching a class called "Casino Operations and Management" at the University of Nevada, Las Vegas, and his management study grew out of the need to have a workable text for the course, which was the first of its kind in the nation. To that end, he conducted four years' worth of research, including archival research and interviews with more than three hundred casino owners, managers, and regulators (Friedman, 1974). As such, his book was accepted as one that reflected the general thinking of those working in—and regulating—the industry at the time.

Sociologist and law professor Jerome H. Skolnick takes an outsider's view of the Nevada regulatory system in his 1978 study, *House of Cards: Legalization and Control of Casino Gambling*. He concerns himself primarily with big questions: How does a society legalize and control "vice?" How do enforcement agents monitor large flows of capital through casinos? but briefly discussed slot-hold percentages. Echoing Friedman, he finds that, "the State of Nevada does not require that payoff percentages be posted or that they be above a certain minimum" (Skolnick, 1978, p. 64). He does, however, note, also like Friedman, that casinos in the same geographic area, like the Las Vegas Strip or Downtown Las Vegas, tend to cluster together in terms of hold percentage (Skolnick, 1978, p. 65).

In his 1996 book *Casino Gambling: Policy, Economics, and Regulation*, gambling attorney Anthony Cabot deals extensively with the issue of slot-hold in a chapter on the larger theme of regulatory price controls. Cabot considers both minimum and maximum price controls. For the former, he offers the example of North Dakota, where by law slot machines must keep at least 5% of all monies bet, as an example of minimum price controls. He finds no solid reason for states to enact minimum price controls, since their only purpose would be to maximize profits, with no logical public-policy reason to prevent casinos from offering a greater share of monies played back to the players (Cabot, 1996, pp. 421–8).

Considering maximum price controls, Cabot finds that jurisdictions might be motivated to set minimum payouts in order to protect players from losing too much money at slot machines, particularly since the hold percentage of most slot machines is unknown to most players. Yet, he declares, "while good policy reasons may exist in some jurisdictions to set maximum price, government may have difficulty in