[This is a work in progress. I have just recently finished gathering data and checking the robustness of the results. Please excuse the early nature of this draft.]

Do Investors Value Privacy? Revealed Preferences from Lottery Sales

Jordan B. Neyland†
George Mason University
jneylan2@gmu.edu

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Abstract

Debate surrounds recent statutes and several proposed bills that offer anonymity to lottery winners. Proponents emphasize the thieving, scamming, and violence that plagues jackpot winners, but opponents note that transparency reduces lottery fraud and legitimizes the fairness of games. I obtain state lottery sales with FOIA requests and hand-collect information on anonymity statutes through analysis of statutes and case law. The combination of the staggered adoption of anonymity laws and the lottery's randomization of the state of the world—through drawing balls—provides causal evidence of the effect of anonymity on sales. Results reveal a significant decline in ticket sales following the passage of anonymity statutes, suggesting that purchasers (at the margin) value transparency and fairness over privacy and security. This result reveals the participants' preference in this market and speaks to larger questions on the disclosure of investor identity.

†Corresponding author.

I. Introduction

In January 2010, detectives found Abraham Shakespeare's body buried under a concrete slab in the backyard of a Tampa suburban home.[1] He had been shot in the chest by Dorice "Dee Dee" Moore, a woman that had befriended him shortly after he won a $30 million jackpot and later withdrew around $1 million from his bank account.[2] Unfortunately, fraudsters and violent offenders' targeting of lottery winners is not uncommon.[3]

Ironically, Dee Dee Moore came out in favor of greater anonymity for lottery winners while considering a Florida bill that would protect the identity of winners. Rep. Tracie Davis specifically cited murder cases of winners during House hearings, and the bill received overwhelming support with 114-1 votes in the House and 37-1 in the Senate.[4] Motivated by concerns for winners, Gov. Desantis signed the bill. Similar concerns led to the passage of comparable laws in other states.

Despite the state's interest in promoting the security of winners, other states vehemently oppose the anonymity of lottery winners. These states are also concerned about fraud but focus on schemes that target the lottery system and jeopardize its integrity. Iowa Lottery officials cite the "Hot Lotto" scandal as a cautionary tale on the importance of transparency.[5] In this case, Eddie Tipton, a security officer at the Multi-State Lottery Association (MUSL), abused his position and hacked the random number generators used by some lotteries to determine the winning numbers.

By identifying those who win, opponents of anonymity laws claim it will be more difficult for lottery organizers and other cheaters to defraud the lottery participants, and it will shine light on an otherwise

[1] http://news.bbc.co.uk/2/hi/americas/8489582.stm
[2] https://abcnews.go.com/US/lottery-murder-deedee-moore-found-guilty/story?id=17926009
[3] [cite other stories here, such as Craigory Burch]
[4] https://www.tampabay.com/news/breaking-news/2022/03/02/tampa-woman-who-killed-lottery-winner-backs-bill-to-keep-names-secret/
[5] https://www.kcci.com/article/why-you-can-t-remain-anonymous-if-you-win-the-lottery/6916850

opaque game. In short, transparency is a governance mechanism. In much the same way U.S. regulators require the disclosure of the compensation of company executives to ensure they don't receive a disproportionate share of corporate profits, lottery players want to be sure that lottery "insiders" and other potential cheaters don't win a disproportionate share of prizes.

These two views on anonymity provide corresponding hypotheses. A pro-anonymity view suggests that protecting winners serves the public good and should drive an increase in ticket sales. However, a pro-disclosure view promotes the fidelity of the lottery and its management. Given the reasonable nature of these competing views and the diversity of laws across jurisdictions, the social value of anonymity laws for lottery winners is an empirical question.

In this paper, I present evidence of the net effects of these competing forces on lottery ticket sales. I expect the changes in sales around the approval of anonymity laws to demonstrate the revealed preferences of the marginal lottery player. That is, any change in sales shows the net effect. The hypotheses are not exclusive. Players can value the transparency of the winners and their privacy if they happen to win. Any change in sales shows which effect they value more.

Results show a decline in ticket sales in states that have recently enacted anonymity laws. I propose a causal interpretation of this decline in sales for several reasons. First, the lottery, absent any fraud, is entirely random. The randomized nature of the lottery limits the effect of any potential omitted variables on the relation between anonymity and sales. That is, there are no "unobservable investment opportunities" that differ across individuals or states. Everyone plays the exact same game. One might be concerned that the enactment of these laws coincides with some characteristic related to the propensity for gambling or investment. Given the staggered nature of the adoption of these laws, legislators would have to identify such characteristics in advance and have the same reaction—to propose an anonymity law. This seems unlikely.

Due to the nature of this experiment, studying disclosure in this setting provides several advantages not available to studies on corporate disclosure. Primarily, most U.S. disclosure laws are enacted at the federal level. This makes it difficult to identify the effects of the disclosure law from other contemporaneous laws and events. (For example, it is difficult to isolate the effects of SOX and Reg FD, since they passed at the same time.) In addition, this experiment is not affected by the endogenous selection that plagues studies of corporate governance. In most studies of the adoption of a governance mechanism, there could be unobservable growth options leading to the adoption of the governance characteristic by the board or shareholders. Here, the randomized nature of the lottery ensures that the value of the payoff (winning) is unrelated to the choice of governance/law.

II. Background to the Lottery and Laws

a. Megamillions and Powerball

Each state determines if it will establish a lottery and related games. While most states outlaw gambling generally, the vast majority of states have lotteries. The exceptions are Utah, Nevada, Hawaii, Alabama, and Alaska. While individual state lotteries exist in many states, the most visible lotteries are Mega Millions and Powerball, which are multi-state games.

The adoption of these lotteries was staggered over the last few decades, with the most recent adopter, Mississippi, joining the Powerball and Mega Millions in 2020. In the 1990s and 2000s, these multi-state lotteries were geographically segmented. However, there was a large expansion in 2010 of both games and now most states offer tickets for both multi-state games.

Understanding the basic premise is nearly ubiquitous. A player can buy a ticket/draw for $2 (formerly $1). For each draw purchased, she must pick five numbers "white balls" between 1 and 70 (1 and 69) and another number between 1 and 25 (1 and 26), the "gold Mega Ball" ("red Powerball") for Mega Millions (Powerball). Random number generators can also choose these numbers ("quick pick").

On the draw date, one set of 5 white balls with corresponding numbers and one color ball is chosen. If the player's numbers match the winning set, she wins some cash, even with as little as one ball matching. If all six numbers match, they win the jackpot. For prizes related to matches of less than six balls, values range from a few dollars to millions of dollars. These values are fixed across draws.

The jackpot starts at a designated minimum value. This minimum has periodically increased over time. If there is a winner that matches all 6 numbers, the jackpot is paid out to the winner. If there are multiple tickets with all 6 matching numbers, the jackpot is split amongst the winners. If there is no ticket with all 6 matching numbers, the jackpot rolls over into the jackpot prize for the next drawing.

Due to this rollover, the jackpot can grow dramatically as new sales are added to the jackpot. On many occasions, the jackpot has been over $1 billion. These large jackpots result from an (empirically) non-linear relation between jackpot size and ticket sales. Lower jackpots have substantially similar sales. Larger jackpots draw in more and more sales over time. This is potentially due to greater excitement and salience as the jackpot size gets increasingly large.

Figure 1 presents the total sales and jackpot values against time for Mega Millions. The sample is restricted to draws between 2015 and the end of 2019 for clarity. The top line, which shows the jackpot value, increases dramatically as a lack of winners leads to a rollover in jackpot values. However, the sales in the lower line show a more slowly increasing, yet non-linear trend.

For each drawing, there are two stated jackpot values. This reflects an election that a winner must make upon winning the jackpot. The larger of the values is the one more frequently seen advertised. It is the sum of a stream of payments, essentially an annuity. This annuity starts with an immediate payment upon winning and 29 later annual payments. For both Powerball and Mega Millions, each annual payment increases by 5% each year. In contrast to the "annuity" jackpot, winners can opt to take the "cash option," in which the (present) value of the payments is paid out immediately.

b. Winners and Privacy

Irrespective of taking the annuity or cash option, the money won in the lottery is life-changing. Unfortunately, such changes are not always for the better. Lottery winners have been known to use drugs excessively, feel isolated, and become the target of various scammers and predators.

Recently, Edwin Castro took home $2 billion ($996 million cash option) in jackpot winnings. Almost immediately, he was sued in a dispute over the ownership of his winning ticket.[6]

Such troubles are likely made worse by the winner's actions. Ostentatious purchases and frivolous spending attract unwanted attention and envy. For Castro, one lawyer specializing in working with winners was critical, noting that "no attorney in their right mind would have advised the 30-year-old to buy a whopping $25 million on a mansion in the Hollywood Hills as well as a flashy, new sports car."[7] He suggests that lottery winners would benefit from some advice and protection.

Concerns for the security of the winners lead sum to push for greater privacy to protect winners and attract those leery to buy a ticket due to the dubious benefits of winning. In Arizona, the sponsor of a bill to protect privacy for winners, Rep. Nancy Barto, stated of hesitant players, "They will not even engage in the Lottery because of fear that, if they do win, their life will change and they won't be able to withstand the very likely threats and bodily harm, all kind of nuisance calls and harassment."[8]

This line of thinking suggests that players value their privacy due to the increased protection it provides and that they are more willing to invest in lottery tickets if their identity is shielded. The rationale leads to a "protection" hypothesis, which states that as law provides more anonymity to winners of lotteries,

[6] https://www.the-sun.com/news/8540832/edwin-castro-legal-battle-powerball-lotto-case-take-years/
[7] https://www.the-sun.com/money/8530160/edwin-castro-mistakes-powerball-lottery-choosing-attorney/
[8] https://fronterasdesk.org/content/767241/bill-would-allow-some-arizona-lottery-winners-be-anonymous

sales should increase at the margin, as many of the negative outcomes that befall winners can now be more easily avoided. That is, sales should increase with anonymity statutes.

Barto's bill was eventually passed into law. At nearly the same time Arizona Governor Doug Ducey signed the bill, neighboring New Mexico Governor Michelle Lujan rejected a similar bill. Her motivation was to protect the lottery's integrity, stating that "New Mexicans should have every confidence in the games run by the lottery."[9] Her concern is that players could get (or feel they are getting) cheated.

Following the adage that "sunlight is the best disinfectant," supporters of transparency believe that winners' identities should be known to prevent insiders or other scammers from manipulating the lottery to pay out to themselves, friends, or family. Since transparency increases the belief that the game is fair and likely to not favor some players, the second "integrity" hypothesis states that ticket sales decrease as such laws decrease transparency because players are skeptical of the game's fairness.

Note that the protection and integrity hypotheses are not necessarily exclusive. Some individuals may value privacy more, while others may value transparency more at the margin. In fact, many players may want to broadcast their newfound wealth and status. Hence, any observed empirical relation between privacy and sales should be interpreted as a net effect.

III. Prior Literature and Contribution

There is a substantial body of research in accounting and finance studying the importance of disclosure in accounting and finance. A full survey of this immense literature is beyond the scope of the paper, but I present some relevant highlights here. In the U.S., securities laws create a disclosure-based system, which aims to protect investors by requiring the disclosure of information about a company

[9] https://www.nbcnews.com/news/us-news/arizona-becomes-latest-state-shield-lottery-winners-names-n995696

once it is publicly listed on an exchange. While investor protection is a laudable goal, the mandatory disclosure requirements have been criticized for their additional costs since their inception.

Debates criticizing the costs of disclosure go back decades. Stigler (1963) criticizes the lack of evidence of benefit supporting the costs of mandatory disclosure. Benston (1973) also notes the lack of evidence supporting the mandatory disclosure regime and provides some initial empirical evidence. He finds no significant effect on affected stocks around the effectiveness of the 1934 Exchange Act. On the other hand, Coffee (1984) notes the public benefit of disclosure and that mandatory disclosure acts as a collectivization of effort to minimize social waste. Easterbrook and Fischel (1984) note that mandatory federal-level disclosure could help overcome limitations on information dissemination from third-party (non-investor) effects or disparate application of the law across states.

The need for further empirical evidence on the importance of disclosure spurred a large literature in accounting and finance on the economic consequences of disclosure. Lambert, Leuz, and Verrecchia (2007) present a theoretical model linking disclosure to the cost of capital in a seminal paper. Leuz and Wysocki (2016) summarize the literature on the consequences of a disclosure regime and the empirical evidence on the net benefits of such a regime. They conclude that more evidence is still needed to understand the full societal impact, including externalities, of a disclosure-based regime. Focusing on one of the most important elements of disclosure, earnings, Dechow, Ge, and Schrand (2010) discuss several proxies of earnings quality and note that different measures in disclosures can be more or less useful, as a proxy's usefulness depends on the economic outcome of interest.

In this paper, I focus on one aspect of disclosure, the identity of the investor (gambler). This is most closely related to prior finance literature that describes mandatory disclosure of owners' identities. There are, broadly speaking, three scenarios in which ownership interests must be disclosed under U.S. securities laws. First, when a person or group purchases more than 5% of a publicly traded

company, they are required to file a schedule 13D, which essentially publicly discloses their ownership interest in the issuer. This requirement relates to concerns about investors being informed of potential changes in control and hostile takeovers. Grossman and Hart (1980) discuss this notification requirement and suggest that the disclosure could overly hinder the takeover process.

Second, some funds, particularly mutual funds, must disclose their investments on 13F filings. Such filings allow mutual fund investors to monitor the investment performance of the managers responsible for investing their money. However, there is evidence that one of the most predicted costs of disclosure–loss of competitive advantage–results from 13F filings. Frank, Poterba, Shackelford, and Shoven (2004) find that funds that "copycat" actively managed funds can emulate similar or higher post-expense returns by following the active funds' purchases. Relatedly, Aragon, Hertzel, and Shi (2013) find evidence that fund managers seek confidentiality to protect proprietary information.

Third, large ownership interests are disclosed through required information about executives and their compensation. While this can reduce agency problems related to excessive compensation, Hermalin and Weisbach (2012) show that it is possible for additional disclosures to decrease firm value.

In sum, the literature on disclosure of ownership interests largely tracks the older and more general debates on mandatory disclosure. That is, disclosure to investors is beneficial for its reduction of problems of information asymmetry. However, the costs of disclosure could overwhelm the benefits.

This study contributes to the broader literature in finance and accounting by providing causal evidence of the preferences of investors regarding the disclosure of investor identity. While the setting is different from the typical investment in publicly traded equity securities, the evidence presented speaks directly to investors' preferences for privacy out of concern for discretion and safety against their desire to know if the funds from their investment (gamble) are inappropriately going to insiders.

IV. Data

Data for the study come from several sources.

a. Lottery Sales and Prize Data

I made several Freedom of Information Act (FOIA) requests to several states to obtain information on sales by the state for the Mega Millions and Powerball drawings. This sales data is contained in "draw reports" provided to each state following a draw. The draw reports have each state's sales revenues and prize obligations. In essence, the draw reports provide information on the accounting for cash flows in and out due to ticket sales. This information is necessary to settle up after a drawing as any participating state may have taken in disproportionately more or less than its obligations to pay out to prize winners. Because this data must be provided after each draw, I observe each state's sales for each draw. For Mega Millions, I obtain data back to 2003, and Powerball data goes back to 2010. I scrape powerball.com and megamillions.com for cash option values and jackpots. These websites also provide basic information about the lottery, such as participating states, which days of the week have drawings, and prize values for non-jackpot winners.[10]

b. State Anonymity Laws for Winners

Several states have adopted laws that allow winners to remain anonymous, either by opting in or opting-out of disclosure. The approval and effective dates of state anonymity laws come from searches of statutory history in Westlaw. This provides the text of the statute, which increases terms such as the length of time for which anonymity applies and the dollar value for which anonymity begins. For example, in West Virginia, anonymity is only available for those who win over $1 million.

[10] Powerball included a third drawing, on Mondays, starting August 23, 2021.

Here is an example of an excerpt of relevant parts of an anonymity statute from Arizona.[11]

> C. The commission shall furnish the department of economic security with the names and the social security numbers of persons who are paid lottery prizes or winnings in an amount of $600 or more pursuant to this section for the purposes prescribed by § 41-1965. The department of economic security shall pay the commission for the costs of furnishing the information.
>
> D. Except as provided in subsections B and C of this section, the name of a person or legally formed entity that is paid a lottery prize or winnings of $100,000 or more is confidential on request of the prizewinner and, if confidentiality is requested, is not a public record under title 39, chapter 1, article 2. If a prizewinner does not make a request, the name of the person or legally formed entity is confidential for ninety days from the date the prize is awarded and is not a public record under Title 39, chapter 1, article 21 during this ninety-day period. Information regarding the prizewinner's city and county of residence is not confidential. A prizewinner may waive the confidentiality provisions of this subsection by voluntarily consenting to the disclosure of the prizewinner's name.

This Arizona statute is an "opt-in" statute, for which the prize winner must request that his identity not be disclosed to the public. Note that the winner's ID is not confidential from other state sources, and it is common to see carve-outs such that the winner's identity is provided to tax authorities or other agencies interested in the winner's personal finance (eg, for child support).

c. Information on Trusts

[11] (A.R.S.) §5-573(D)

The Arizona statute also explicitly notes that legal entities (not natural persons) may be the claimer of the prize. In some, but not all, states, legal entities can claim lottery winnings. These are typically trusts or LLCs. States may allow obfuscation of the personal identity of the winner through the use of such entities. Other states require that natural persons claim the prizes or that the beneficiaries (natural persons) of the entities disclose their identities. Hence, it is important to control for the effects of trust law/policy.

I search case law, media outlets, and state statutes for information on whether trusts allow for anonymous prize claims in a state. Note that the existence of a trust option for anonymity does not necessarily negate any effects of an anonymity statute. Lottery winners, which may be less sophisticated, may be unaware of the trust laws or their need for a lawyer to help navigate legal issues.[12]

d. Demographic Information

Demographic information, in particular state population data, comes from the Census Bureau and the Bureau of Labor Statistics. This data is publicly available for download from the bureaus' websites. The population data scales the sales data by state-year.

V. Methodology

This study uses two different features of the lottery and winner privacy laws to identify the effect of investor/gambler anonymity on sales outcomes. First, the lottery is, by its nature, a process with a randomized outcome. From an investment perspective, the state of the world is completely randomized. This nullifies issues related to unobserved investment opportunities. With complete randomization, outcomes are orthogonal to omitted variables.

Second, the staggered adoption of state anonymity laws reduces the likelihood that observed changes in sales around changes in winner privacy are driven by state-specific influences, such as changes in preferences for gambling. Such changes would have to coincide with different adoptions of anonymity laws in different states at different times. This seems unlikely.

a. First-stage Determinants of Ticket Sales

While the setting allows for the identification of the effects of privacy on ticket sales with respect to unobservables, one challenge is that the effect of privacy on sales may be small relative to the effect of other characteristics. Intuitively, the size of the jackpot is likely to be a much more important determinant of ticket sales than other attributes since winning the jackpot is the primary reason people play the lottery in the first place. To control for the effects of draw characteristics on sales. I model the sales as a function of the jackpot (annuity), cash option value, day of drawing, and time since a winner. The following regression is estimated by state, separately for Mega Millions and Powerball.

$$Log(Sales - to - Population)_i = \alpha + \beta_1 Jackpot + \beta_1 Cash\ Option + \beta_1 Friday(Saturday) + \beta_1 RunCount + \varepsilon_i \quad (1)$$

Log(Sales-to-Population) is the log sales scaled by the population by state and draw. *Jackpot* is the annuity value of the jackpot. *Cash Option* is the cash value of the immediate payout of the jackpot, *Friday (Saturday)* is an indicator if the draw day is on Friday for Mega Millions or Saturday for Powerball. This reflects the fact that sales may be higher on weekends after players receive their paychecks and have time to buy tickets. *RunCount* is the number of draws since the last draw with a winner. This picks up any excitement or fatigue generated from having multiple draws without a winner.

b. Second-stage Regressions of Abnormal Sales around Privacy Laws

In equation (1), I control for the draw-related determinants of lottery ticket sales. The regressions are estimated by state, eliminating time-invariant state-level effects from the error term. Since the error term represents ticket sales not attributed to state effects or the specified draw characteristics, I use this first-stage variable to study the effects of anonymity laws on sales.

Figures 2 and 3 plot the errors from equation 1 against the 100 draws before and 100 draws after a state's adoption of an anonymity law. Confidence intervals are included for comparison. Figure 2 has Mega Millions sales, and Figure 3 has Powerball Sales. Both are downward-sloping. This slope suggests that sales decline after adopting a privacy law, consistent with the integrity hypothesis dominating the protection hypothesis. That is, players prefer transparency at the margin.

VI. Results

In this section, I present the results of multivariate models of lottery sales.

a. First-stage results

Table 2 presents the results of regressions of log sales-to-population on the *Jackpot* (annuity), *Cash Option*, indicator for *Friday/Saturday*, and *RunCount*. Since the regressions are run by state and for Mega Millions and Powerball separately, there are dozens of first-stage regressions. I present only one regression from Mega Millions sales for the state of Texas. As one might expect, sales increase with the jackpot and cash option value, as bigger prizes attract more players. Also, Fridays (for Mega Millions) and Saturdays (for Powerball) tend to attract more sales than weekdays. This is perhaps because many people get paid at the end of the week or have more time to buy tickets on the weekend. Interestingly, after controlling for the jackpot, the number of draws since the last win is negatively related to sales. Perhaps people feel there is a losing streak and fatigue from playing.

b. Second-stage results

Table 3 formalizes the results observed in Figures 2 and 3 in a regression model. These univariate regressions have the first-stage error term as the dependent variable, ie, abnormal sales. These abnormal sales are regressed on a counter that increases by one for each draw after the passage of an anonymity law. The value is a negative number for draws before the passage of the law. I run regressions for Mega Millions and Powerball separately. Irrespective of the game, the coefficient is negative and statistically significant at the 1% level. I also restrict the sample to the 200 draws around the enactment of the law, 100 before to 100 after, to check that changes occur around the change in the law. Results are substantially similar. In the last four columns of Panel A of Table 3, I use quantile regressions to ensure that outliers in sales or jackpots do not drive the results. The negative relation continues to hold.

In Panel B of Table 3, I include an indicator for states in which the winner can establish anonymity via a trust or LLC. The results are substantially similar to Panel A. That is, there is a negative relation between the passage of anonymity laws and ticket sales.

In Table 4, I run regressions similar to a standard differences-in-differences approach. Rather than solely looking at states that adopt anonymity laws, I include states that did not adopt such laws as a control group. The dependent variable is still the abnormal sales estimated in equation (1). The independent variable of interest, "Law Effective," is an indicator equal to one if the state passed an anonymity law, zero otherwise. In Panel A, the passage of the law is associated with a reduction, relative to the controls, in sales. I limit the sample to years after 2015 as well because many anonymity laws were passed in the late 2010s and early 2020s. The results are substantially the same. I also run quantile regressions and find no evidence that extreme observations drive the results. In Panel B, I check that the results are not driven by a general time trend by including year-fixed effects. The results remain substantially unchanged. In Panel C, I control for the presence of state trust laws that provide

for anonymity to winners. I also include an interaction term between the presence of a trust option for anonymity and the passage of an anonymity statute. The coefficient on the interaction term, across all regressions, is almost equal to the coefficient of the indicator for the anonymity statute. In short, anonymity statutes seem to have little effect on sales in states that already provide an option for anonymity via the establishment of a trust or LLC to protect the identity of the winner.

VII. Conclusion

Overall, initial results support the idea that players value transparency and the fidelity of the system over the security that anonymity affords to winners. From the view of the state legislators considering enactment of a law, they may want to consider not only the reduction in revenue to the state (or state-related entities) but also the autonomy of the player, who values lottery integrity.

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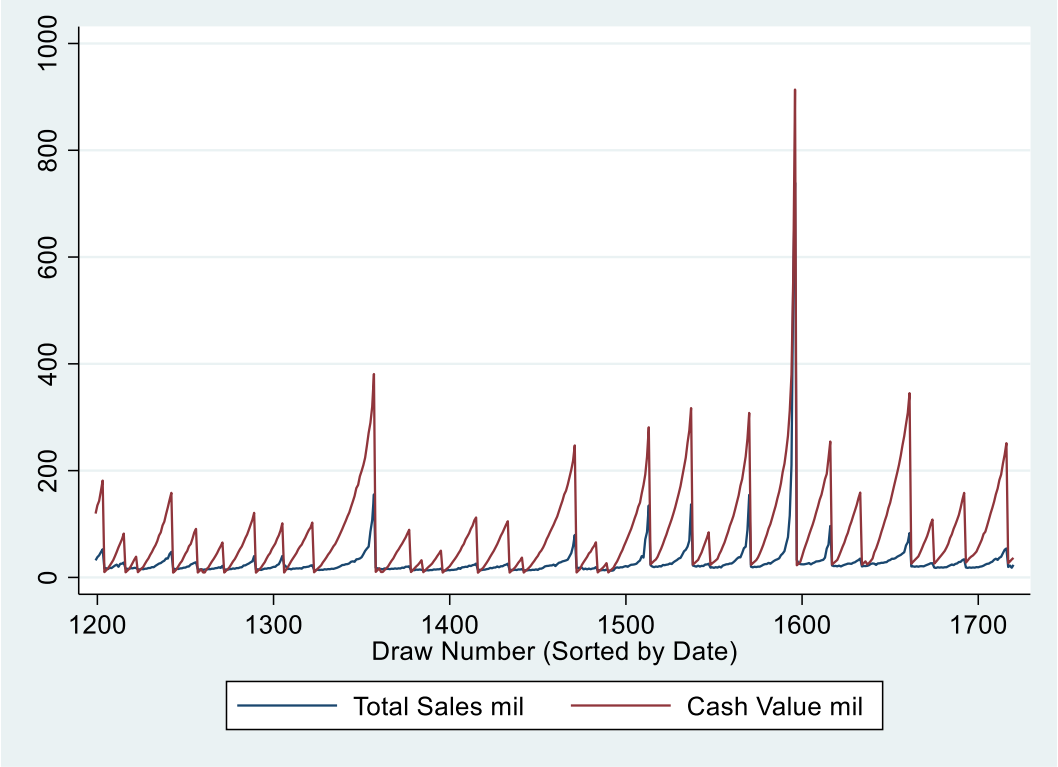
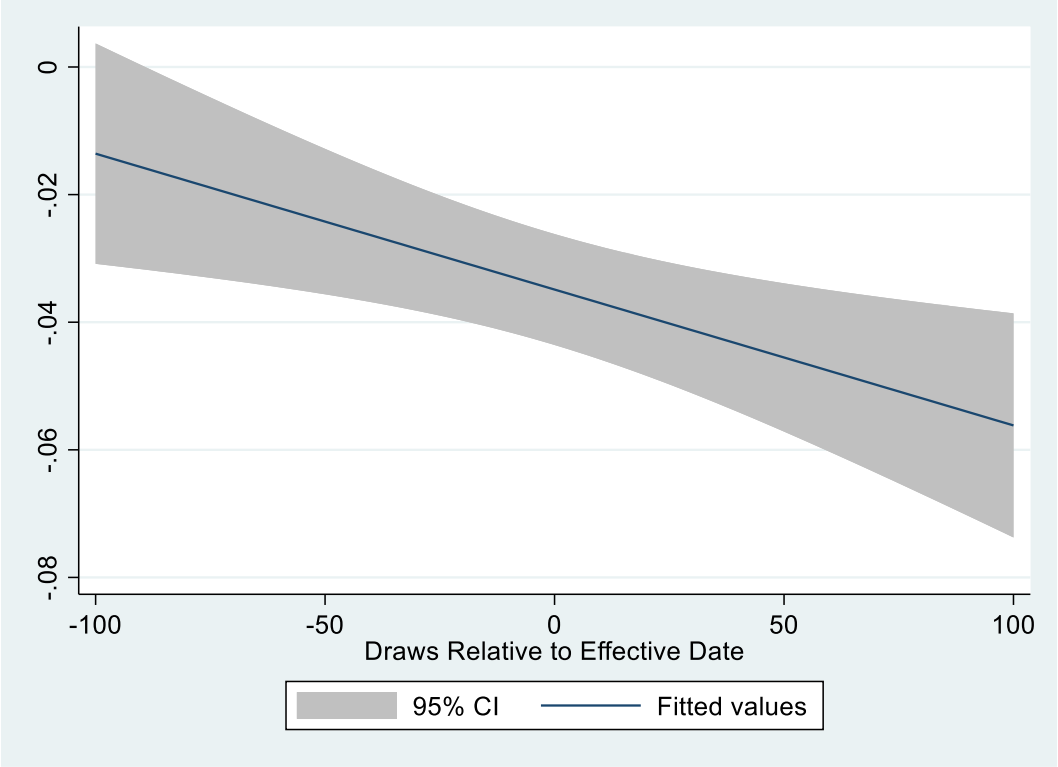
Figure 1 – Total Sales Relative to Cash Option Value of Jackpot



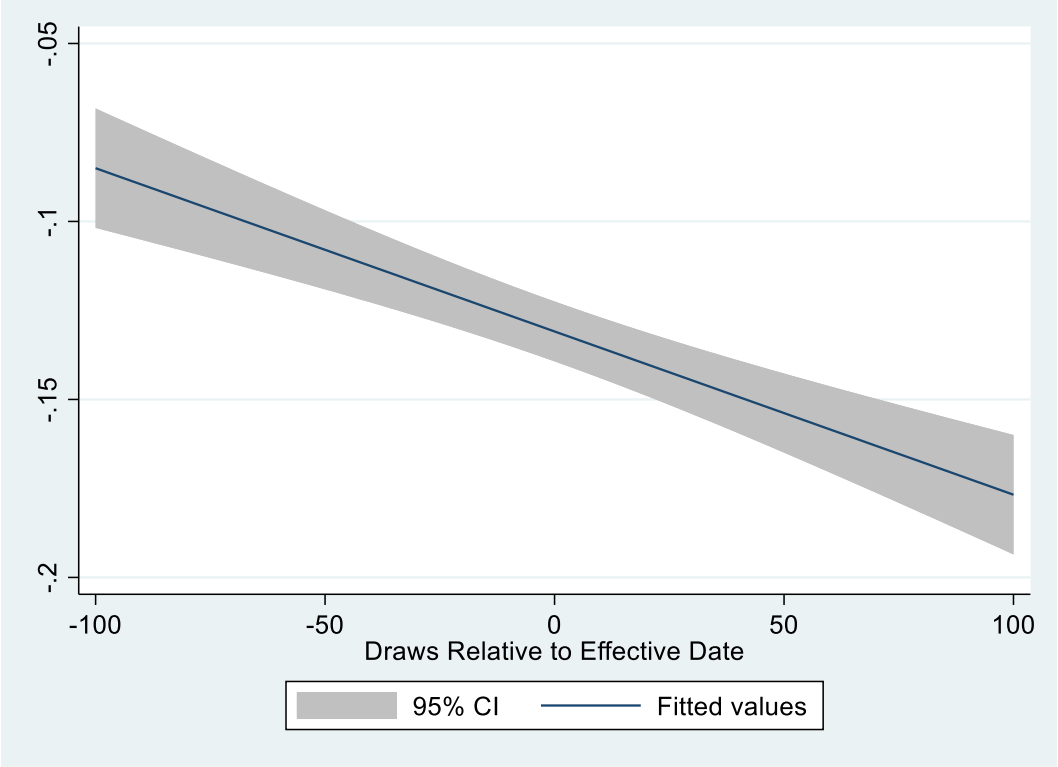
This figure presents a line graph of the total ticket sales by draw date for the (lower) blue line. The (higher) red line is the cash option value of the jackpot for the draw date. The draws are sorted by date and range from the beginning of 2015 to the end of 2019 for Mega Millions. Sales are only for the standard draw (not including Megaplier or other options). The vertical axis is millions of dollars.

Figure 2 – Abnormal Mega Millions Sales Around Adoption of Privacy Laws



This figure presents a fitted line around abnormal Mega Millions sales for the 100 draws before and after states adopt laws that protect the identity of the jackpot winners. Sales are scaled by population, logged, and control for the effect on sales from the jackpot size, cash option, day of the week, and draws since the last winner. 95% confidence intervals are presented around the fitted line.

Figure 3 – Abnormal Powerball Sales Around Adoption of Privacy Laws



This figure presents a fitted line around abnormal Powerball sales for the 100 draws before and after states adopt laws that protect the identity of the jackpot winners. Sales are scaled by population, logged, and control for the effect on sales from the jackpot size, cash option, day of the week, and draws since the last winner. 95% confidence intervals are presented around the fitted line.

Table 1 – Univariate Statistics

	N	Mean	Std. Dev.	Min.	Max.
		Mega Millions			
Jackpot (mil)	2,033	98.57	103.09	12.00	548.00
Cash Option (mil)	1,349	75.16	73.53	7.70	348.60
Friday	2,033	0.50	0.50	0.00	1.00
Run Count	2,032	8.43	6.59	1.00	37.00
		Powerball			
Jackpot (mil)	1,386	147.54	128.94	20.00	699.80
Cash Option (mil)	1,386	93.23	81.43	10.50	417.80
Saturday	1,386	0.47	0.50	0.00	1.00
Run Count	1,384	9.45	7.92	1.00	41.00

This table presents univariate statistics for the determinants of lottery ticket sales.

Table 2 – Example of State Sales Model (Texas)

	Sales-to-Population
Jackpot (mil)	0.001***
	(5.16)
Cash Option (mil)	0.005***
	(9.43)
Friday	0.055***
	(5.58)
Run Count	-0.021***
	(-10.40)
N	1,349
R-squared	0.829
Adj. R-squared	0.829

This table presents a model of ticket sales relative to population. Primary determinants of ticket sales are the jackpot size, the size of the cash option, the day of the week of the draw (Friday), and the number of times in a row that there has not been a successful lottery draw with a winner (Run Count). This example is for the state of Texas. Similar models are run for each state and game (Powerball or Mega Millions).

Table 3 – Ticket Sales Around Adoption of Privacy Laws

Panel A – Univariate Regressions								
	Linear Regression				Quantile Regression			
	Mega Millions		Powerball		Mega Millions		Powerball	
	Full Sample	200 Draws	Full Sample	200 Draws	Full Sample	200 Draws	Full Sample	200 Draws
Draws After Effective Date (MM)	-0.049***	-0.213***			-0.041***	-0.013		
	(-21.36)	(-2.77)			(-16.91)	(-0.17)		
Draws After Effective Date (PB)			-0.312***	-0.459***			-0.308***	-0.461***
			(-75.92)	(-6.20)			(-66.39)	(-5.88)
N	22,854	2,776	19,772	2,814	22,854	2,776	19,772	2,814
Pseudo R-squared					0.009	0.000	0.126	0.007
R-squared	0.02	0.003	0.226	0.013				
Adj. R-squared	0.02	0.002	0.226	0.013				

Panel B – Trust Options								
	Linear Regression				Quantile Regression			
	Mega Millions		Powerball		Mega Millions		Powerball	
	Full Sample	200 Draws	Full Sample	200 Draws	Full Sample	200 Draws	Full Sample	200 Draws
Draws After Effective Date (MM)	-0.050***	-0.207***			-0.046***	-0.110		
	(-21.72)	(-2.70)			(-18.95)	(-1.39)		
Draws After Effective Date (PB)			-0.318***	-0.459***			-0.317***	-0.440***
			(-76.88)	(-6.20)			(-66.62)	(-5.39)
Trust Anonymity	0.014***	0.052***	-0.040***	0.013	0.028***	0.065***	-0.039***	0.012
	(3.89)	(5.72)	(-10.65)	(1.45)	(7.70)	(6.89)	(-9.06)	(1.26)
N	22,854	2,776	19,772	2,814	22,854	2,776	19,772	2,814
Pseudo R-squared					0.011	0.013	0.129	0.008
R-squared	0.02	0.014	0.23	0.014				
Adj. R-squared	0.02	0.014	0.23	0.014				

This table presents regressions of lottery ticket sales following the adoption of a law that protects the privacy of jackpot winners. The window of study is 200 draws after the adoption of privacy laws. Due to the exponential growth of jackpots and ticket sales, linear regressions and quantile regressions are included to estimate the average and median effects of the laws on ticket sales. Panel A presents coefficients for indicators of the passage of privacy laws. Panel B includes an indicator that controls for the availability of anonymity through the use of a trust or LLC that has the winner as a beneficiary.

Table 4 – The Passage of Privacy Laws and Ticket Sales

Panel A - Differences								
	Linear Regression				Quantile Regression			
	Mega Millions		Powerball		Mega Millions		Powerball	
	Full Sample	Post-2015	Full Sample	Post-2015	Full Sample	Post-2015	Full Sample	Post-2015
Law Effective	-0.033***	-0.020***	-0.074***	-0.009***	-0.022***	-0.015***	-0.056***	-0.004
	(-13.13)	(-7.13)	(-25.55)	(-3.09)	(-8.65)	(-5.29)	(-17.11)	(-1.48)
N	59,823	37,880	61,852	39,682	59,823	37,880	61,852	39,682
Pseudo R-squared					0.001	0.001	0.004	0.000
R-squared	0.003	0.001	0.01	0.000				
Adj. R-squared	0.003	0.001	0.01	0.000				

Panel B - Year Fixed Effects								
	Linear Regression				Quantile Regression			
	Mega Millions		Powerball		Mega Millions		Powerball	
	Full Sample	Post-2015	Full Sample	Post-2015	Full Sample	Post-2015	Full Sample	Post-2015
Law Effective	-0.011***	-0.014***	0.019***	0.027***	-0.015***	-0.016***	0.017***	0.025***
	(-4.42)	(-5.02)	(7.80)	(9.68)	(-5.37)	(-5.50)	(6.67)	(8.61)
Year Indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	59,823	37,880	61,852	39,682	59,823	37,880	61,852	39,682
Pseudo R-squared					0.044	0.03	0.242	0.063
R-squared	0.081	0.039	0.375	0.107				
Adj. R-squared	0.08	0.039	0.375	0.107				

Panel C - Anonymous Trusts								
	Linear Regression				Quantile Regression			
	Mega Millions		Powerball		Mega Millions		Powerball	
	Full Sample	Post-2015	Full Sample	Post-2015	Full Sample	Post-2015	Full Sample	Post-2015
Law Effective	-0.116***	-0.061***	-0.145***	-0.029***	-0.120***	-0.082***	-0.113***	-0.020***
	(-20.45)	(-10.98)	(-22.97)	(-5.16)	(-20.88)	(-14.72)	(-15.91)	(-3.85)
Trust Anonymity	-0.009***	0.013***	-0.005*	-0.028***	0.000	0.019***	-0.011***	-0.030***
	(-3.94)	(4.70)	(-1.72)	(-9.19)	(0.02)	(6.98)	(-3.58)	(-10.51)
Law Effective X	0.103***	0.052***	0.089***	0.030***	0.116***	0.081***	0.077***	0.025***
Trust Anonymity	(16.25)	(8.08)	(12.52)	(4.60)	(18.05)	(12.68)	(9.62)	(4.13)
N	59,823	37,880	61,852	39,682	59,823	37,880	61,852	39,682
Pseudo R-squared					0.005	0.006	0.005	0.002
R-squared	0.007	0.005	0.013	0.002				
Adj. R-squared	0.007	0.005	0.013	0.002				

This tables presents a difference-in-difference analysis of the effect on sales of a passage of privacy laws. Law Effective is an indicator that equals one for lottery drawings in a state after it has passed a privacy law. In Panel A, only the Law Effective indicator is included. In Panel B, indicators for years are included. In Panel C, an indicator for states that allowed anonymity through a trust or LLC is included, as well an interaction term for the indicator of the effective date of the anonymity law and the indicator for a trust/LLC.