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Margin of Luck and Value of Information in Lottery Purchases in Thailand

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ABSTRACT: This paper investigates the rationality behind the superstitious behavior of Thai lottery gamblers who search for a lucky number in hopes to win the Last Two Digits Prize. It also finds whether the historical statistics from the previous 25 years of lottery draws can help to develop a winning strategy. As the findings show, some lottery numbers have certainly been drawn more than once for the Last Two Digits Prize in every 30 lottery rounds. It seems to be that having this statistical knowledge significantly increases the chance to win when considering the full range of prizes. However, given that the expected return is illusive, playing the lottery having this prior knowledge may turn out to be a loss. Evidently, statistics do not contribute to winning. The only way to win is to know at least one exact number of the two-digits combination that will win the Last Two Digits Prize. This knowledge, drawn on superstitious sources, certainly leads to a net gain in the lottery investment. The study concludes that the winning strategy exists but requires the number superstition which is beyond randomness. Therefore, the search behavior of Thai lottery gamblers who hold a belief in the number superstition is rational; it makes the lottery investment profitable in case the lucky number wins. Additionally, to cover the search cost, the lottery buyer needs to buy a set of multiple tickets with the same number in order to win higher prize money.

KEYWORDS: Rational behavior, Margin of luck, Value of information, Search cost

Introduction

Lottery gamblers in Thailand have various superstitious methods of finding lottery numbers. The most popular ones include tree rubbing to make the numbers appear, praying at holy shrines, and interpreting from dreams or messages believed to come with the appearance of strangely-handicapped animals. Some people memorize license plate numbers of recently-crashed cars, draw on magicians who play tricks around numbers or ask for lucky numbers from fortunetellers. Even incense smoke can be interpreted. Although seemingly strange and irrational, these are regular activities on which many Thai lottery gamblers are willing to spend money and time in order to search for luck. The

purpose of the search is most often to find an exact two-digits combination that wins the Last Two Digits Prize.

Considering this search as an investment, the cost may be too high to make it profitable even if finding the right number leads to victory. However, many Thais do not seem to stop searching using the abovementioned methods. This behavior signals that the search may be economically rational. The lucky number found may significantly increase the chance to win the lottery.

This study investigates whether that exact combination of the last two digits is worth the search activities and cost. It includes samples of lottery statistics from the last 25 years with 600 observations of lottery draws. It calculates the expected return from lottery purchases with prior information that some numbers can be drawn more than once. The expected return is compared with the lottery price to verify net benefits from the investment. Moreover, it compares various expected returns in the purchase scenarios with and without the prior information to calculate the margin of luck that a buyer has to risk his or her investment when following the belief. Finally, it calculates the value of information of that exact number that leads to the willingness to spend on the search.

Literature review

The search behavior of Thai lottery gamblers is concerned academically by Ariyabuddhiphongs (2006) who addresses cognitive bias in this behavior. According to his research, the lottery buyers have faulty cognition towards chasing particular numbers, hoping to win the lottery despite the slim chance. Even though this work does not directly mention the number superstition, it points out that those whose family members invest more in lottery purchases tend to do so believing there are exact numbers to be drawn in the next lottery round. In his later work, Ariyabuddhiphongs (2011) states that there is potential addictiveness among lottery buyers both in terms of spending money on lottery tickets and searching particular numbers in high hopes of winning.

Ideas for a lottery winning strategy are presented by many scholars. Chen (2013) devises the so called "Definite Structure Proportional Reduction" based on the mathematical logic of number combinations as a winning strategy. He mentions that buying lottery tickets is rather an investment than gambling. Abram and Garibaldi (2008) claim that some mathematics shows a positive rate of return from buying lotteries, and that the US lottery gamblers can potentially win by buying tickets in lotteries where the ticket sales are a small fraction of the jackpot. Moreover, they point out that buying out is another good strategy, but discourage readers to do so because of the huge amount of money needed for the investment.

Bescar and Zoltay-Paprika (2016) present an experiment with the "hidden lottery" game. They conclude that winners make conscious strategic decisions, instead of random choices, with geometric patterns of numbers when investing in lotteries. This work emphasizes that it is necessary to buy lotteries with consciousness rather than relying on randomness, and that winning is possible with the knowledge of some geometric patterns. Galbo-Jørgensen, Suetens and Tyran (2014) investigate the law of small numbers. They discover that gamblers tend to invest more into numbers that frequently appear in recent draws, a decision consistent with the "hot hand fallacy". Meanwhile, they tend to avoid betting on the number that has just won the lottery based on faulty reasoning called the "gambler's fallacy". Although these strategies do not guarantee a better outcome than that

based on randomness, they characterize gamblers' behavior which is learned through trials and errors.

However, some scholars do not believe in lottery investment. Allman (2005)'s study shows that buying lottery tickets yields only the negative value of expected return. Thus, spending more on them means the gambler is wasting more money instead of increasing the chance to win. Barclay (2008) mentions that lottery players do not think they are wasting money; they bet because they like the discussion over numbers and feel that betting gives them a little thrill of hope despite the slim chance to gain serious pay-offs.

Kearney (2005) admits that lottery gambling is part investment and part entertainment. In her former study (Kearney 2004), she explains that the demand for lottery depends on its expected rate of return. When a buyer spends more on lottery tickets, he or she reduces the expenditure of non-gambling products and not that of other forms of gambling. It means that the increase in the largest prize attracts more lottery spending even if the chance to win remains the same. Lottery players are not aware of this illusion, which may lead to them having the cognitive bias toward investing more into the lottery without having a larger chance to win. Moreover, the higher investment is based on reduced consumption, rather than coming from the investment pool that should be separated from consumption. Thus, lottery gambling is a possible harm to household economic security, especially when the chance to win is small. This is dangerous for the lowest socioeconomic group in the society which, according to Barnes et al (2011)'s telephone surveys, accounts for the majority of lottery gamblers. In sum, this kind of pure entertainment and bad investment is likely to make the poor poorer and income distribution even worse.

History of lottery gambling in Thailand

Thailand first launched lottery around 1832 in the reign of King Rama III to encourage more spending into the circular flow of the Siamese economy. Another purpose was to increase the fiscal budget for the royal treasury as the winning odds spontaneously went to the lottery issuer. Lottery gambling has been popular among Thais since. Until now, the control over lottery issuing and drawing has been monopolized by the government. The Government Lottery Office, a modern government agency, was established in 1974 to take control of lottery administration and regulation.

Currently, a lottery ticket contains a six-digit number. The First Prize promises as much as six million Baht per ticket, won by matching all six digits in correct order (Table 1). The Special Prize worth 100,000 Baht is given to two winners whose tickets match the two neighboring numbers of the First-Prize winning numbers. For the Second Prize, five sets of numbers are drawn, each valuing 200,000 Baht. Ten numbers are drawn for the Third Prize which is worth 80,000 baht. There are 50 and 100 winning numbers for the Fourth and Fifth prizes, each worth 40,000 and 20,000 Baht, respectively, so the chance to win these prizes increases.

The last three prizes are the highlight of every lottery draw: the First Three Digits Prize, the Last Three Digits Prize, and the Last Two Digits Prize. For the First Three Digits Prize worth 4,000 Baht, two six-digit numbers are drawn. Players win by matching the first three digits. This is the same for the Last Three Digits Prize, except winning requires a match of the last three numbers. The Last Two Digits Prize is considered the climax of each lottery round given the greatest chance to win: matching the last two digits in the only six-digit number drawn for a prize worth 2,000 Baht.

Table 1. Lottery prizes in Thailand

Prize	Payout per ticket (Thai Baht)	Number of draws per round
First Prize	6,000,000	1
Special Prize (Neighboring Numbers Prize)	100,000	2
Second Prize	200,000	5
Third Prize	80,000	10
Fourth Prize	40,000	50
Fifth Prize	20,000	100
First Three Digits Prize	4,000	2
Last Three Digits Prize	4,000	2
Last Two Digits Prize	2,000	1

Source: *The Government Lottery Office, September 2017*

The lottery round is scheduled on the 1st and 16th of every month, except for January 1st whose draw is made on December 30th so as to avoid the New Year holiday. The round on May 1st, the Labor Day, is also moved to May 2nd.

One lottery ticket with a six-digit number can be printed for up to 40 copies. This means buyers can buy the same six-digit number and win a prize worth a multiplied amount. They may buy a lot of tickets with the same number, hoping to win folds of the prize in case that number becomes the lucky one.

Search cost, value of information and margin of luck

An individual may spend time and cost searching for a piece of information. However, the search is not always successful. The benefit of the search appears in the form of an expected return which is the full benefit weighted by the probability of discovering the information. When the individual believes that the expected return is higher than the costs, he or she performs the search.

The value of information is calculated based on the difference between benefits with and without the information. A huge difference attracts an individual to the search bearing high search costs. A small difference may discourage him or her from the search. An indifferent benefit makes the search unnecessary.

The margin of luck is an essential part of lottery gambling. It is the difference between the expected return and the cost when the cost surpasses the expected return. Without luck, the lottery investment definitely yields loss. For example, if the expected return is 78 Baht when the cost is 80 Baht per ticket, the margin of luck is 2 Baht. It is difficult to interpret whether this absolute value of margin is high or low, unless the value is understood in relation to the cost. From this example, the margin of luck is 2/80. It means that in the investment of 80 Baht, the buyer needs fortune in order to have 2 Baht added to the return. This 2 Baht does not naturally appear, but comes from pure luck. The higher margin of luck leads to the higher risk and loss.

The margin of luck can also be viewed as the additional probability to win the lottery. For example, when the expected return is 20 Baht, based on (1/100)*2,000 Bath, with a cost of 80 Baht, the margin of luck is 60 Baht, representing the difference between the expected return and the cost. This additional 60 Baht can only come from the increase of probability from 1/100 to 4/100 that yields the expected return of (4/100)*2,000 which

equals 80 Baht. The additional probability is 3/100. Therefore, the margin of luck is three times the usual probability to win the lottery.

Methodology

Three experiments are conducted under this study. The first experiment is concerned with calculating the base case of the expected return from buying a lottery ticket, taking into account the full range of the prizes. The second investigates the possibility of a winning strategy by looking at the statistics of the Last Two Digits Prize from 600 lottery draws in Thailand in the last 25 years. The third involves a calculation to find out whether knowing an exact number in the last two-digits combination definitely leads to victory.

The calculations are based on these following assumptions:

(1) This study considers only the government's legal lottery tickets, each of which coming with a six-digit number.
(2) A person buys x number of the winning lottery tickets. The payout is multiplied by x. The maximum value of x is 40.
(3) One lottery ticket costs 80 Baht, priced by the Government Lottery Office as of September 1st, 2017.
(4) The payouts are based on the Government Lottery Office's announcement as of September 2017 as shown in Table 1.

Results

The results of the three experiments are presented below.

Experiment 1: The base case calculated from the full range of the prizes

The expected return when a person purchases a lottery ticket, considering the full range of the prizes, is shown as follows:

$$E(r) = \left(\frac{1}{100}\right)2{,}000x + \left(\frac{2}{1{,}000}\right)4{,}000x + \left(\frac{2}{1{,}000}\right)4{,}000x + \left(\frac{100}{1{,}000{,}000}\right)20{,}000x + \left(\frac{50}{1{,}000{,}000}\right)40{,}000x + \left(\frac{10}{1{,}000{,}000}\right)80{,}000x + \left(\frac{5}{1{,}000{,}000}\right)200{,}000x + \left(\frac{2}{1{,}000{,}000}\right)100{,}000x + \left(\frac{1}{1{,}000{,}000}\right)6{,}000{,}000x$$

The cost of lottery buying can be represented by $C = 80x$.

The ratio of the expected return to the cost is illustrated as follows:

$$\frac{E(r)}{C} = \frac{(20 + 28)}{80} = 0.60$$

The ratio of expected return to the cost indicates that a spending of 80 Baht for a lottery ticket yields only 48 Baht in return. This amount can be decomposed into two terms, the

first 20 Baht is from the Last Two Digits Prize and the second 28 Baht is from other prizes. The net loss is 32 Baht or 40 per cent. Fundamentally, lottery gambling is not an economically rational investment as the investor would certainly throws 40 per cent of his or her money away.

Experiment 2: A search for a winning strategy through an investigation of the historical data

The historical data from the last 25 years featuring 600 observations show that the winning numbers often repeated. Focusing on the last two digits, the results in Table 2 reveal that in every 30 rounds of lottery, it is certain that at least two of the 30 numbers were the same. This is crucial information concerning the lottery investment in Thailand: the odd ratio is significantly reduced from 1/100 to 1/29 for the next draw.

To clarify this calculation, the number 29 counts from only 29 unique numbers including in the current batch of 30 numbers where two numbers are the same. There are two possible cases to calculate this probability when the next draw is believed to repeat one of the of this. First, in the first case if one of the repeated numbers in this batch of 30 numbers appears first before other numbers, the remaining numbers are all unique 29 numbers which means that the chance for the next draw must be one of these 29 numbers, thus the probability is 1/29. Second, if the couple of repeated numbers are located at other places apart of the first place in this 30-day series, there are only 28 unique numbers that must appear in the next draw which makes the probability reduce to 1/28. However, to be more conservative, the less probability should be chosen, therefore the chance to win the last two digits in the next draw given the information from the prior 29 draws is 1/29 or around 0.0345.

In addition, when the rolling window is shrunk to 25 and 20 rounds, the probability slightly decreases to around 0.97 and 0.86, respectively. When the rolling windows are smaller at 15, 10 and 5 rounds, the probability decreases to 0.62, 0.33 and 0.08, respectively.

Table 2. The occurrence of at least a single repeat of the winning last two-digit numbers in the past 25 years

Number of rounds as observed by the rolling window method	Total events	Events where the same last two-digit numbers repeat	Probability of repeat
5	589	48	0.081494
10	584	194	0.332190
15	579	363	0.626940
20	574	491	0.855400
25	569	553	0.971880
30	564	564	1.000000

Source: *Own calculation in Octave using the data from the Government Lottery Office until September 16th, 2017*

To ensure that the probability synchronizes with the recent lottery draws, in the next calculation, only the data from last five years are considered. As a result, an even greater probability is observed as shown in Table 3. The same winning numbers repeat at least once in 30 rounds and, surprisingly, in 25 rounds. The probability remains high at 0.97 and 0.79 when the rolling windows are shrunk to 20 and 15 rounds, respectively. However, the probability at the window sizes of 10 and 5 is 0.45 and 0.08, respectively, which is not much different from that of the 25-year data.

Table 3. The occurrence of at least a single repeat of the winning last two-digit numbers in the past 5 years

Number of rounds as observed by the rolling window method	Total events	Events where the same last two-digit numbers repeat	Probability of repeat
5	116	10	0.086207
10	111	50	0.450450
15	106	84	0.792450
20	101	98	0.970300
25	96	96	1.000000
30	91	91	1.000000

Source: *Own calculation in Octave using the data from the Government Lottery Office until September 16th, 2017*

It is interesting to see further whether the repeat of the last two-digit numbers occurs more than once in the specified period. In the last 25 years, Table 4 shows that the probability of a double repeat is as high as 0.95 in each 30 rounds. However, in the last five years, a double repeat exactly occurs in every 30 rounds as shown in Table 5. Even the probability of double repeat in 25 rounds is as high as around 0.92.

Table 4. The occurrence of at least a double repeat of the winning last two-digit numbers in the past 25 years

Number of rounds as observed by the rolling window method	Total events	Events where the same last two-digit numbers repeat	Probability of repeat
5	589	0	0.000000
10	584	15	0.025685
15	579	101	0.174440
20	574	276	0.480840
25	569	444	0.780320
30	564	537	0.952130

Source: *Own calculation in Octave using the data from the Government Lottery Office until September 16th, 2017*

Table 5. The occurrence of at least a double repeat of the winning last two-digit numbers in the past 5 years

Number of rounds as observed by the rolling window method	Total events	Events where the same last two-digit numbers repeat	Probability of repeat
5	116	0	0.000000
10	111	8	0.072072
15	106	40	0.377360
20	101	65	0.643560
25	96	88	0.916670
30	91	91	1.000000

Source: *Own calculation in Octave using the data from the Government Lottery Office until September 16th, 2017*

For the double repeat, in the current 30-day series, there are two pairs of the same numbers which means that only 28 unique numbers are left. There are two possible cases for the calculation of probability. First, if one of the repeated numbers are located at the beginning of the series, there are 28 unique numbers left in the rest of 29 numbers. One of these 28 numbers is believed to be repeated in the next draw, then the probability is 1/28. Second, if the repeated numbers are located at some positions else, the unique numbers are reduced into 27 in 29 numbers. The probability increases to 1/27. However, by the conservative calculation with the less probability, therefore, the chance to win the last two digits prize becomes 1/28 or around 0.0357.

The next question is whether a triple repeat is possible. Results in Table 6 and 7 show that there is a high chance of a triple repeat. The probability in the data from the last 25 years is around 0.82 and from the last 5 years around 0.91. To calculate the probability of this triple repeat, there are two possible cases. First, if one of the repeated numbers are located at the beginning of the 30-day series, there are 27 unique numbers remained in the rest 29 numbers. Thus, one number will be repeated in the next draw by the chance of 1/27 times 0.91 which equals 0.0337. Second, if the repeated numbers are located in other places apart of the beginning of the series, there are 26 unique numbers left. The probability in this case increases to 1/26 times 0.91 which equals 0.0349. However, the conservative calculation by the less probability indicates that the chance to win the last two-digits prize is 0.0337.

Table 6. The occurrence of at least a triple repeat of the winning last two-digit numbers in the past 25 years

Number of rounds as observed by the rolling window method	Total events	Events where the same last two-digit numbers repeat	Probability of repeat
5	589	0	0.000000
10	584	2	0.003425
15	579	19	0.032815
20	574	101	0.175960
25	569	300	0.527240
30	564	462	0.819150

Source: *Own calculation in Octave using the data from the Government Lottery Office until Sept. 16th, 2017*

Table 7. The occurrence of at least a triple repeat of the winning last two-digit numbers in the past 5 years

Number of rounds as observed by the rolling window method	Total events	Events where the same last two-digit numbers repeat	Probability of repeat
5	116	0	0.000000
10	111	2	0.018018
15	106	9	0.084906
20	101	37	0.366340
25	96	67	0.697920
30	91	83	0.912090

Source: *Own calculation in Octave using the data from the Government Lottery Office until September 16th, 2017*

Regarding a quadruple repeat, the results in Table 8 and Table 9 suggest that the event has a little chance to occur. The probability in the data from the last 25 years is as low as 0.63 while that from the last 5 years is around 0.71. Consequently, the conservative calculation of the chance to win the last two digits is 1/26 times 0.71 which equals 0.0273.

Table 8. The occurrence of at least a quadruple repeat of the winning last two-digit numbers in the past 25 years

Number of rounds as observed by the rolling window method	Total events	Events where the same last two-digit numbers repeat	Probability of repeat
5	589	0	0.000000
10	584	0	0.000000
15	579	5	0.008636
20	574	44	0.076655
25	569	156	0.274170
30	564	355	0.629430

Source: *Own calculation in Octave using the data from the Government Lottery Office until September 16th, 2017*

Table 9. The occurrence of at least a quadruple repeat of the winning last two-digit numbers in the past 5 years

Number of rounds as observed by the rolling window method	Total events	Events where the same last two-digit numbers repeat	Probability of repeat
5	116	0	0.000000
10	111	0	0.000000
15	106	5	0.047170
20	101	19	0.188120
25	96	45	0.468750
30	91	65	0.714290

Source: Own calculation in Octave using the data from the Government Lottery Office until Sept. 16th, 2017

In search for a winning strategy based on the information of repeats in lottery numbers, the expected returns in the cases of single, double, triple and quadruple repeats are displayed in Table 10.

Table 10. Expected returns from buying every possible lottery number with prior information of repeats in the last two digits considering the full range of prizes

Types of repeat	Number of unique numbers (Numbers)	Expected return from the last two digits prize (Baht)	Expected return from other prizes (Baht)	Total expected return (Baht)	Cost of lottery purchase (Baht)	Ratio of expected return to cost
Single repeat	29	(29/29)*1*2,000 = 2,000	29 numbers *28 Baht = 812 Baht	2,812	2,320	1.21
Double repeat	28	(28/28)*1*2,000 = 2,000	28*28 = 784	2,784	2,240	1.24
Triple repeat	27	(27/27)*0.91*2,000 = 1,820	27*28 = 756	2,576	2,160	1.19
Quadruple repeat	26	(26/26)*0.71*2,000 = 1,420	26*28 = 728	2,148	2,080	1.03

Source: *Own calculation*

Table 11. Expected returns from buying one lottery number with prior information of repeats in the last two digits considering the full range of prizes

Types of repeats	Number of tickets to be bought (Numbers)	Expected return from the Last Two Digits Prize (Baht)	Expected return from other prizes (Baht)	Total expected return (Baht)	Cost of lottery purchase (Baht)	Ratio of expected return to cost
Single repeat	1	(1/29)*1*2,000 = 68.97	28	96.97	80	1.21
Double repeat	1	(1/28)*1*2,000 = 71.42	28	99.42	80	1.24
Triple repeat	1	(1/27)*0.91*2,000= 67.40	28	95.40	80	1.19
Quadruple repeat	1	(1/26)*0.71*2,000= 54.61	28	82.61	80	1.03

Source: *Own calculation*

It seems to be that prior knowledge of repeats in the last two-digit numbers can be a basis for a winning strategy. The net gain ranges from 3 per cent to 24 per cent depending on the types of repeats. However, two things must be cautioned. First, this strategy requires that no repeat of the same type occurs in between the previous 29 lottery rounds. Otherwise, there will be no repeat in the next round. Second, the expected return may actually be illusive when all the prizes offered are taken into account. Imagine that the first prize is raised to 12 million Baht instead of 6 million Baht, the expected return spontaneously increases. However, the chance to win the first prize remains relatively low at one to million. The illusive expected return may draw a lottery buyer to overinvest. Without the illusion, only the expected returns from the Last Two Digits Prize as shown in Table 10 and 11 should be counted. In these cases, apparently all types of repeats yield the expected

returns below the cost. The implication of the results is crucial: the seemingly winning strategy is most likely to bring loss. By all means, prior knowledge of repeats does not boost the chance of winning the lottery.

Experiment 3: The number superstition

Many Thai lottery gamblers rely on their superstitious search for an exact number which they believe will appear in the last two digits of the drawn lottery number. For example, if they believe 5 will be the lucky number, they will buy the tickets on which the last two digits contain a combination of 5 and every other number (05, 15, 25, 35, 45, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 65, 75, 85, and 95). They will buy 19 lottery numbers in total. If 5 actually turns out to be the winning number, the probability to win the Last Two Digits Prize increases to 1/19. The expected return can be calculated as shown in Table 12.

Table 12. Expected returns from lottery purchase with prior information of a lucky number

Number of tickets to be bought (Numbers)	Expected return from the Last Two Digits Prize (Baht)	Expected return from other prizes (Baht)	Total expected return (Baht)	Cost of lottery purchase (Baht)	Ratio of expected return to cost
19	(19/19)*1*2,000 = 2,000	19*28 = 532	2,532	1,520	1.67
1	(1/19)*1*2,000= 105.26	28	133.26	80	1.67

Source: *Own calculation*

According to the analysis, investing in the lottery with the knowledge of an exact number in the combination of the last two digits leads to a net gain in both the case of the full-range prizes and the case of the Last Two Digits Prize. If the belief in that exact number becomes true, the buyer will surely gain from the lottery investment. The rate of return is as high as 67 per cent.

Every copy of lottery tickets brings about 25.26 Baht in net gain, taking into account only the benefit from the Last Two Digits Prize, i.e. 105.26 minus the cost of 80 Baht. The gain increases from minus 32 Baht which is the base case as calculated in Experiment 1. It means that the additional benefit from the number superstition is 57.26 Baht, i.e. 25.26 Bath plus 32 Baht. This is the value of information of the exact number.

In order to tell whether the investment is worthy, the search cost in cash must be taken into account and compared with the net gain. For a profitable investment, the search cost must be below 25.26 Baht which seems to be unrealistic because the actual search activities could be much more expensive. For example, to pray at a shrine for a lucky number, a person needs to buy flowers, candles and incense sticks which cost around 100 Baht. Therefore, to cover the search cost, that person needs to buy at least a set of four lottery tickets with the same number. In reality, it is regular to find Thai gamblers buying a set of at least 5 tickets, and up to 20 tickets, of the same number.

Conclusions

This paper demonstrates how the number superstition, which involves Thai lottery gamblers searching for an exact number in the combination of the last two digits, is rational. Apparently, having prior statistical knowledge in the previous winning numbers

does not increase the chance of winning the lottery in Thailand. The only possible way to win is to know which number will be drawn for the Last Two Digits Prize. This winning strategy goes beyond luck and randomness, as it depends on a superstitious belief in the lucky number. Many Thai gamblers form their expectation based on such belief which actually brings a potential for a profitable investment. The superstitious search is, therefore, economically rational.

This study also explains the reason behind the behavior of buying more than one lottery ticket of the same number. While searching for the lucky number, a person bears the transaction cost which should be below the prize money he or she is expecting. The higher the transaction cost, the more the person needs to cover the cost by expecting to win a greater amount of prize from buying multiple tickets in case he or she is lucky enough.

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