

## BACCARAT: A LONGITUDINAL MICRO-STUDY

FIELD RESULTS FROM ONE ATLANTIC CITY CASINO, JANUARY 2004 TO JUNE 2010

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Baccarat is the most important game in the world's biggest gaming destination, Macau, and a growing part of Nevada's overall gambling portfolio. A study at the micro level—that of a single casino—demonstrates that though the game is lucrative, it is also extremely volatile. Operators offering the baccarat must be willing to tolerate months with overall losses at the tables, and even years with average hold percentages below the traditional levels, in the faith that, over time, the game will be an effective profit center for the table games department. Because of the considerable expense involved in attracting high-end baccarat players, it is not surprising that the risk inherent in the game keeps many casino managers from embracing it.

All data is taken from monthly gross revenue tax returns for the casino in question, filed with the New Jersey Casino Control Commission.

### Definitions

Tables is the number of tables in use in the casino under study during the month in question

Win is the total amount retained by the casino after paying off winners, in US dollars

Drop is the amount wagered by players, in US dollars

Win % is the win or hold percentage, i.e., Win divided by Drop.

### Summary

Because of its high bet sizes and relatively small number of players, baccarat has a reputation for volatility in many American jurisdictions. The total variation in monthly baccarat hold percentage for Nevada games from 2004 to 2009, for example, was more than three times that of blackjack. Nevada gaming statistics, however, are aggregated by region, and may hide even greater volatility at the property level.

For this reason, I chose to analyze baccarat statistics for a jurisdiction that reports them by casino, Atlantic City, New Jersey. To get a better idea of how a volatile game like baccarat performs in the field, under actual gaming conditions (as opposed to in theory), I collected data showing how one casino's

baccarat tables fared from January 2004 to June 2010. In the period under study, the casino in question had between zero and five baccarat tables in use in any given month.

The data available include the number of tables in use, the win, the total amount wagered by players (drop), and the win or hold percentage.

Some important pieces of data that I didn't have access to would have been useful: the average bet size, and the total number of bets. The data suggest that the bet sizes remained nearly constant throughout the period in question, since when drop fell precipitously after September 2007, the variance in hold percentage jumped from 51.1 for the earlier period to 161.2 for the months after.

For the entire period under study, baccarat was a study in volatility. The best month the casino enjoyed during the study, January 2005, saw revenues of more than \$3.5 million from about \$8.2 million in handle, a hold percentage of 42.5 percent. The previous month, however, saw a higher handle, approximately \$10.3 million, but the casino actually lost more than \$600,000, as its hold percentage fell to below negative 6 percent. This is the hazard of a game with large bet sizes and high volatility—sometimes, even over a month, and even with large drops at the tables, the house does not win.

Over the entire period, however, baccarat has been a lucrative game for the casino. From January 2004 to June 2010, the game averaged the following:

Revenue	Drop	Win %
530,886	3,632,698	14.4%

This period included three months in 2010 when the casino booked no baccarat bets, which dragged down the Revenue and Drop averages. Looking at the period January 2004 to September 2007, when the casino consistently recorded drops of \$4 million and more, the numbers look even better:

Revenue	Drop	Win%
872,291	5,853,523	14.7%

Provided the casino opens the tables, over time, the game will be profitable. In any given month, the casino win may be negligible, or the casino may even lose money: in 12 out of 78 months (15% of the time), the casino lost money at baccarat. But in 25 out of 78 months (32% of the time), the casino enjoyed winning percentages of greater than 20%, substantially higher than the average of 14.4%.

Provided the amount wagered remains consistently high, the good months more than compensate for the bad months. But when these bad months cluster, fear of baccarat appears justified. Between July and October of 2004, for example, the monthly baccarat hold percentage was consistently below average. It was a long, bad summer in the bacc pit that year, and despite several good months, the hold percentage for the year was substantially below the average for the period under study.

Inconsistency in Baccarat Drop

Over the period under study, baccarat play at the casino greatly decreased. While a roughly uniform handle would have illustrated the principle of volatility in a clearer fashion, I decided to base this study on a casino with a “lopsided” total handle because this may reflect results at many other casinos that also experience peaks and valleys in their play.

The decline is readily apparent: in 2004, each month saw an average of \$7.2 million wagered on the game. The handle dropped consistently over the period under study, and quite dramatically after September 2007.

Baccarat Handle by Month, January 2004-June 2010

	2004	2005	2006	2007	2008	2009	2010
Jan	7,619,411	8,416,923	4,389,430	4,604,032	2,924,597	63,806	19,730
Feb	9,043,696	5,840,913	5,932,557	5,521,377	2,376,326	127,520	0
Mar	7,775,621	4,929,260	6,291,483	4,318,929	1,823,496	358,441	65,700
Apr	6,940,449	6,580,139	6,501,699	3,923,624	1,293,444	630,766	0
May	6,392,565	7,259,384	6,530,605	4,508,300	1,441,370	159,760	0
Jun	4,974,509	4,732,069	4,824,322	4,080,351	697,746	303,485	26,270
Jul	8,778,581	6,393,164	5,571,905	4,718,282	974,406	165,895	
Aug	6,613,399	5,482,354	6,291,443	4,086,594	632,952	132,478	
Sep	7,285,730	4,939,672	5,347,402	4,501,165	420,053	658,100	
Oct	6,266,168	5,638,432	4,185,454	1,129,132	624,715	210,695	
Nov	7,571,216	5,887,194	4,732,632	1,672,186	584,391	136,421	
Dec	10,319,61	6,071,053	5,261,544	2,072,952	104,808	331,062	
<i>Average</i>	<i>7,205,577</i>	<i>6,014,213</i>	<i>5,488,373</i>	<i>3,761,410</i>	<i>1,158,192</i>	<i>273,202</i>	<i>18,617</i>
Total	79,261,345	72,170,557	65,860,476	45,136,924	13,898,304	3,278,429	111,700

If the current trend holds up for 2010, the casino will average less than \$20,000 in total monthly handle on a game that once booked nearly \$80 million in bets a year, with a resulting decline in revenues from \$9.8 million for the year to about \$65,000.

The reasons behind the decline at this particular casino are beyond the scope of the present study, but it’s worth noting that the dramatic drop that began in September 2007 coincides with the beginning of the current recession, which may have triggered a decline in high-end play at this property.

This decline in handle should not be construed to mean that the game itself is in universal decline. During the same period, Nevada’s overall baccarat handle and revenues increased despite an ongoing decline in overall gaming revenues, making the game a more important part of the state’s total gambling offerings.

Trends in Baccarat Revenue

Because of the game's volatility, the year that casino recorded its highest drop (2004) did not yield its highest revenue. In fact, in the following two years revenues exceeded or came close to 2004 totals, despite a significant decline in handle.

Baccarat Revenue by Month, January 2004-June 2010

	2004	2005	2006	2007	2008	2009	2010
Jan	1,672,648	3,573,078	807,017	986,554	308,725	(999)	6,603
Feb	1,640,648	1,122,041	637,295	511,022	294,521	(9,765)	0
Mar	1,316,684	277,577	909,015	533,126	(65,097)	11,493	28,700
Apr	845,746	1,917,992	1,425,959	1,362,604	(174,670)	(473,550)	0
May	(58,723)	1,860,297	233,139	383,515	112,153	29,146	0
Jun	1,246,567	595,926	683,620	825,539	132,472	(11,375)	(2,333)
Jul	692,857	1,128,141	1,206,846	(406,421)	239,687	(21,840)	
Aug	(147,421)	1,113,550	521,924	182,793	72,163	23,725	
Sep	862,871	620,502	1,175,920	348,263	106,731	234,264	
Oct	808,795	1,238,591	476,844	16,027	138,586	77,317	
Nov	1,657,527	539,661	583,766	319,151	329,822	117,430	
Dec	(641,764)	756,785	1,224,169	145,398	5,093	166,475	
<i>Average</i>	<i>824,703</i>	<i>1,228,678</i>	<i>823,793</i>	<i>433,964</i>	<i>125,016</i>	<i>11,860</i>	<i>5,495</i>
Total	9,896,435	14,744,141	9,885,514	5,207,571	1,500,186	142,321	32,970

Baccarat revenue, then, isn't entirely stable from month to month, even when the handle stays constant. Comparing the revenue figures for seven months in which the drop ranged from approximately \$6.3 to 6.6 million demonstrates the frequent disjuncture between handle and win.

Win over Seven Months with Comparable Drop

	Tables	Win	Drop	Win%
May-04	4	(58,723)	6,392,565	-0.9%
Aug-04	5	(147,421)	6,613,399	-2.4%
Apr-05	4	1,917,992	6,580,139	29.1%
Jul-05	4	1,128,141	6,393,164	17.6%
Mar-06	3	909,015	6,291,483	14.4%
Apr-06	3	1,425,959	6,501,699	21.9%
May-06	3	233,139	6,530,605	3.6%

With roughly the same action, the same casino recorded everywhere between a \$147,421 loss and \$6,613,399 in revenues. In fact, the month with the largest handle in this sample also had the biggest

loss. Over the period of a month, during which the baccarat tables may be in use for only a few days or even hours, the high volatility has very real impact on a casino's monthly, quarterly, and even annual balance sheet.

### Trends in Win Percentage

Baccarat's reputation as a game with high volatility (and a correspondingly high risk for the casinos that offer it) is well deserved. As these field results show, real-world baccarat tables live up to their reputation for volatility. The total range of variance of 161.2 is 1119.4 percent of the average hold for the period, 14.4 percent—an astronomical deviation. In short, anything can happen in a baccarat pit over any given month. The results for a single shift are likely even more extreme.

#### Baccarat Win Percentage by Month, January 2004-June 2010

	2004	2005	2006	2007	2008	2009	2010
Jan	22.0%	42.5%	18.4%	21.4%	10.6%	-1.6%	33.5%
Feb	18.1%	19.2%	10.7%	9.3%	12.4%	-7.7%	n/a
Mar	16.9%	5.6%	14.4%	12.3%	-3.6%	3.2%	43.7%
Apr	12.1%	29.1%	21.9%	34.7%	-13.5%	-75.1%	n/a
May	-0.9%	25.6%	3.6%	8.5%	7.8%	18.2%	n/a
Jun	25.1%	12.6%	14.2%	20.2%	19.0%	-3.7%	-8.9%
Jul	7.8%	17.6%	21.7%	-8.6%	24.6%	-13.2%	
Aug	-2.4%	20.3%	8.3%	4.5%	11.4%	17.9%	
Sep	11.8%	12.6%	22.0%	7.7%	25.4%	35.6%	
Oct	12.9%	22.0%	11.4%	1.4%	22.2%	36.7%	
Nov	21.9%	9.2%	12.3%	19.1%	56.4%	86.1%	
Dec	-6.2%	12.5%	23.3%	7.0%	4.9%	50.3%	
<i>Average*</i>	12.49%	20.43%	15.01%	11.54%	10.79%	4.34%	29.52%

\*This is the total annual win divided by the total annual handle, not the mean of each monthly average.

The wide range of variance for hold percentage figures supports the contention that baccarat, while a lucrative game to offer over time, can be a real gamble for casinos in any given month.

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Questions? Contact: Dr. David G. Schwartz, Director  
phone (702) 895-2242 | [dgs@unlv.nevada.edu](mailto:dgs@unlv.nevada.edu)

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Raw Data

Below are the raw data extracted from monthly gross revenue tax returns posted by the Casino Control Commission. For the original documents, see <http://www.state.nj.us/casinos/financia/mthrev/>.

Month	Tables	Win	Drop	Win%
Jan-04	4	1,672,648	7,619,411	22.0%
Feb-04	4	1,640,648	9,043,696	18.1%
Mar-04	4	1,316,684	7,775,621	16.9%
Apr-04	5	845,746	6,940,449	12.1%
May-04	4	(58,723)	6,392,565	-0.9%
Jun-04	4	1,246,567	4,974,509	25.1%
Jul-04	4	692,857	8,778,581	7.8%
Aug-04	5	(147,421)	6,613,399	-2.4%
Sep-04	4	862,871	7,285,730	11.8%
Oct-04	4	808,795	6,266,168	12.9%
Nov-04	4	1,657,527	7,571,216	21.9%
Dec-04	4	(641,764)	10,319,61	-6.2%
Jan-05	4	3,573,078	8,416,923	42.5%
Feb-05	4	1,122,041	5,840,913	19.2%
Mar-05	4	277,577	4,929,260	5.6%
Apr-05	4	1,917,992	6,580,139	29.1%
May-05	4	1,860,297	7,259,384	25.6%
Jun-05	4	595,926	4,732,069	12.6%
Jul-05	4	1,128,141	6,393,164	17.6%
Aug-05	4	1,113,550	5,482,354	20.3%
Sep-05	4	620,502	4,939,672	12.6%
Oct-05	4	1,238,591	5,638,432	22.0%
Nov-05	4	539,661	5,887,194	9.2%
Dec-05	4	756,785	6,071,053	12.5%
Jan-06	4	807,017	4,389,430	18.4%
Feb-06	3	637,295	5,932,557	10.7%
Mar-06	3	909,015	6,291,483	14.4%
Apr-06	3	1,425,959	6,501,699	21.9%
May-06	3	233,139	6,530,605	3.6%
Jun-06	3	683,620	4,824,322	14.2%
Jul-06	3	1,206,846	5,571,905	21.7%
Aug-06	2	521,924	6,291,443	8.3%
Sep-06	3	1,175,920	5,347,402	22.0%
Oct-06	3	476,844	4,185,454	11.4%
Nov-06	3	583,766	4,732,632	12.3%
Dec-06	2	1,224,169	5,261,544	23.3%
Jan-07	2	986,554	4,604,032	21.4%

Feb-07	3	511,022	5,521,377	9.3%
Mar-07	2	533,126	4,318,929	12.3%
Apr-07	2	1,362,604	3,923,624	34.7%
May-07	2	383,515	4,508,300	8.5%
Jun-07	2	825,539	4,080,351	20.2%
Jul-07	2	(406,421)	4,718,282	-8.6%
Aug-07	2	182,793	4,086,594	4.5%
Sep-07	1	348,263	4,501,165	7.7%
Oct-07	1	16,027	1,129,132	1.4%
Nov-07	1	319,151	1,672,186	19.1%
Dec-07	1	145,398	2,072,952	7.0%
Jan-08	1	308,725	2,924,597	10.6%
Feb-08	1	294,521	2,376,326	12.4%
Mar-08	1	(65,097)	1,823,496	-3.6%
Apr-08	1	(174,670)	1,293,444	-13.5%
May-08	1	112,153	1,441,370	7.8%
Jun-08	1	132,472	697,746	19.0%
Jul-08	1	239,687	974,406	24.6%
Aug-08	1	72,163	632,952	11.4%
Sep-08	1	106,731	420,053	25.4%
Oct-08	1	138,586	624,715	22.2%
Nov-08	1	329,822	584,391	56.4%
Dec-08	1	5,093	104,808	4.9%
Jan-09	1	(999)	63,806	-1.6%
Feb-09	1	(9,765)	127,520	-7.7%
Mar-09	1	11,493	358,441	3.2%
Apr-09	1	(473,550)	630,766	-75.1%
May-09	1	29,146	159,760	18.2%
Jun-09	1	(11,375)	303,485	-3.7%
Jul-09	1	(21,840)	165,895	-13.2%
Aug-09	1	23,725	132,478	17.9%
Sep-09	1	234,264	658,100	35.6%
Oct-09	1	77,317	210,695	36.7%
Nov-09	1	117,430	136,421	86.1%
Dec-09	1	166,475	331,062	50.3%
Jan-10	1	6,603	19,730	33.5%
Feb-10	0	--	--	--
Mar-10	1	28,700	65,700	43.7%
Apr-10	0	--	--	--
May-10	0	--	--	--
Jun-10	1	(2,333)	26,270	-8.9%