



Gambling Behavior and Lotto Participation in Iceland: A Comparison before and after the Economic Collapse in 2008

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Foreword and Acknowledgements

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Abstract - English

Gambling is popular all over the world and the accessibility to gambling has become more convenient and widespread with the advent of the Internet. The main aim of this study was to examine gambling behavior on the Icelandic national lottery (Lottó 5/40), before and after the economic collapse in Iceland 2008. The purpose was also to examine the effects of the jackpot size on participants' purchases. The current study used data from the Icelandic Lottery and Sports betting database. Participants were a total of 8,867 Icelanders who bought a Lotto ticket on the Icelandic Lottery and Sports betting website during a certain period of time. The sample contained 5,725 males (64.6%) and 3,142 females (35.4%). Results showed that there were more purchases in 2011 than in 2007, whether the jackpot was single, quadruple or sixfold. Most participants bought Lotto when the jackpot was sixfold. Moreover, it was found that males purchased more rows and tickets than females. Overall, these results underline earlier findings obtained from self-reports and suggest that economic crisis influence gambling behavior.

Keywords: gambling, lotto, economic crisis, Iceland

Abstract - Icelandic

Fjárhættuspil eru vinsæl um allan heim og hefur aðgengi að þeim orðið mun útbreiddara með tilkomu Internetsins. Meginmarkmið þessarar rannsóknar var að kanna spilahegðun íslendinga í Lottó (Lottó 5/40), fyrir og eftir efnahagshrunið á Íslandi árið 2008. Markmiðið var einnig að kanna áhrif af stærð Lottópottar á kaup þátttakenda. Gögn voru fengin frá gagnabanka Íslenskrar getspár og Íslenskra getrauna. Þátttakendur voru alls 8.867 Íslendingar sem höfðu keypt sér Lottó miða á heimasíðu Íslenskrar getspár og Íslenskra getrauna á ákveðnu tímabili. Úrtakið innihélt 5.725 karla (64,6%) og 3.142 konur (35,4%). Niðurstöður sýndu að lottóspilarar keyptu fleiri raðir árið 2011 heldur en þeir gerðu árið 2007, hvort sem Lottópotturinn var einfaldur, fjórfaldur eða sexfaldur. Flestir keyptu sér Lottó miða þegar Lottópotturinn var sexfaldur. Þar að auki sýndu niðurstöðurnar að karlar keyptu fleiri raðir heldur en konur. Á heildina litið endurspeglar þessar niðurstöður fyrri rannsóknir sem byggjast á sjálfsmati og benda til þess að efnahagshrunið hefur haft áhrif á spilahegðun.

Lykilhugtök: fjárhættuspil, lottó, efnahagskreppa, Ísland

Gambling Behavior and Lotto Participation in Iceland: A Comparison Before and After the Economic Collapse

Over the last several years, gambling has become more widespread and popular. Gambling is when an individual places value upon a game or a bet of any type (for instance a lottery or a sports game) that has an unpredictable outcome and the result is to some magnitude determined by chance (Raylu & Oei, 2002).

The law structure around gambling in Iceland is relatively young compared to many other European countries (Olason & Gretarsson, 2009). The first gambling law in Iceland was adopted by the Icelandic Parliament in 1926 (Lotteries and Tombolas Act No. 6/1926). There the legislator stated that it was illegal to run gambling in Iceland without license from the Ministry of Justice and Ecclesiastical Affairs. Furthermore all foreign gambling forms were illegal as well. The University of Iceland Lottery was founded back in 1933 and its first draw was held on March 10, 1934. Nowadays, a number of different types of gambling have been legislated in Iceland, all by special law (Olason & Gretarsson, 2009) and the operation of all legal gambling forms in Iceland is restricted to non-governmental institutions or charities (Olason et al., 2011). The gambling market in Iceland today consists of slot machines, bingo, scratch cards, lotteries, football pools (running odds) and sports betting (fixed odds and live betting) (Olason & Gretarsson, 2009).

Íslenskar getraunir (“Saga Íslenskra getrauna,” n.d.) has a license from 1969 and are owned by the Sports movement in Iceland (90%) and the State Sports Committee (10%). They run Football pools (1X2), Odd set and Sports betting games. Íslensk getspá (“Saga Íslenskrar getspár,” n.d.) has a license from 1986 for number games and are running Lotto 5/40, Joker, Viking Lotto and Euro Jackpot. Most gambling activities in Iceland do not have legal age restriction for participation except

for slot machines, which you have to be 18 years or older to gamble on (Ólason & Grétarsson, 2009). On the other hand, a few gambling operators have set their own age restrictions, for example, you must be 18 years old to buy lottery tickets, scratch cards and to bet on sport.

A study by Ólason et al. (2006) on gambling behavior and problem gambling among 3,511 13 to 15 year old Icelandic adolescents revealed that 93% of the sample had gambled at least once in their life. Furthermore, 70% of adolescents had gambled at least once in the past year. The most popular form of gambling for adolescents were scratch tickets, slot machines and Lotto. A similar study was conducted on gambling and problem gambling among 1,513 students in Iceland aged 16 to 18 years old (Baldursdóttir, Ólason, Grétarsson, Davíðsdóttir, & Sigurjónsdóttir, 2008). Findings indicated that 62% of the sample had gambled at least once in the preceding year. The most popular gambling activities among the adolescents were gambling machines, scratch tickets, games of skill and poker. In this study, 3% of the sample were identified as problem gamblers. Problem gambling prevalence was evaluated with the DSM-IV-MR-J (Fisher, 2000).

In 2007 an epidemiological research was conducted on 3,009 adults, aged 18 to 70 years old, from Iceland (Ólason, 2008). The aim of the study was to examine gambling behavior and prevalence of gambling addiction. Overall, 67% of the sample reported gambling at least once in the past year and 13% of the sample reported gambling weekly. The most common gambling form was the lottery, scratch cards and slot machines (Ólason, 2008). A similar epidemiological research on gambling behavior and prevalence of gambling addiction was performed in 2011, on 1,887 Icelandic adults aged 18-70 years old (Ólason, 2012). Results indicated that 76% of the sample had gambled at least once during the previous 12 months. Consistent with

the findings from 2007, the most popular form of gambling was lotto, scratch cards, poker and slot machines. Compared to the results from the 2007 research, the results indicated that gambling participation had increased in 2011 compared to 2007 (Ólason, 2008, 2012).

A survey was conducted on gambling behavior in 1999 to 2000 with a representative sample of 2,630 U.S. residents aged 18 or older (Welte, Barnes, Wieczorek, Tidwell, & Parker, 2002). Overall, 82% of respondents gambled in the year prior to the interview. The most commonly played game and the most frequent type of gambling was the lottery. A large part of the sample (66%) played the lottery in the past year and 13% played it weekly or more often.

Internet Gambling

With the gambling activities now on the Internet, researchers are concerned about the accessibility and ease of gambling, where gambling is highly accessible on the Internet (Griffiths & Barnes, 2008), whereas websites operates 24 hours a day, 7 days a week (Gainsbury, Wood, Russell, Hing, & Blaszczynski, 2012). This 24/7 accessibility challenges a jurisdiction's capacity to control gambling when individuals are gambling from their home or from work through the Internet (Phillips, Ogeil, Chow, & Blaszczynski, 2013). For example, recent studies examining Internet gambling, revealed that participants reported that the main reasons for their online gambling was convenience, not having to leave the house to play, accessibility and comfort (McBride & Derevensky, 2009; McCormack, Shorter, & Griffiths, 2014). Studies on Internet gambling (Gray, Jónsson, LaPlante, & Shaffer, 2013; Griffiths, Wardle, Orford, Sproston, & Erens, 2009; McBride & Derevensky, 2009) have suggested that Internet gambling is more common among males than females. McCormack et al. (2014) conducted a survey on 975 online gamblers in order to

examine gender differences in Internet gambling. The results are consistent with previous research (Gray et al., 2013; Griffiths et al., 2009; McBride & Derevensky, 2009) that indicates that Internet gamblers are more likely to be male. Olason et al. (2011) examined gambling behavior among 13 to 18 year old adolescents in Iceland. This study studied both land-based and Internet based gambling behavior. The results indicated that boys were more likely to have gambled on the Internet than girls. The results also showed that in the school year of 2007-2008 56.6% of the participants had gambled at least once in the past 12 months and 24.3% of the sample had gambled on the Internet. The overlap between land-based gambling and Internet gambling showed that the majority of those who gambled on the Internet also gambled on land-based games (95.1%), however, only 42.1% of those who gambled on land-based games also gambled on the Internet (Olason et al., 2011).

In a recent study on Internet gambling behavior, Gray et al. (2013) used a cohort of 398 Icelandic residents who subscribed to betting service provider, Íslensk Getspá from January 1, 2010 through December 31, 2011. The results indicated that the typical subscriber betted about three days per month and most subscribers made fewer than two bets per gambling day. In addition, they found that the lottery games were more popular among the subscribers than the sports betting games in terms of total number of active players. However, subscribers did spend a smaller amount per bet on lottery games than sports betting games. Subscribers also purchased the lottery less frequently than sports bets.

Lottery Gambling

Gambling activities, like lotteries, require a small investment for the possibility of a large wins and a great financial gain. Lotteries are perceived as socially acceptable, rather affordable and easily accessible (Hardoon, Baboushkin,

Derevensky, & Gupta, 2001). Unlike other gambling activities, lotteries do not require specific knowledge to be able to participate (Perez & Humphreys, 2013). According to Mizerski et al. (2004), lottery gambling has been described as the softest form of gambling where there is usually only one or two draws a week (Wood & Griffiths, 1998). It has been argued that individuals with lower income are especially drawn to lottery participation because they see the lottery as a great chance to get wealthier (Turner, 2010) and as an opportunity to improve their standard of living (Blalock, Just, & Simon, 2007). Research has shown that individuals with lower income spend more on lottery tickets than those with higher income (Beckert & Lutter, 2013). For example, Layton and Worthington (1999) examined the impact of socio-economic factors on gambling expenditures of 8389 Australian households. Their results are consistent with previous research (Blalock et al., 2007; Kearney, 2005; Turner, 2010) that individuals with lower income and who belong to minority groups spend a higher percentage of their wealth on lottery tickets.

In general, as in the case for Lotto 5/40, if no player wins the jackpot by matching all the five winning numbers correct, then the jackpot prize money is rolled over into the next week's jackpot (Beenstock, Goldin, & Haitovsky, 2000; DeBoer, 1990; Perez & Humphreys, 2013; Walker & Young, 2001). This phenomenon is known as a rollover. The combined jackpot prize money is rolled again over into the next lottery draw until someone matches all the winning numbers exactly (Beenstock et al., 2000). Lottery jackpot prizes can, therefore, become quite large from time to time. Large lotto jackpots result from continuous rollovers (DeBoer, 1990; Matheson & Grote, 2004). Beenstock and Haitovsky (2001) found that rollovers in lottery had a positive effect on demand. In addition, the rollover induced excitement for customers and interest in the game. Several studies have been conducted to examine the relation

between the size of the jackpot and revenues for lottery draws. They all have the same outcome; a higher lottery jackpot induces more lottery sales (Forrest, Simmons, & Chesters, 2002; Garrett & Sobel, 2004; Kearney, 2005; Matheson & Grote, 2003). Garrett and Sobel (2004) argue that game characteristics, for example the value of the top prize or the total number of combinations, are important for predicting lottery revenues. Their findings indicated that lottery ticket sales for big jackpot games were influenced by the size of the top prize.

Olason et al. (in press) conducted a study where they reported on the results from three national prevalence studies that were conducted in Iceland in 2005, 2007 and 2011. They examined the potential effects of the economic collapse in 2008 on gambling participation and problem gambling on 8,249 participants (aged 18-70) by comparing results from the 2005 and 2007 studies with results from the 2011 study. The results from this study which were obtained from self-reports showed an increase of total gambling participation of 51% between 2005/2007 and 2011 for most gambling types. The results also showed that those participants who had financial difficulties in 2011 were 52% more likely to buy lottery tickets than those who had no financial difficulties (Olason et al., in press).

The aim of this study was to examine gambling behavior on the Icelandic national lottery (Lottó 5/40) website before and after the economic collapse in Iceland in 2008. The Icelandic Lotto has not been studied with actual data before. It was hypothesized, based on previous findings from self-reports (Olason et al., in press), that there were more purchases of lottery rows after the economic collapse than before the economic collapse. The second hypothesis was that there were more rows purchased when there was a larger jackpot. The third hypothesis was that males purchase more rows than females.

Method

Participants

Included in the study were all individuals who bought an Icelandic national lottery ticket (Lottó 5/40) on the Icelandic Lottery and Sports betting website (www.lotto.is) over three weeks in 2007 and three weeks in 2011. There was a single lottery jackpot in one week each year, a quadruple lottery jackpot in another week and a sixfold lottery jackpot in the third each year. In 2007 there was a single jackpot 19 times, a quadruple jackpot eight times and sixfold jackpot only one time. In 2011 there was a single jackpot 17 times, a quadruple jackpot seven times and a sixfold jackpot two times. The total number of lottery buyers was 8,867, 5,725 males (64.6%) and 3,142 females (35.4%). The youngest participant was 18 years old (born in 1993) and the oldest one 85 (born in 1922). The mean age was a little above 40 years where males were about one year older than females. To be able to buy lottery tickets, or to gamble online, all individuals must subscribe to the Icelandic Lottery and Sports betting website and provide an Icelandic social security number and a credit card. In Iceland you must be 18 years or older to buy lottery tickets and scratch cards.

Measures

The independent variables include gender (males and females), the size of the lottery jackpot (single, quadruple and sixfold), year of purchase (2007 and 2011) and age. The dependent variables were the number of lottery rows purchased and number of tickets purchased.

Procedure

The data for the current study were obtained from the Icelandic Lottery and Sports betting database. It was gathered through Betware, which is a gaming platform provider that stores the data. To obtain the data, researchers had to define the

parameters for this study, which were gender, age, time frame and the size of the lottery jackpot. Furthermore, the data were gathered only from individuals who bought the Icelandic lottery ticket. The time frame that was selected were three separate weeks in 2007 (before the economic collapse) and three separate weeks in 2011 (after the economic collapse). The three-week period in 2007 was chosen when there was a single lottery jackpot (week 4-10 of February), a quadruple lottery jackpot (week 12-18 of August) and a sixfold lottery jackpot (week 2-8 of December). The three-week period in 2011 was also chosen when there was a single lottery jackpot (week 6-12 of March), a quadruple lottery jackpot (week 31 July-6 of August) and a sixfold lottery jackpot (week 4-10 of December). These particular weeks were selected as they were at a similar time both years.

Statistical Analysis

The data were analyzed with SPSS version 20. Word and Excel were used to design figures and tables. Birth year was transformed into age at the year of 2007 and also age at the year of 2011. Descriptive statistics were performed for all the variables. A t-test was computed, however, as there are numerous participants, a marginal difference between means is significant. This causes the emphasis to be on descriptive difference between means rather than inferential statistics.

Results

Numbers of buyers are shown in Table 1, broken down by gender, year and jackpot size. There were more males than females who bought lottery tickets both years, regardless of whether there was a single jackpot, quadruple jackpot or sixfold jackpot. As can be seen, there were considerably more buyers in 2011 than in 2007. Also, the higher the jackpot, the more purchases can be observed.

Table 1

Number of Buyers by Jackpot Size, Year and Gender

Size of the jackpot	Gender	2007	2011
		<i>n</i>	<i>n</i>
Single jackpot	Male	276	794
	Female	127	381
Quadruple jackpot	Male	777	1927
	Female	426	895
Sixfold jackpot	Male	2082	3682
	Female	1009	1876

As can be seen in Figure 1, the number of purchased tickets was almost twice as high in 2011 as in 2007. For the three weeks in 2007 participants bought 6,643 tickets and 12,780 tickets for the three weeks in 2011. However, a single lottery ticket can consist a various numbers of rows.

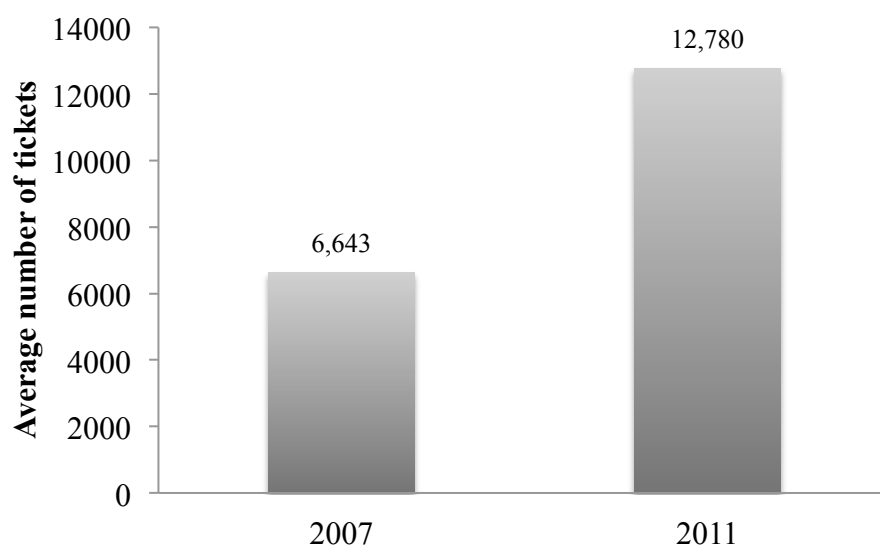


Figure 1. Number of purchased tickets for three weeks in 2007 and three weeks in 2011.

Figure 2 displays the average number of purchased rows per participant by year and jackpot size. There is a little difference in terms of purchased rows between years on one hand and between the size of the jackpot on the other hand. However, there were considerably more rows purchased on the average when there was a sixfold jackpot in 2007 than for the sixfold jackpot in 2011. Although the average number of rows for a sixfold jackpot in 2007 was higher than in 2011, it does not mean that there was more buying in 2007, as there were more people who bought lottery tickets in 2011. As shown, the two lines are not parallel, which indicates that there is an interaction effect between the size of the jackpot and the years on the number of rows purchased.

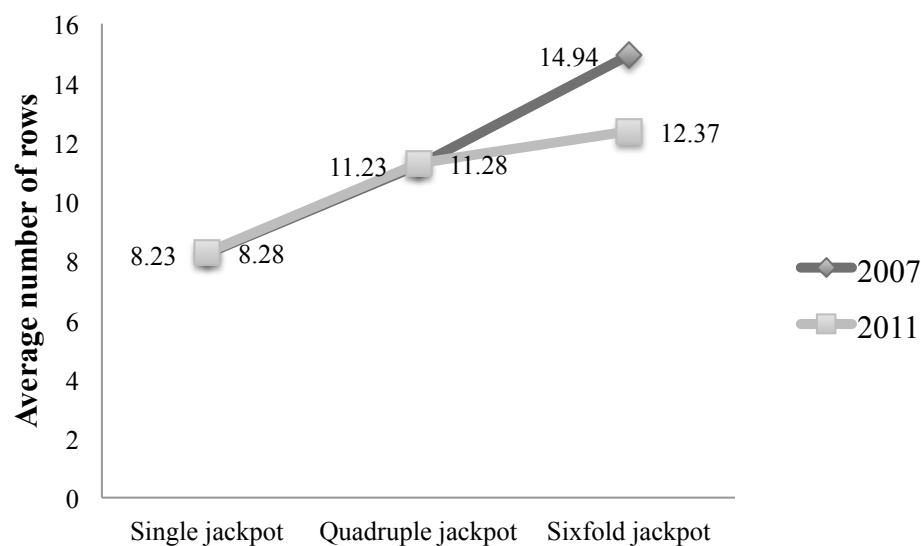


Figure 2. Average number of purchased rows by jackpot size and year.

Figure 3 shows the average rows purchased in 2007 and 2011 depending on gender and the size of the jackpot. For example, a clear difference can be seen in rows purchased among males and females when there was a sixfold jackpot in 2007 compared to a sixfold jackpot in 2011. As can be seen in Figure 3, a difference was found between males and females, where males bought more rows on average than

females. The difference between males and females on average number of rows purchased was evaluated by comparing the average number of rows purchased with the size of the jackpot and year of purchase. Not only did males buy more rows each time on average, but also generally more males bought lottery ticket. During these six weeks, males bought on average over 138 thousands rows (138,937) and females only about 54 thousands rows (53,788) on average.

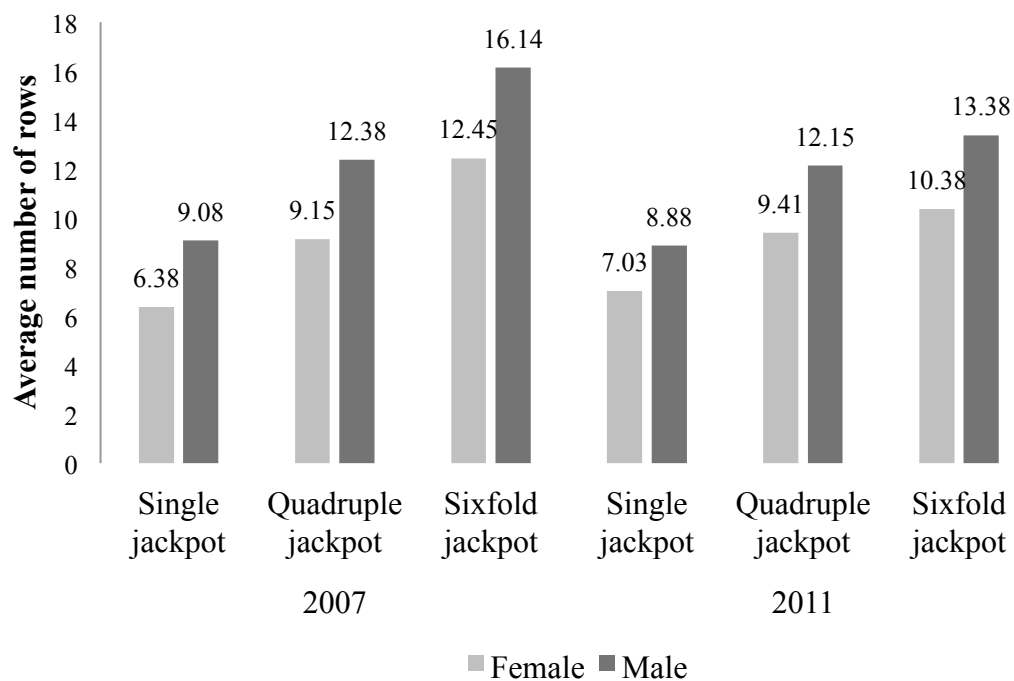


Figure 3. Average number of rows purchased by gender, year and the size of the jackpot.

The results showed that the higher the jackpot, the more rows were purchased on average per person, both in 2007 and 2011 (see Figure 3). The results also showed that in 2007 more rows were purchased on average than in 2011 when broken down by gender. There was a difference between gender and years. For example, there was a significant difference for a single jackpot in 2007 between males ($M = 9.08$, $SD = 12.47$) and females ($M = 6.38$, $SD = 4.30$), $t(380) = 3,206$, $p < .001$. There was also a

significant difference for a single jackpot in 2011 between males ($M = 8.88$, $SD = 13.11$) and females ($M = 7.03$, $SD = 6.45$), $t(1172) = 3.249$, $p < .001$.

The correlation was measured between age and number of purchased rows for each of the jackpot sizes, for 2007 on the one hand, and for 2011 on the other. There was a very low, however positive, correlation between age and number of purchased rows for all three sizes of jackpots, both in 2007 and 2011 (Pearson's correlation coefficient ranged between .037 and .084). The results also showed a weak positive correlation between age (2007 and 2011) and number of tickets bought in 2007, $r = .116$, $p < .001$ and in 2011, $r = .081$, $p < .001$.

Discussion

The main aim of the present study was to examine gambling behavior on the Icelandic national Lottery (Lottó 5/40) before and after the economic collapse in Iceland 2008 with data from the Icelandic Lottery and Sports betting. The purpose was also to examine the effects of the jackpot size on participants' purchases.

It was hypothesized that there were more purchases in 2011 after the economic collapse than in 2007, before the economic collapse. When the jackpot was single and quadruple, there were more purchases in 2011 than in 2007. These findings are consistent with Olason et al. (in press) study, where they found that total gambling participation in Iceland had increased between 2005/2007 and 2011. Interestingly, they found that those who experienced financial difficulties following the economic crisis in 2008 were 52% more likely to have bought a lottery ticket in the past years. This increase in purchase and participation in Iceland between 2007 and 2011 could possibly be explained by people seeing the Lotto as an easy and quick way to become richer. After the economic collapse in 2008 many individuals and families experienced financial difficulties, and it can therefore be deduced that people were

poorer in 2011. In fact, research has shown that individuals with lower income are especially drawn to lottery participation because they see the lottery as a great chance to escape financial difficulties (Turner, 2010) and as an opportunity to improve their standard of living (Blalock et al., 2007). In addition, Beckert and Lutter (2013) pointed out that lottery players in general overestimate the low probability of winning the jackpot.

The second hypothesis was that there were more rows purchased when there was a larger jackpot than small. This hypothesis was supported. The results indicate that lottery sales increased considerably with jackpot size. As expected, the findings showed a significant increase by the size of the jackpot per person both in 2007 and 2011. These findings are consistent with Matheson and Grote (2003) study. Their results showed that ticket sales increased with the size of the advertised lottery jackpot. There are several other studies that have been conducted to examine the relationship between the size of the jackpot and lottery sales. They all have the same outcome; a higher lottery jackpot induces more lottery sales (Forrest et al., 2002; Garrett & Sobel, 2004; Kearney, 2005; Matheson & Grote, 2003). This difference in increase in sales with larger jackpots could be explained by the fact that individuals mainly focus on winning large prizes, but not that they might have to share the winning prize with other winners.

The third hypothesis was that there is a difference in how much males and females purchase. The third hypothesis was also supported, as a difference was found between males and females, where males bought more rows on average and there were more males who bought Lotto compared to females both years. These findings are consistent with Olason (2008) study from 2007, where males were more likely than females to buy a single Lotto ticket on the Icelandic Lottery and Sports betting

website (www.lotto.is). Furthermore, McKormack et al. (2014) found that males purchased the lottery online more frequently than females. The difference could be explained by that perhaps women prefer to buy lottery tickets land-based and males prefer to buy them online. For example, research has shown that Internet gambling is more common among males than females (Gray et al., 2013; McBride & Derevensky, 2009).

This study has a few limitations. Firstly, the data for this study is only based on data from individuals who bought Icelandic lottery (Lotto) tickets in three weeks in 2007 and three weeks in 2011. We cannot, therefore, generalize the overall gambling behavior for Icelanders from these six weeks. However, it's difficult to see as to why there would be a difference between weeks, for example, when the jackpot was single. Secondly, only three jackpot sizes were examined for this study, namely a single jackpot, a quadruple jackpot and a sixfold jackpot. It would have been a stronger study to examine a more variation in jackpot sizes, spanning a larger amount of weeks and to then compare the results. A larger data set and larger sample is suggested for further studies. Thirdly, this study examined only one type of lottery, Lottó 5/40. Recommendations for future research would be, for example, comparing Lotto and Viking Lotto participation and purchasing.

The strengths of this study, however, are that the data are based on actual numbers of purchased tickets. This study also represents one of the first studies on the Icelandic Lotto based on actual data.

In conclusion, it is clear from this study's results that the economic crisis in Iceland did have an effect on the Lotto purchases in Iceland. Recommendations for future research would be to examine the effects of the economic crisis also on the Viking Lotto.

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