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Shootings and Their Effect on Stock Price and Volume in the Firearm Manufacturing Industry

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Shootings and Their Effect on Stock Price and Volume in the Firearm Manufacturing Industry

Abstract:

This article investigates how mass shootings are influencing the price and trading volume of firearm manufacturers differently than the previously documented “fear-based” gun sales price spikes. (Wallace, 2015). It is expected that, following a mass shooting, firearms sales increase due to a fear of legislation banning products and a limited timeframe to obtain them. For instance, *The Financial Times of London* reported 52% increase of gun sales in the year following the Sandy Hook shooting; however, in the long term, if there is regulation that limits the autonomy of manufacturers then investors would be inclined to divest in firearms manufacturers. This dichotomy between short-term sales increasing returns and the long-term viability of the industry leaves market response, and longevity, unpredictable.

Introduction:

Since April 2007 there have been 17 shootings in the United States that have resulted in nine or more fatalities. The United States leads in gun deaths per capita among all countries that are members of the Organization for Economic Cooperation and Development. (Gopal and Greenwood, 2017). Even when compared to areas notorious for violence, discounting deaths from armed conflicts, the United States has a higher gun death per capita than all of the Middle East and Northern Africa, including Afghanistan, Libya, and Syria. (Institute for Health Metrics and Evaluation). These statistics are sobering evidence that there is something unique about the

United States that results in such frequent firearm violence, and more notably, premeditated events with such high numbers of fatalities.

Taking these statistics into account, it is not surprising that firearm ownership is extremely common in the United States. The United States has the highest firearm to capita ratio of any country. It is estimated there are between 89 and 100 guns for every 100 people in America; essentially, there are roughly the same number of people in the United States as there are guns. However, according to a 2013 Gallup poll, only around 25% of Americans own a gun. This indicates that a minority of Americans own the majority of guns. The average gunowner possesses three guns. Additionally, 14% of gunowners, or 3% of Americans, own between a staggering eight and 140 firearms.

There has been significant debate surrounding potential causes for the prevalence of mass shootings with high fatalities in recent history, much of which is politically stratified. Conservatives are inclined to promote gun ownership, while liberals are typically more interested in increasing controls and regulations. Common theories related to the prevalence of public mass shootings are related to the easy access to firearms due to their abundance, while others support the notion that mental health is the issue, and barring certain at-risk individuals from possessing firearms would be the solution. Despite the constant debate regarding firearm access and causes of these events, there has been little research related to the market impact mass shootings have on the manufacturers of firearms and ammunition.

The majority of firearm and ammunition manufacturers are private entities, with only a few exceptions: Sturm, Ruger, and Co, (RGR), the rebranded Smith and Wesson to American Outdoor Brands, (AOBC), Axon Enterprise Inc, (AAXN), and National Presto Industries,

(NPK). Ruger is the primary point of focus for this analysis as it is the only company listed that is not diversified from firearm manufacturing; 99% of Ruger's revenues are from the sale of guns. American Outdoor Brands is slightly more diversified, with 86% of revenues coming from the sale of guns. Axon's flagship product is the Taser, an electroshock weapon intended for self-defense and law enforcement. Axon is more diversified and would be assumed to be less affected by shootings than entities with a primary focus on firearm production. National Presto Industry is composed of three divisions, House Appliance, Absorbent Products, and Defense. The defense division has closed and reopened, and almost entirely serves U.S government contracts for ammunition; these orders are also assumed to be independent of effects resulting from mass shootings. For these reasons, this analysis will primarily focus on Ruger representative of the firearm industry due to their lack of diversification.

Background:

There are two easily recognizable trends for firearm sales. The first, is that following a mass shooting, sales tend to increase. This is likely a result of fear of legislation banning particular products and consumers rush to purchase before a prohibition. This leads to the stock price increasing. The second trend is related to the majority party in the legislative branch, and the commander in chief of the executive branch. This is clearly represented by the Ruger stock price relative to the 2016 election. Ruger is used as an indication of the firearm industry as it is not diversified, 99% of revenue is from gun sales; 96% of revenue is from the United States.

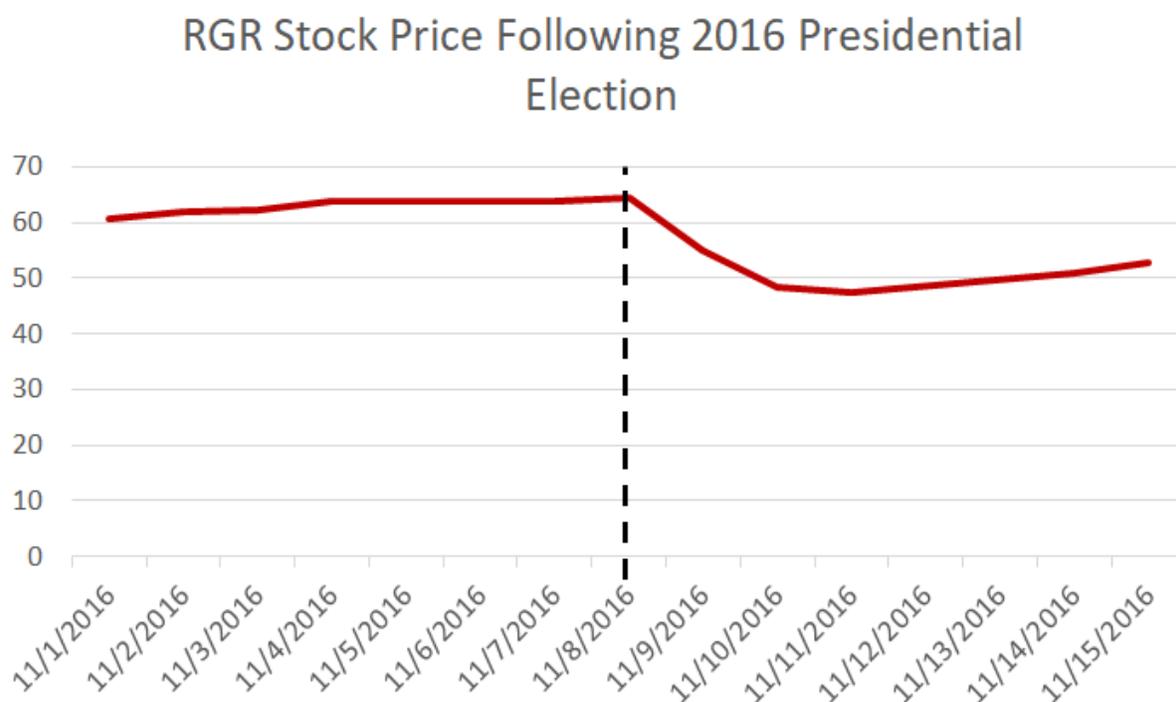


Figure 1. Ruger stock price before and after the 2016 presidential election.

As demonstrated by the figure above, the stock price of Ruger fell almost immediately after President Trump won the election over Hilary Clinton, the expected winner. As Clinton has indicated she favors stronger gun control, gun consumers feared there could be sweeping prohibitions on many types of firearms and accessories. This made sales increase in the quarters leading up to the election, and stock price increased accordingly. When President Trump won, the fear of strict gun control ceased, and sales were expected to fall. This led the stock price to fall dramatically in the week following the election. According to the former Ruger CEO, Michael Fifer, "...there was a widespread expectation that Hillary would win and some gun retailers began to stock up, expecting strong demand surge from the prospect of tightening gun control under a Hillary Clinton administration." Ruger's sales increased 19% in the quarter prior

to the election. Immediately following the election both Ruger, (ticker RGR), and Smith and Wesson, recently rebranded as American Outdoor Brands, (ticker AOBC), share price dropped by nearly 20%. This supports the theory that the fear of tightening legislation increases gun sales, whether it is the result of a specific event, or an administration intending to implement stronger controls.

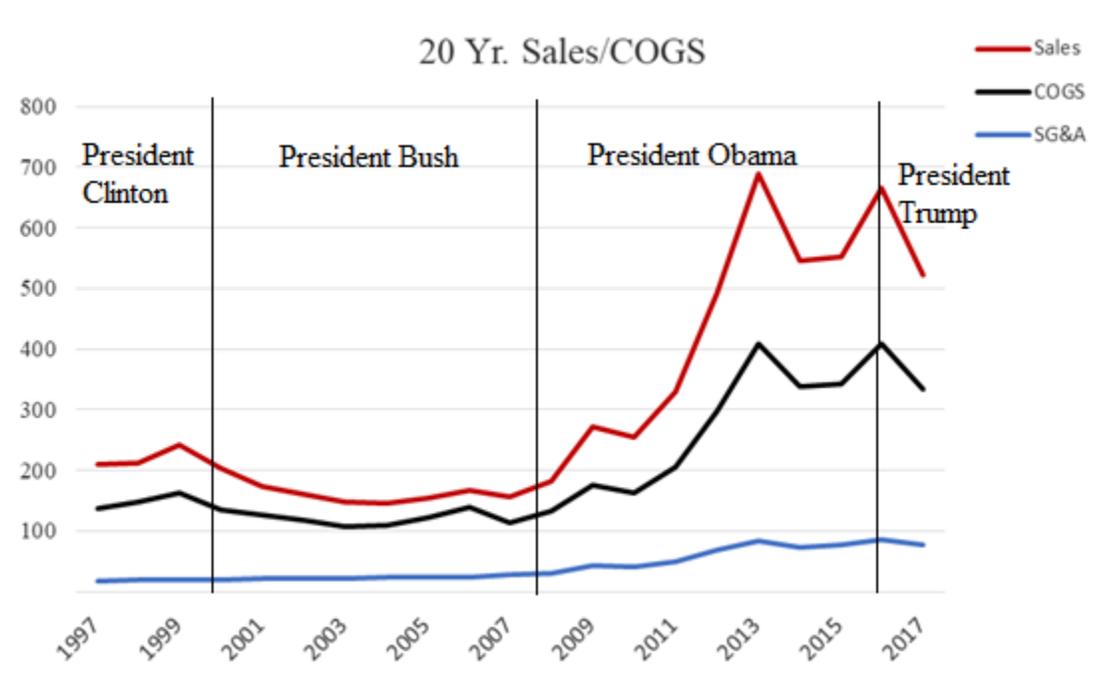


Figure 2. 20 year sales of Ruger relative to cost of goods sold, as well as selling, general, and administrative expenses.

This effect of an administration's either conservative or liberal affiliation affecting gun sales is also apparent Figure 2 showing the 20-year sales relative to cost of goods sold of Ruger. Sales decreased as President George W. Bush was elected president in 2001, and increased very dramatically in late 2008 as President Barack Obama was elected. Sales again increased as it seemed Hilary Clinton would be elected, and dropped as President Trump was elected.

Correlation is clearly strong between the president's political affiliation and the volume of sales in the firearm industry.

Current Market

The firearm industry appears to be in a new era. The earlier predictable surge in stock price following a mass shooting was not evident in either the Parkland or Sutherland Springs shootings. The "fear-based" sales following a shooting driving up stock prices now seems to be less of a factor as stock prices have not been increasing in a similar way to the period prior to Trump's presidency. There may not be as significant a fear of products being prohibited as both the House and Senate were Republican majority during these more recent shootings. Alternatively, the stock price may not be increasing potentially due to fears of longevity for the industry. This appears to be increasingly probable as although a Republican, President Trump has been tough on gun control, demanding bump stocks be made illegal, encouraging the age of long rifle purchase from 18 to 21, and barring certain people who could be a danger to themselves or others from owning firearms. Additionally, Florida, a historically conservative and pro second amendment right state, has pushed for similar legislation banning certain products.

Empathy for the gunowner demographic also appears to be waning. Corporate partnerships with the National Rifle Association (NRA), one of the largest proponents and lobbying groups for second amendment rights, have been ending over the past year. Numerous large companies have severed ties with the NRA, including: United Airlines, Delta Airlines, Hertz, Enterprise, Avis, Chubb, Best Western, Wyndham, MetLife, and Symantec. Financial institutions have also begun to restrict their services offered to firearm manufacturers. Bank of America does not offer underwriting or other credit services to manufacturers of assault-style

firearms not intended for military application; a vice-chairman stated “It’s our intention not to finance these military-style firearms for civilian use.” Citigroup also has formal policies in place for dealing with the gun industry. Based on an April 10, 2019, House Financial Services Committee hearing, it is expected that JP Morgan could follow suit. As financial institutions limit their relationships with manufacturers, it is likely that divestments will occur and stock prices will suffer.

Shootings after November 2016:

Parkland, Florida:

February 14, 2018, Nikolas Cruz, a nineteen-year-old former student of Douglas High School, killed 17 students and staff members; he also inflicted 17 additional injuries. Cruz used an AR style rifle and multiple magazines. The Parkland shooting is the deadliest high-school shooting in United States history, exceeding Columbine. Cruz was arrested without incident following the shooting. Following the incident Florida passed a bill raising the minimum age to purchase a rifle to 21, established waiting periods and background checks, and barred some mentally unhealthy people convicted of certain crimes from owning firearms.

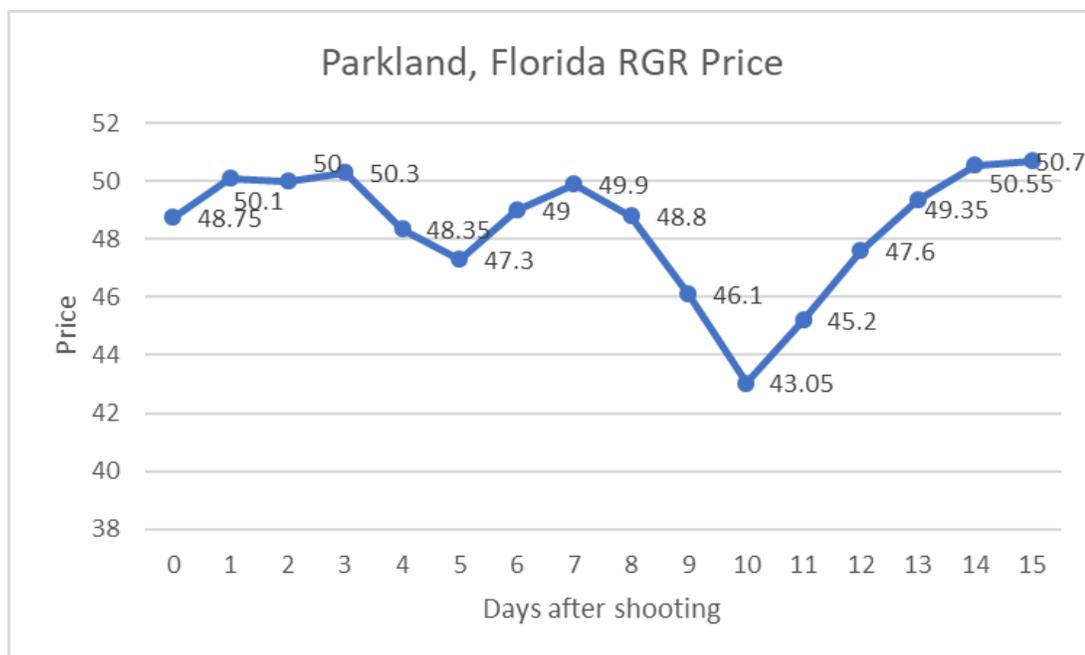


Figure 3. Ruger share price before and after the shooting.

The day before the Parkland shooting, Day 0, RGR stock closed at \$48.75. The closing prices in the 15 day period following the shooting were \$50.10, \$50.00, \$50.30, \$48.35, \$47.30 and \$49.00. Unlike similar mass shootings the past couple of years, this time Ruger did not receive a stock bump. By Day 13 following the shooting RGR had surpassed its pre-shooting price and Day 15 closed as \$50.70.

On February 23, Florida Governor Rick Scott, a Republican, announced a multi-faceted plan to reduce the probability of events like Parkland occurring in the future. This plan included: all firearm purchasers to be 21 years or older; courts prohibiting the mentally ill from purchasing firearms; and additional mandates intended to keep students safe, a program expected to cost over \$500 million per year. This statement coincided with the stock price of Ruger on Day 7 declining until the trough of the 15 day window on Day 10 at \$43.05. a republican governor increasing the barriers to purchase firearms

indicated dwindling support to the industry, as well as a smaller consumer base eligible to purchase.

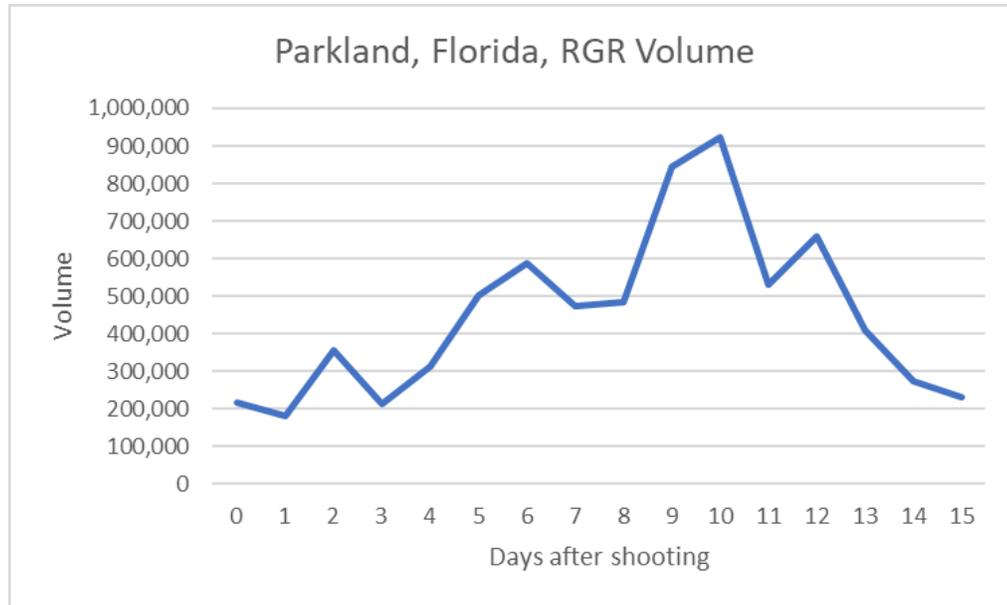


Figure 4. Ruger volume following the shooting.

Sutherland Springs, Texas:

November 5, 2017, Devin Kelley, 26, killed 26 and injured an additional 20 others at the First Baptist Church. Kelley used an AR style rifle with 15 magazines with a 30-round capacity each. Kelley had a history of mental health issues, and had been admitted to a mental health facility prior to the shooting. Kelley was killed by a self-inflicted shot to the head.

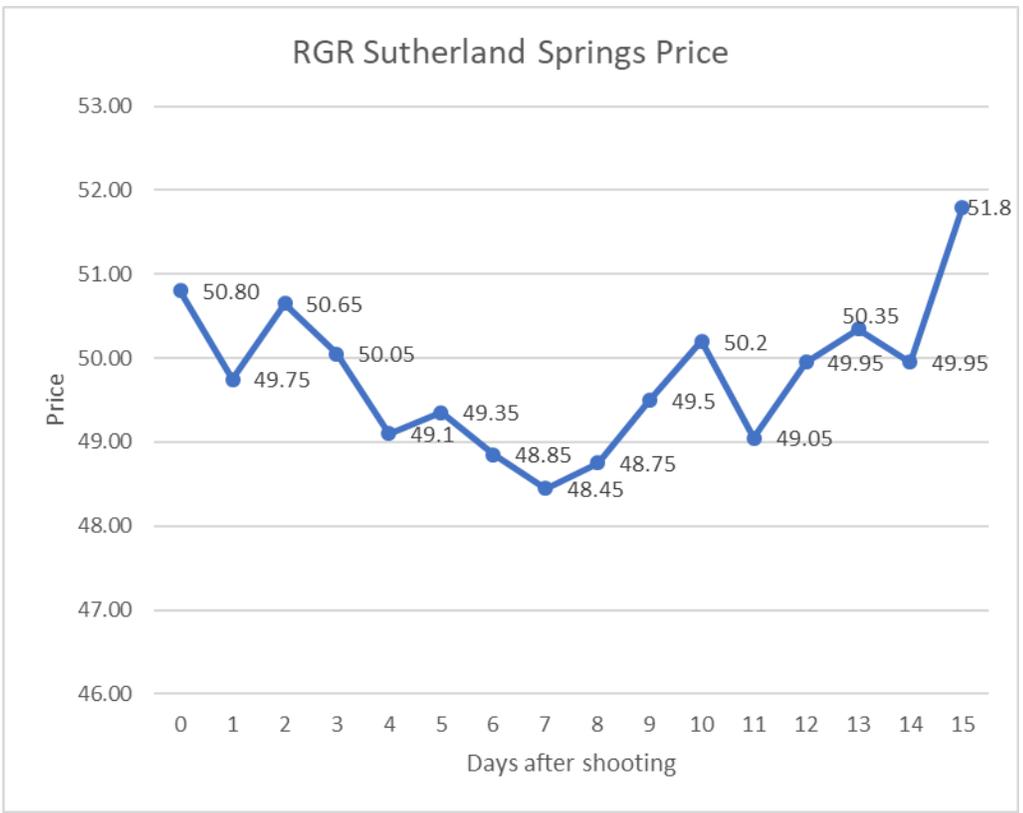


Figure 5. Ruger share price before and after the shooting.

The day of trading prior to the shooting, a Friday, Day 0, RGR closed at \$50.80. The day following the shooting, Day 1, a Monday, RGR dropped to \$49.75. It then nearly returned to near the pre-shooting price at \$50.65, then continued to fall until Day 7, the trough of the 15 day window at \$48.45. By Day 15, RGR had surpassed its pre-shooting price, closing at \$51.80.

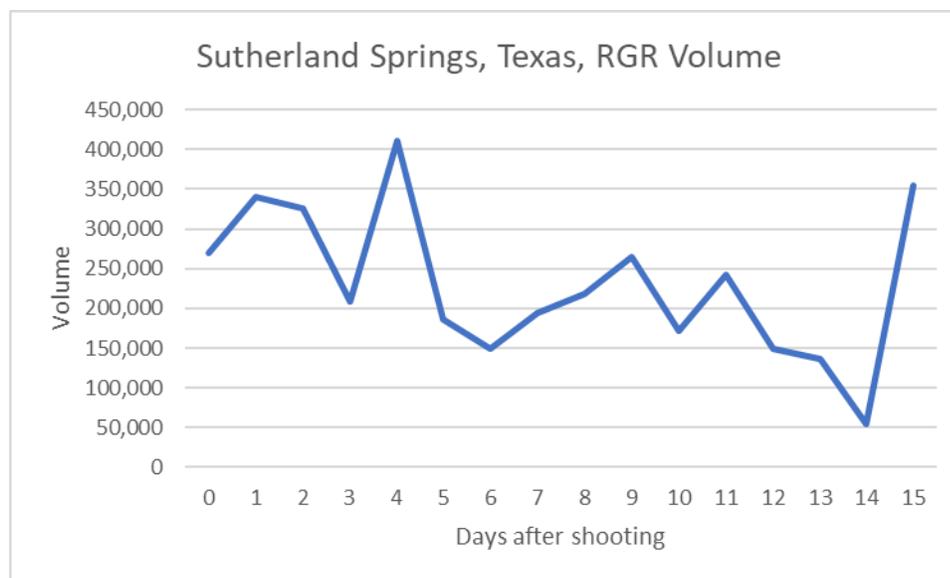


Figure 6. Ruger volume following the shooting.

Las Vegas, Nevada:

The evening of Sunday October 1, 2017, Stephen Paddock fired into a concert crowd from his 32nd floor hotel suite. Paddock, 64, fired over 1,100 rounds from 24 different firearms, 22 of which were AR style rifles. Fifty-eight people were killed, and over 400 injured as a result of gunfire. This is the deadliest mass shooting in the history of the United States. Paddock was able to fire so many shots partly due to his use of a “bump stock,” an aftermarket accessory that enables rifles to fire in quick succession, similar to that of automatic rifles. In addition, Paddock also used ten 100 round magazines. Paddock’s motive is still unknown. Paddock was killed by a self-inflicted shot to the head.

The Friday before, RGR stock closed at \$51.70. On Monday morning, RGR opened 3.4% higher, which was over 6.6% higher during the day before closing 3.5% higher. During the week, RGR peaked at \$55.90 or 8.1% higher than its pre-shooting price. The stock

price then declined the following week. By Day 15 RGR closed higher than its pre-shooting price and closed at \$52.45.

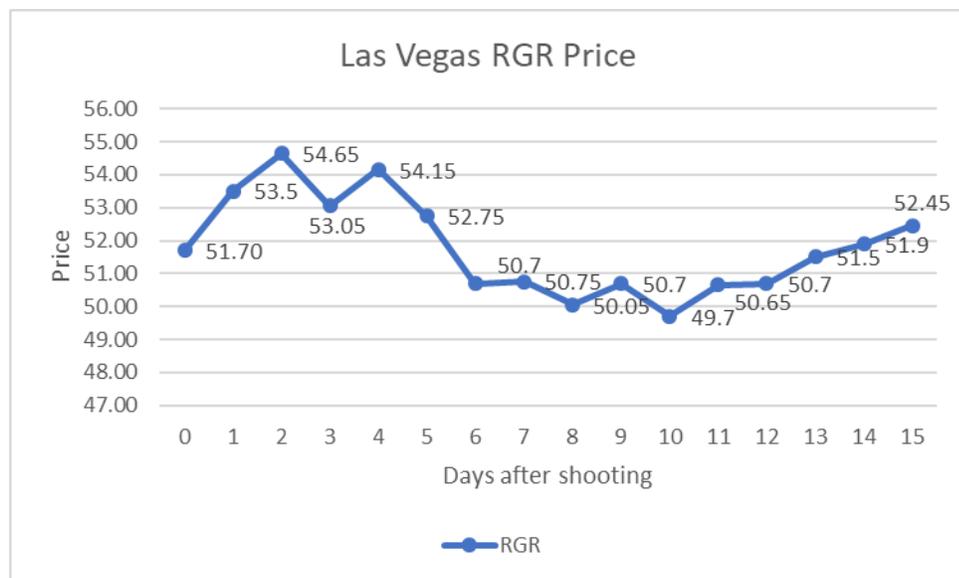


Figure 7. Ruger share price before and after the shooting.

Day 4 following the shooting, a sharp decrease in price began that would continue for the next 6 days of trading. Day 4 equates to October 5, 2017. On this day, in a surprising move, the National Rifle Association, executive president Wayne LaPierre issued a statement “The NRA believes that devices designed to allow semiautomatic rifles to function like fully-automatic rifles should be subject to additional regulations.” This is one of the first instances of the NRA promoting regulation of any kind of firearm product. The same day President Trump announced his administration could be in favor of banning bump stocks.

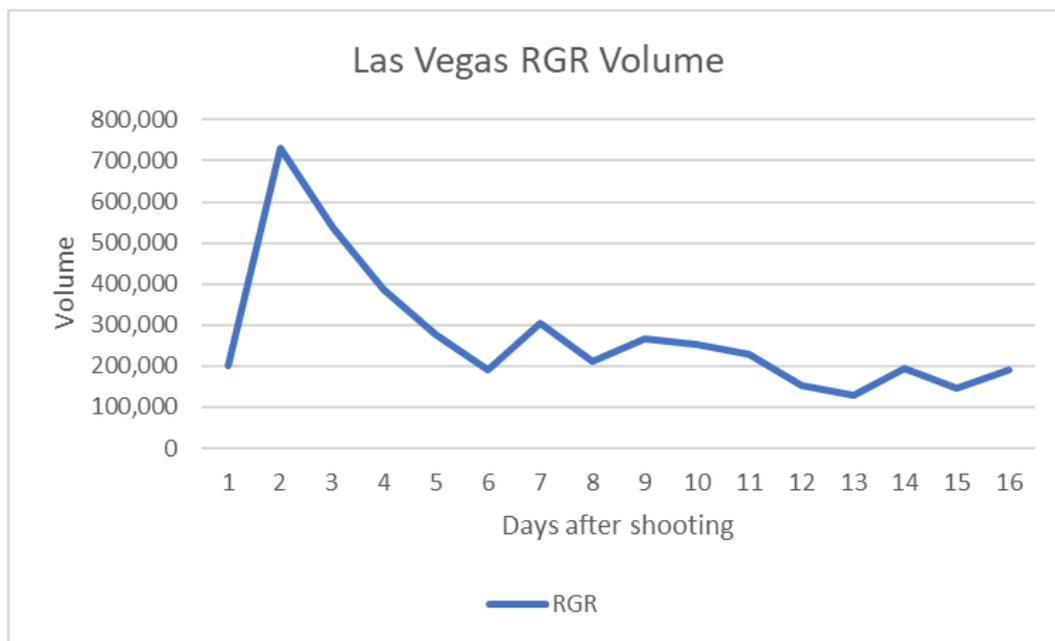


Figure 8. Ruger volume following the shooting.

Shootings before November 2016:

Orlando, Florida:

Saturday June 12, 2016, Omar Mateen committed a mass shooting inside a gay nightclub in Orlando. Mateen killed 49 and wounded another 53. At the time of the shooting it was the deadliest in United States history. Mateen attributed the act to an allegiance to the Islamic State, making the shooting a terrorist attack. Mateen used a SIG Sauer MCX semi-automatic assault rifle and a Glock 17 pistol. Mateen reportedly fired at least 110 rounds, and hundreds more rounds were found in his car. Mateen was killed by a self-inflicted shot to the head.

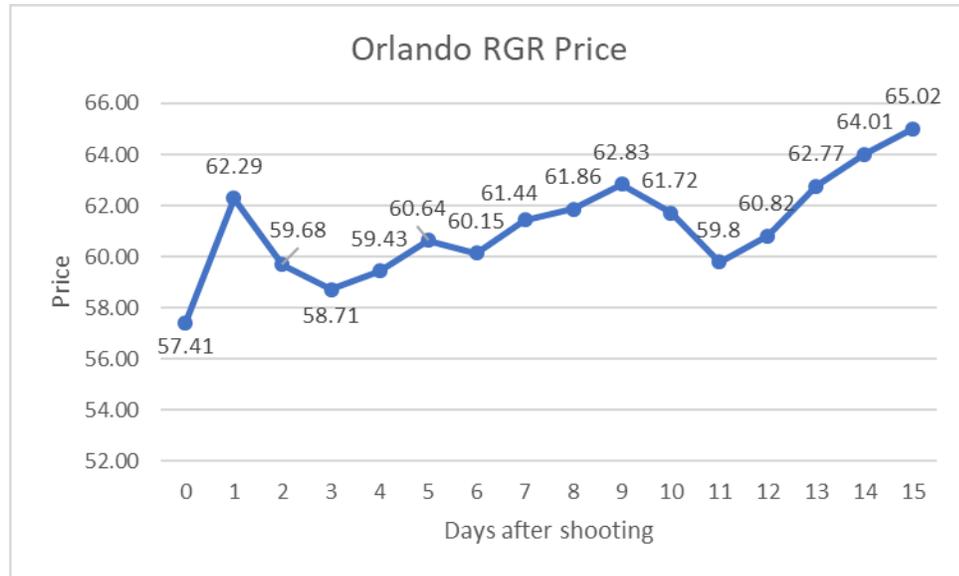


Figure 9. Ruger share price before and after the shooting.

The Friday before RGR stock closed at \$57.41. On Monday morning, RGR opened 7.9% higher, was over 10.7% higher during the day before closing 8.5% higher, closing at \$62.29. During the 15 day window following the shooting the lowest closing price was \$58.71, higher than the pre-shooting price. The 15 day window closed at \$65.02, more than a 13% increase from the price the day before the shooting.

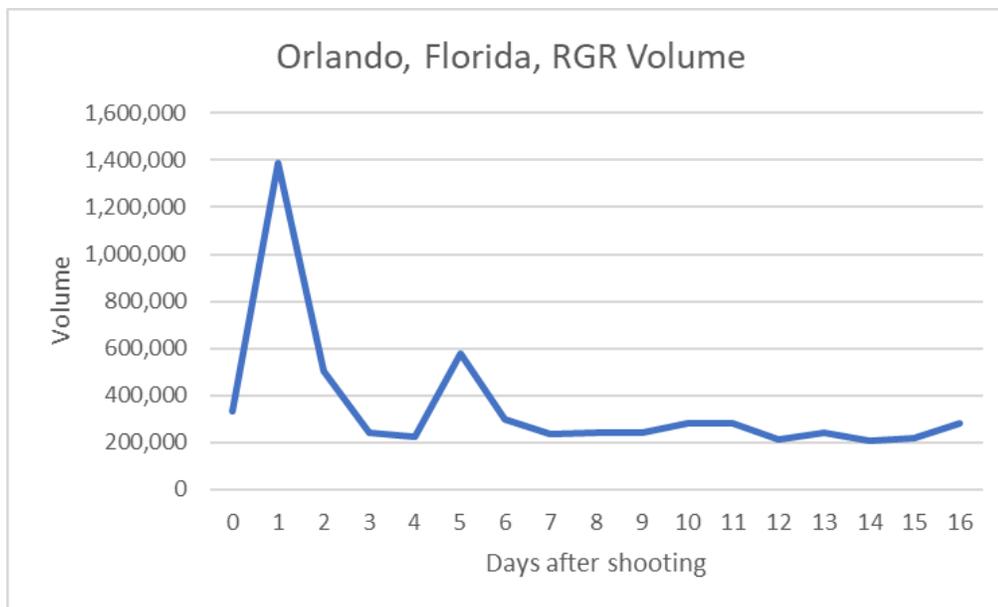


Figure 10. Ruger volume following the shooting.

San Bernardino, California:

December 2, 2015, a married couple engaged in a terrorist attack for the Islamic State consisting of a mass shooting and a bombing at the Inland Regional Center located in San Bernardino, California. The two perpetrators, Syed Farook and Tashfeen Malik, used AR-15 style rifles, 9mm semiautomatic pistols, and pipe bombs. The couple killed 14 and injured an additional 24. The two were determined to be “homegrown violent extremists,” radicalized over the years preceding the event. Both perpetrators were killed by police in a shootout shortly after the incident.

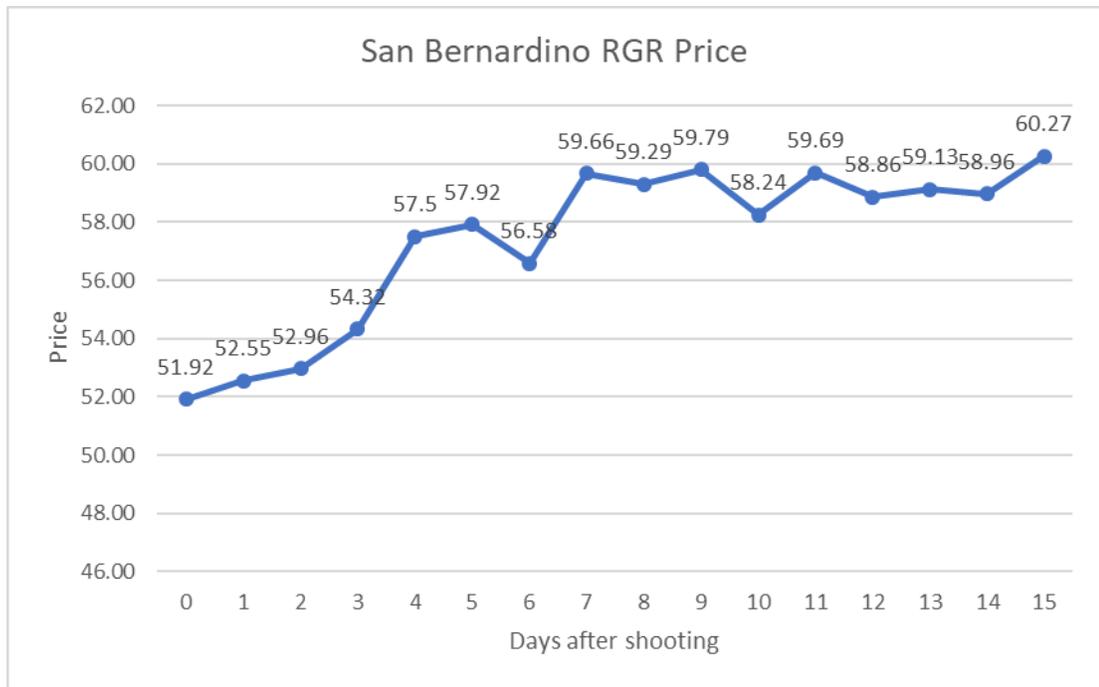


Figure 11. Ruger share price before and after the shooting.

The day before RGR stock closed at \$51.92. The day after the shooting, the stock reached 6.6% higher. During the 15 day window following the shooting the price never closed below pre-shooting levels. The 15 day window ended closing at \$60.27, over 16% above Day 0 closing price. The stock price increased for the next month, reaching a peak price of 28.9% higher.

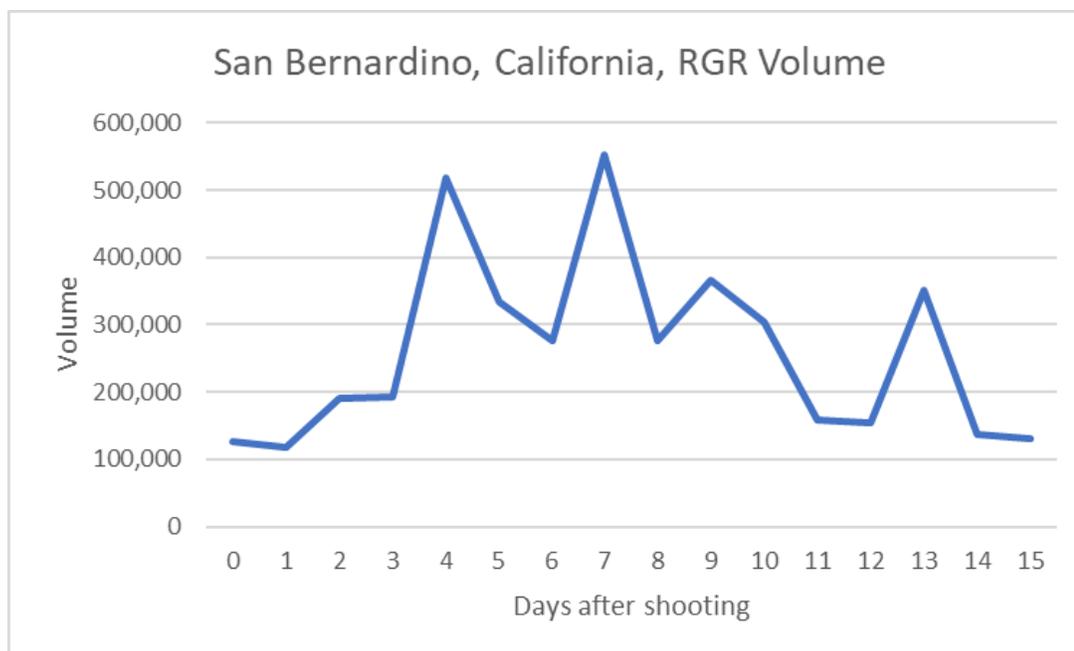


Figure 12. Ruger volume following the shooting.

Sandy Hook, Connecticut:

December 14, 2012, Adam Lanza, 20, killed his mother in their home, then drove to the elementary school, where she was employed, and began his killing spree. Lanza fatally shot 20 children and six adult staff. There were two non-fatal injuries. Lanza used an AR style rifle and a Glock 20SF pistol. He also had ten 30 round magazines for the rifle. This was the deadliest school shooting since the Virginia Tech shooting. Mental health was indicated to be the motive for Lanza's actions, having suffered from Asperger's syndrome, depression, anxiety and obsessive-compulsive disorder. Sandy Hook sparked a national debate for universal background checks for purchasing firearms and new legislation banning sale and manufacture of certain firearms and magazine capacities. Lanza was killed by a self-inflicted shot to the head.

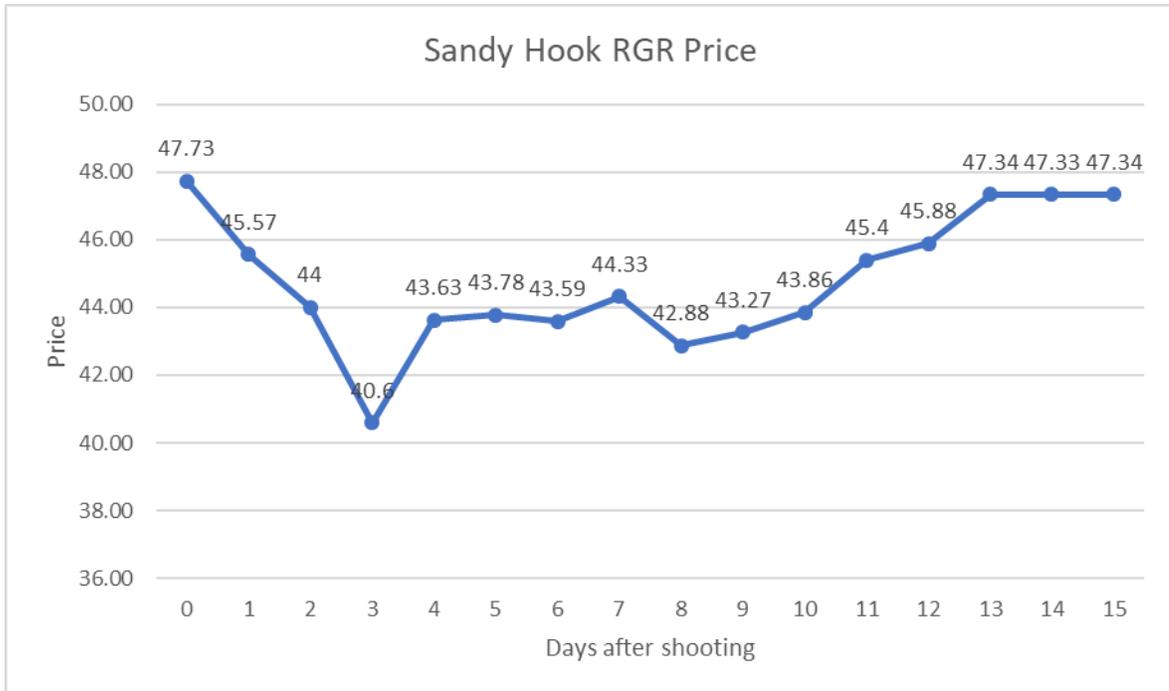


Figure 13. Ruger share price before and after the shooting.

RGR closed at \$47.73 the day prior to the shooting. The price immediately fell until its trough at Day 3, closing at \$40.60. By the end of the 15 day window prices had nearly recovered to pre-shooting close.

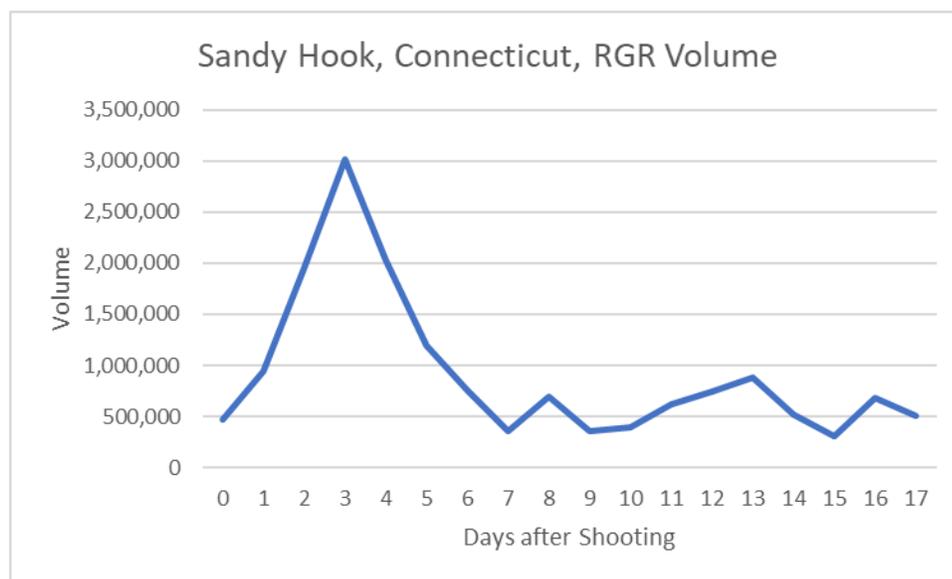


Figure 14. Ruger volume following the shooting.

Aurora, Colorado:

July 20, 2012, James Holmes entered a screening of the film “The Dark Night Rises” and fired into the audience using tear gas grenades and multiple firearms. Holmes killed twelve people and injured another 58. Holmes used an AR style assault rifle, a Remington 12-gauge shotgun, and a Glock 22. The semi-automatic rifle was equipped with a 100-round magazine. Holmes fired a total of 76 shots in the theater. Holmes was reportedly depressed and “obsessed with killing for over a decade.” (CNN “A look inside the broken mind of James Holmes.” June, 2015).

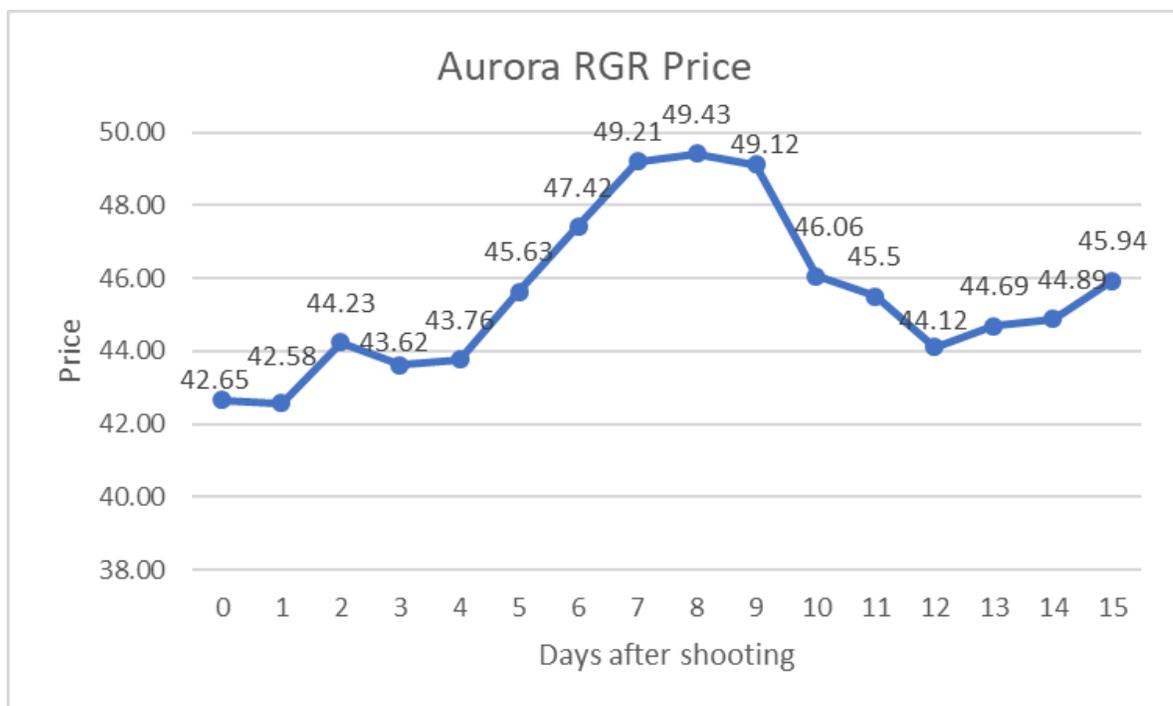


Figure 15. Ruger share price before and after the shooting.

RGR closed the day prior to the shooting at \$42.65. During the 15 day window following the shooting price closed at a peak of \$49.43, nearly 16% increase from pre-shooting price. The 15 day window closed at \$45.94, still more than 7% above pre-shooting price.

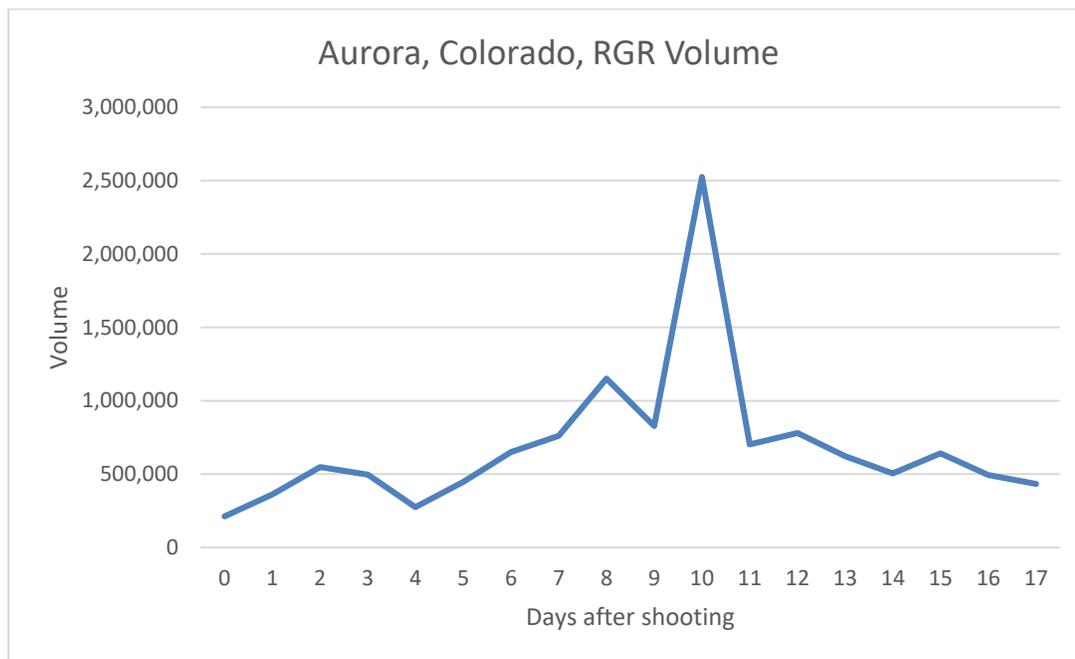


Figure 16. Ruger volume following the shooting.

Fort Hood, Texas:

November 5, 2009, Nidal Hasan, US Army major and psychiatrist shot and killed 13 people and injured 32 others at Fort Hood. Additionally, he killed the mother of an unborn child. Hasan used an FN Five-seven pistol. This remains the deadliest mass shooting on an American military base. Following the incident, it was revealed that Hasan had been in contact with Imam Anwar al-Awlaki, a Yemen based extremist monitored by the National Security Agency, (NSA). Hasan had reportedly become more radicalized over the years prior to the shooting. The US government has declined to recognize the shooting as an act of terrorism despite these ties.

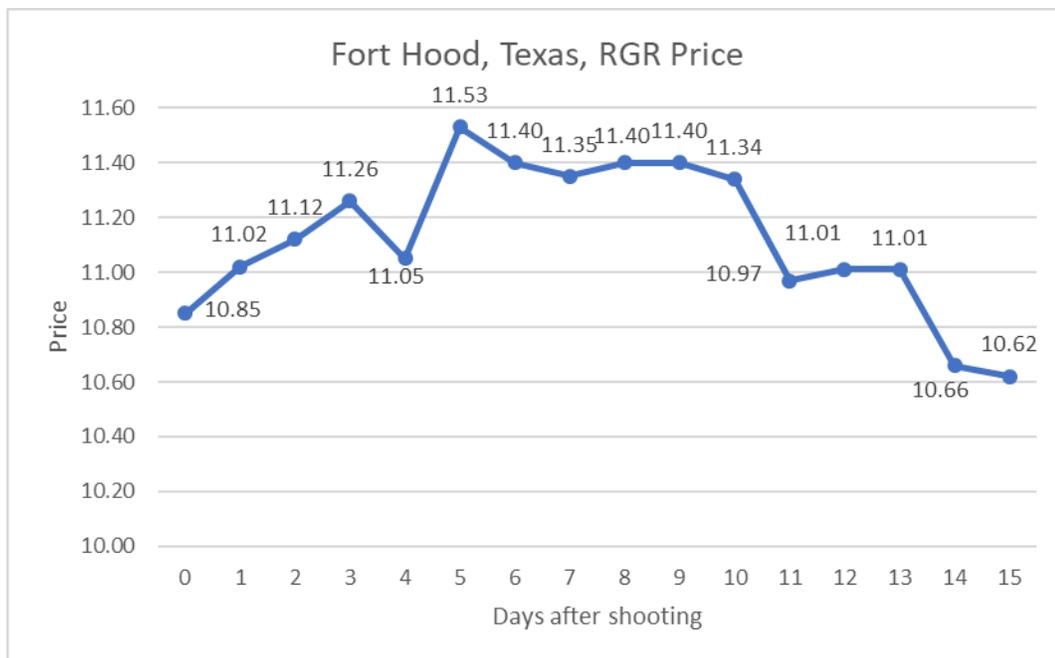


Figure 18. Ruger share price before and after the shooting.

RGR closed the day prior to the shooting at \$10.85. The price increased until Day 4, in which it dropped down to \$11.05, still above pre-shooting levels. During the fifteen day window following the shooting the price reached \$11.53, 6% above the pre-shooting price. The fifteen day window closed at \$10.62, below the pre-shooting price.

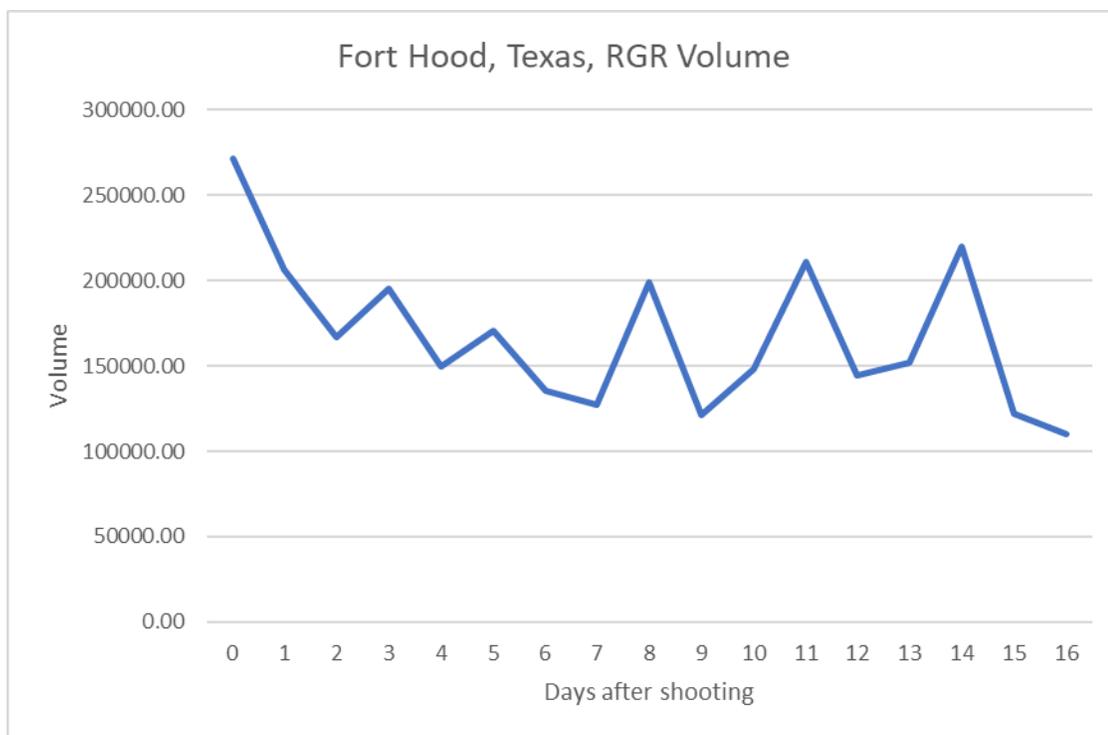


Figure 19. Ruger volume following the shooting.

Binghamton, New York:

The morning of April 3, 2009, Jiverly Wong, a 41-year-old Vietnam born naturalized American, began shooting at the American Civic Association Immigration Center. Wong used a 9mm Beretta and a .45 Caliber Beretta to kill 13 people and wound four others. The shooting took place in the classroom where he had formerly attended English as a second language classes. The motive remains unclear, but theories suggest the incident may have been a result of depression and a feeling of disrespect during a period of unemployment. Wong was killed by a self-inflicted gun shot wound to the head.

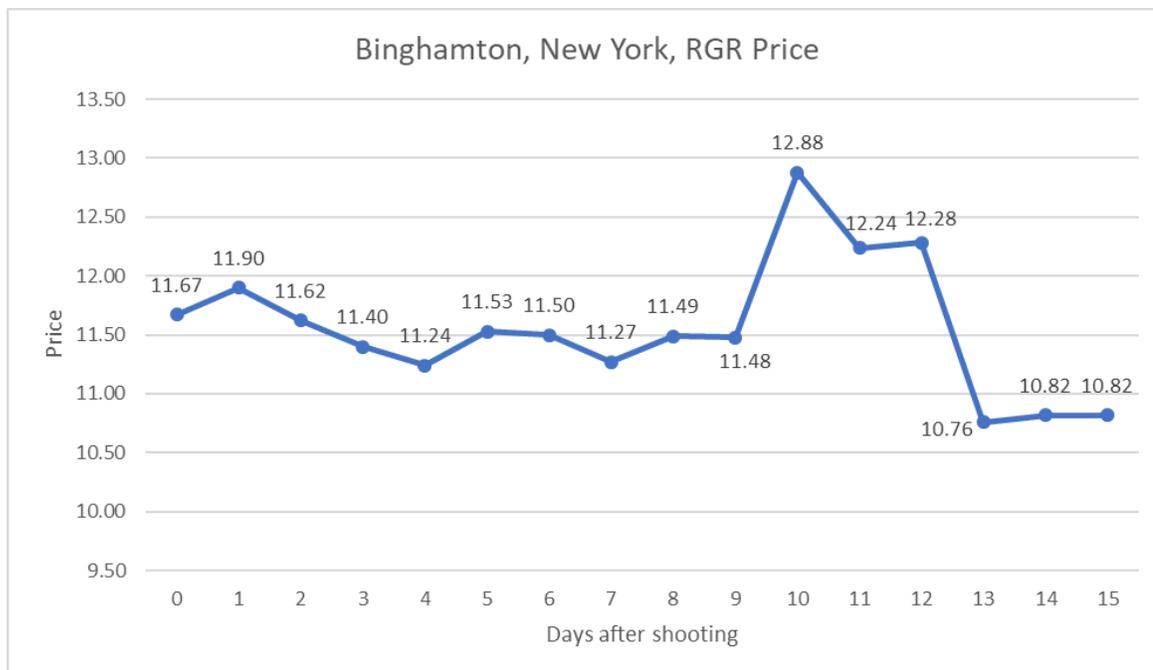


Figure 20. Ruger share price before and after the shooting.

RGR closed the day prior to the shooting at \$11.67, and climbed to \$11.92 during trading the day of the shooting. The price then fell until the Day 11, in which it closed at \$12.88, over 10% above the pre-shooting price. The fifteen day window closed at \$10.82, below pre-shooting levels.

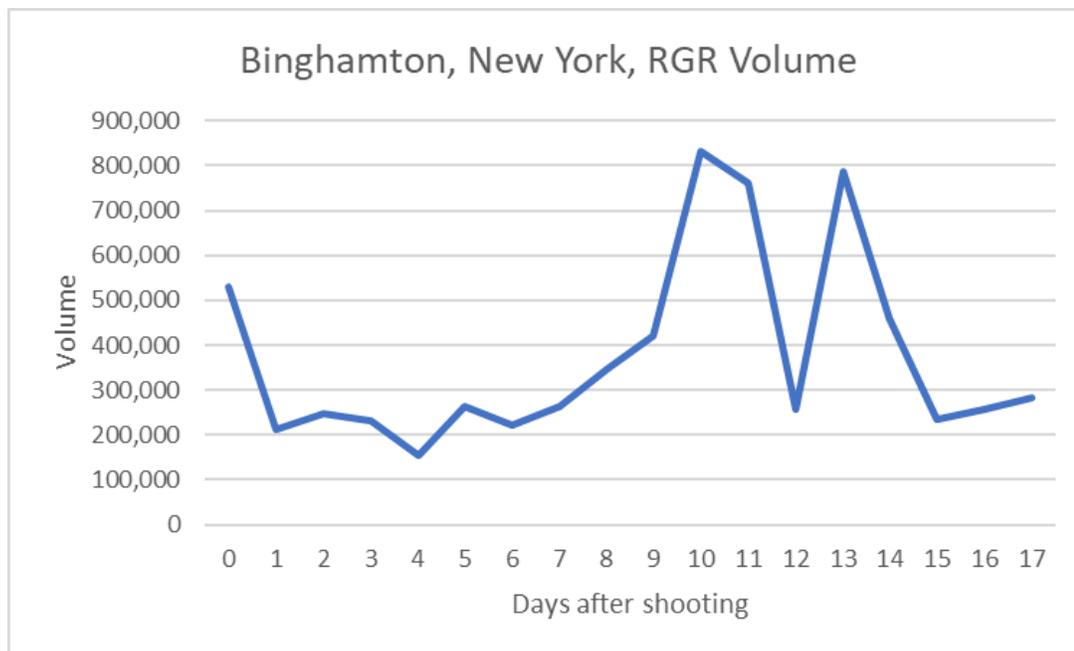


Figure 21. Ruger volume following the shooting.

Virginia Tech, Virginia:

April 16, 2007, Seung-Hui Cho, a South Korean born naturalized citizen and student at Virginia Tech, used two semi-automatic pistols, a Glock 19 and a Walther P22, in a shooting spree at Virginia Polytechnic Institute. Cho killed 32 and wounded an additional 23. This shooting is the deadliest school shooting in United States history, and at the time was the deadliest shooting in US history. Cho had previously been diagnosed with a severe anxiety disorder which is attributed to Cho's decision to engage in this shooting. Cho was killed by a self-inflicted shot to the head.

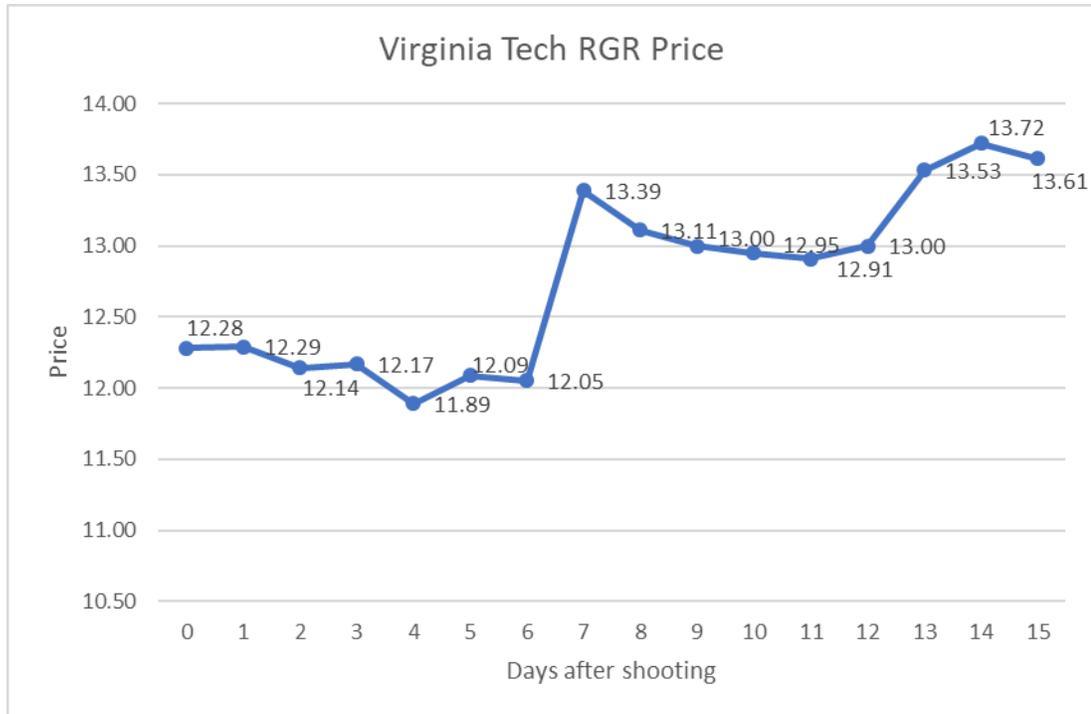


Figure 22. Ruger share price before and after the shooting.

The day prior to the shooting RGR closed at \$12.28. During the day of the shooting, the price was relatively unchanged, closely only one cent higher. Day 7, the price rose to \$13.39, and peaked Day 14 at \$13.72, nearly 12% above pre-shooting price. The 15 day window closed at \$13.61.

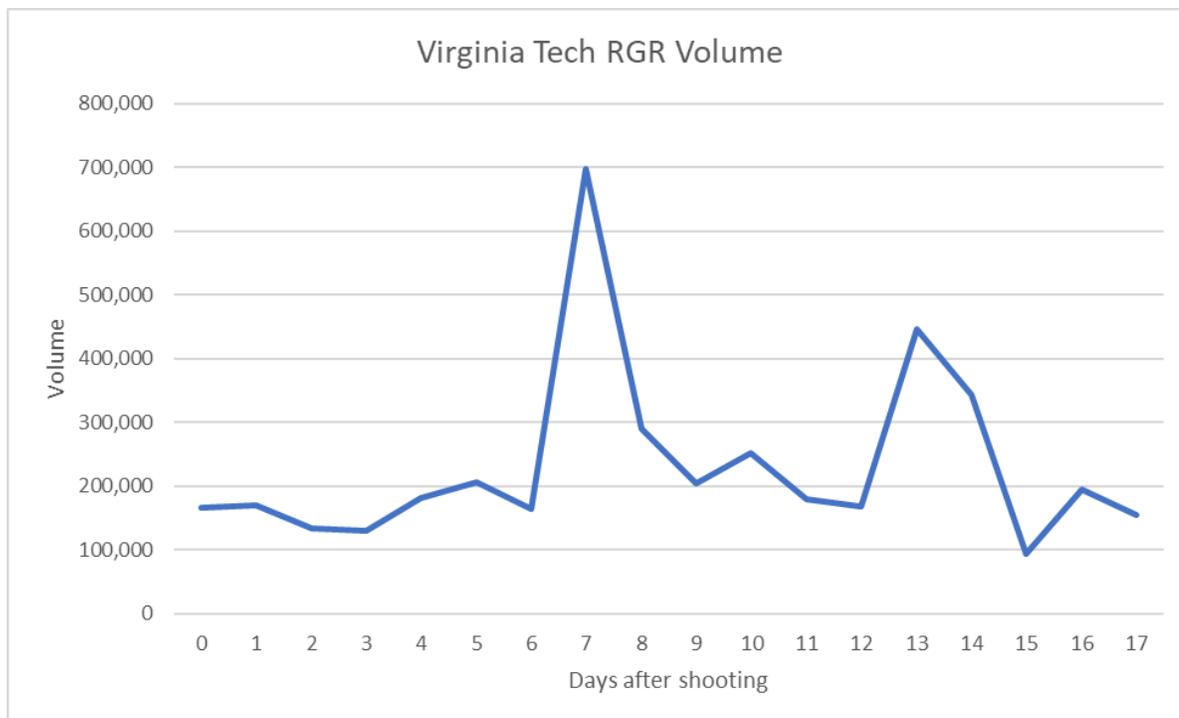


Figure 23. Ruger volume following the shooting.

Data Analysis Methods:

The shootings which are analyzed are the largest ten shootings measured by fatalities in the United States in the last 12 years to assess the effects on Ruger stock. Using the closing price of the day prior to represent “Day 0”, and either the day of the shooting, or the next day of trading, depending on whether the shooting occurred during trading hours or not, to represent “Day 1,” the stock price and trade volume of Ruger is used to identify trends following a shooting. As these events are exogenous and random, there should be no effect leading up to the shooting. The firm level stock data is from the Center for Research in Security Prices.

Analysis:

The change in trading volume suggests that the markets were reacting to these events; the smallest Day 1 percent change was the Virginia Tech shooting, which may be a result of the event occurring during trading hours, and the markets not having the information to make decisions during the day the shooting occurred. Day 3 the volume was 20% below the pre-shooting volume, which reflects the market did react. Additionally, this was the earliest event analyzed, and the trend of sales increasing following a shooting may not have been evident yet, which elicits a stronger market response. Given that these events do have an effect on the market, it is pertinent that we continue to investigate their effects.

Following the percent change in price relative to the day prior to the shooting, we can investigate whether trends exist in the period following the shooting. Both volume of trades and stock price of Ruger, (RGR), are investigated. The change in price and volume are calculated for a 15 day window following the shooting; following the shooting Day 1, 3, 5, 10, and 15 are specifically noted to compare the trading history after each shooting.

We can infer that the shootings are market moving events due to the dramatic change in trading volume for the majority of the shootings. By the market close following each shooting, the average percent change in volume was over 67% greater than the previous day of trading. San Bernardino and Virginia Tech are the only two shootings in which the volume changed by less than 10% by the end of Day 1; however, Day 1 for these events is the day of the shooting as it occurred during trading hours, and there may not have been sufficient information to make informed trades during the course of the day. This is corroborated by the change in volume by Day 3 for these shootings having a similar change in volume to the rest of the sample.

For Days 10 and 15 following the shooting, Aurora is a clear outlier, having a 1000% increase in volume for Day 10 and 202% for Day 15. Removing Aurora from the sample for Day 10 and Day 15, the results fit a normal distribution, and indicate that volume decreases on average throughout the 15 day sample window. Aurora is an anomaly for Day 10 and Day 15 values; Day 10 following the Aurora shooting the trade volume had increased over 1000% from the day prior; the next greatest change was 323%. For Day 15 following Aurora the volume was still over 200% greater than prior to the shooting. The next largest change was a decrease of 56%. When excluding Aurora from the sample, the change in trading volume follows a linear decline with the average Day 1 being a 66.7% increase, Day 3 59.4%, Day 5 47.2%, Day 10 52.4%, and Day 15 -21.05%.

The average price increasing following the shooting indicates investors expecting an increase in sales following the shooting, and therefore a greater earnings per share. An average 4.5% increase in price in 15 days after the shooting is a sizable return given the brief period of time over which it occurs over. The percent change in price is not consistent for every event in terms of magnitude. Only three of the shootings indicated a consistent direction in price movement, either below or above at all 5 benchmarks following the shooting: Orlando, San Bernardino, and Sandy Hook. It could be inferred from the inconsistent direction in price movement that investors are divided on how the shooting affects the company's value.

Shooting	RGR Price						Percent Change from Day 0				
	Day 0	Day 1	Day 3	Day 5	Day 10	Day 15	Day 1	Day 3	Day 5	Day 10	Day 15
Parkland, Florida	48.75	50.10	50.30	47.30	43.05	50.70	2.77%	3.18%	-2.97%	-11.69%	4.00%
Sutherland Springs, Texas	50.80	49.75	50.05	49.35	50.20	51.80	-2.07%	-1.48%	-2.85%	-1.18%	1.97%
Las Vegas, Nevada	51.70	53.50	53.05	52.75	49.70	52.45	3.48%	2.61%	2.03%	-3.87%	1.45%
Orlando, Florida	57.41	62.29	58.71	60.64	61.72	65.02	8.50%	2.26%	5.63%	7.51%	13.26%
San Bernardino, California	51.92	52.55	54.32	57.92	58.24	60.27	1.21%	4.62%	11.56%	12.17%	16.08%
Sandy Hook, CT	47.73	45.57	40.60	43.78	43.86	47.34	-4.53%	-14.94%	-8.28%	-8.11%	-0.82%
Aurora, Colorado	42.65	42.58	43.62	45.63	46.06	45.94	-0.16%	2.27%	6.99%	8.00%	7.71%
Fort Hood, Texas	10.85	11.02	11.26	11.53	11.34	10.62	1.57%	3.78%	6.27%	4.52%	-2.12%
Binghamton, New York	11.67	11.90	11.40	11.53	12.88	10.82	1.97%	-2.31%	-1.20%	10.37%	-7.28%
Virginia Tech, Virginia	12.28	12.29	12.17	12.09	12.95	13.61	0.08%	-0.90%	-1.55%	5.46%	10.83%
Average							1.28%	-0.09%	1.56%	2.32%	4.51%
Shooting	RGR Volume						Percent Change from Day 0				
	Day 0	Day 1	Day 3	Day 5	Day 10	Day 15	Day 1	Day 3	Day 5	Day 10	Day 15
Parkland, Florida	217,776	179,736	212,983	502,787	921,519	229,507	-17.47%	-2.20%	130.87%	323.15%	5.39%
Sutherland Springs, Texas	270,409	340,667	208,692	186,112	171,030	355,012	25.98%	-22.82%	-31.17%	-36.75%	31.29%
Las Vegas, Nevada	202,375	729,886	387,877	189,146	229,301	192,105	260.66%	91.66%	-6.54%	13.31%	-5.07%
Orlando, Florida	332,454	1,390,184	239,650	577,159	282,443	217,779	318.16%	-27.91%	73.61%	-15.04%	-34.49%
San Bernardino, California	125,971	117,984	193,170	334,621	303,675	130,539	-6.34%	53.34%	165.63%	141.07%	3.63%
Sandy Hook, CT	466,100	937,700	3,019,900	1,197,300	387,700	301,500	101.18%	547.91%	156.88%	-16.82%	-35.31%
Aurora, Colorado	211,900	362,000	495,800	446,700	2,525,100	640,600	70.84%	133.98%	110.81%	1091.65%	202.31%
Fort Hood, Texas	271,200	206,200	195,200	170,600	147,900	122,400	-23.97%	-28.02%	-37.09%	-45.46%	-54.87%
Binghamton, New York	531,400	210,500	232,400	261,900	832,500	234,000	-60.39%	-56.27%	-50.72%	56.66%	-55.97%
Virginia Tech, Virginia	166,400	170,500	130,800	205,200	251,600	93,100	2.46%	-21.39%	23.32%	51.20%	-44.05%
Average							67.11%	66.83%	53.56%	156.30%	1.28%

Figure 24. Analysis of Ruger change in volume and price.

Discussion and Conclusion:

The purpose of this analysis was to determine whether there is a clear relationship between mass shootings and the projected value of gun manufacturers. For the shootings prior to the Trump administration, a trend of price increasing both 10 and 15 days following the shooting became apparent. The more recent shootings, however, do not appear to follow this same trend. These three most recent shootings do not reflect a dramatic price increase either immediately following the shooting, or at the end of the 15 day window. Day 10 following each of the three most recent shootings indicated a price decrease, the greatest being Parkland with an 11.7% decrease. However, by Day 15, price had recovered and exceeded pre-shooting price. This indicates a changing mentality toward the industry, potentially a result of the prevalence of these shootings.

**Figure 8. Days Between Mass Public Shootings
(1970-2013)**

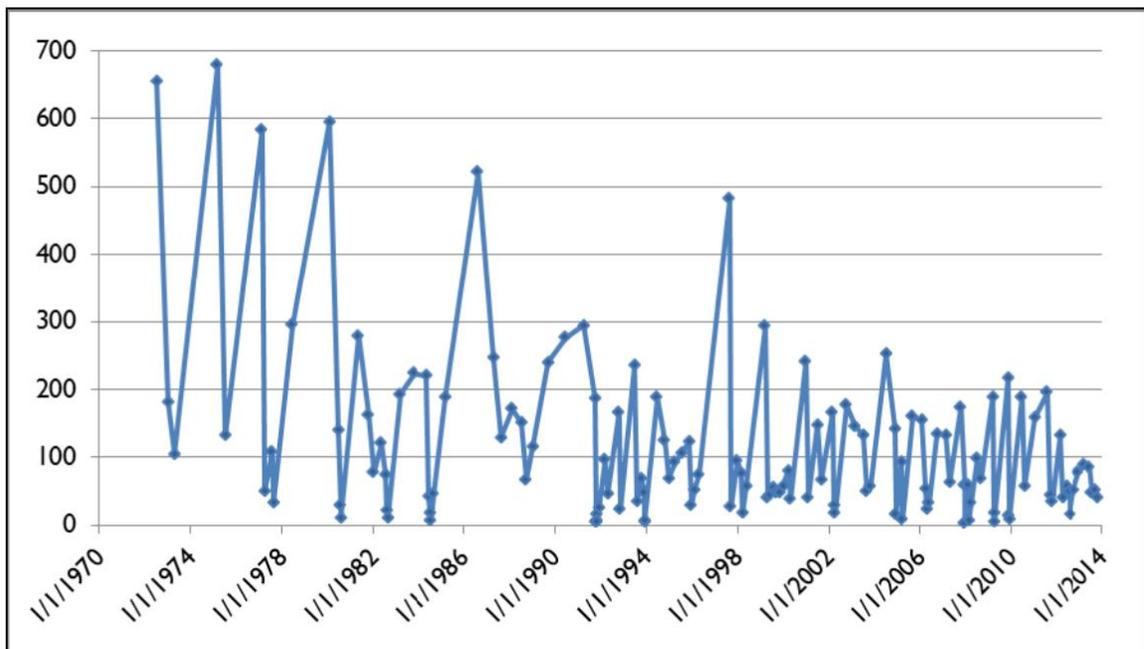


Figure 25. Frequency of mass shootings measured by the number of days between shootings.

According to a report issued by the Congressional Research Service mass shootings have become increasingly frequent. The chart above, figure 25, shows how the average number of days between mass shootings has become significantly shorter. As these shootings become more and more frequent, public support for gun manufacturers profiting after these events has waned. Banks are now offering fewer services as both elements of their corporate responsibility programs, and to simply avoid the toxic publicity accompanying firearm manufacturers. This sentiment is not new; Cerberus Capital Management, the former private equity owner of Remington, a major firearms manufacturer, was urged by investors to sell Remington as early as 2012. This was after a Remington Bushmaster rifle was used in the Sandy Hook shooting. Cerberus did eventually sell Remington, which filed for Chapter 11 bankruptcy in March 2018, which it exited from soon after in May. JP Morgan Chase, Franklin Templeton Investments, and Bank of America acquired stakes in Remington in exchange for credit.

Thirty other potential lenders declined to extend credit to Remington, many citing firearms as the reason according to a Reuters article. Bank of America announced a policy on April 10th, 2018, that aligned with the company's values. According to Anne Finucane, Bank of America Vice Chair, "it is not our intent to underwrite or finance military style firearms on a go-forward basis." This statement was in the weeks following the Parkland shooting, and prior to the credit facility extended to Remington; however Finucane claims the loan was in place before the April 10th commitment. One caveat to this seeming breach of their new policy is that Bank of America's terms include the right for the bank to withdraw from the deal and find another lender to cover the commitment. However, this potentially breaches the bank's fiduciary duty to provide returns to its own shareholders, and opens it to potential lawsuits and damages, as well as hurting the bank's

reputation for serving its clients. Wells Fargo, another lender to Remington, stated “we believe the government should set gun policy, not companies through their credit.”

More recently, many major banks have discussed and implemented policies that are intended to reduce the services offered to manufacturers of military style weapons sold to civilians. At the April 10th, 2019, House Financial Services Committee hearing with 7 prominent bank Chief Executive Officers, legislators questioned bankers regarding their relationship with firearm manufacturers. Citigroup’s Michael Corbat referred to the bank’s policy of requiring their customers to adhere to a number of practices including: not selling firearms to individuals under 21 years old; only selling firearms to individuals that have passed a background check; not selling bump-stocks or high capacity magazines. Bank of America’s CEO, Brian Moynihan, also referenced the bank’s policy to not offer credit services for certain manufacturers. JP Morgan CEO, Jamie Dimon, was pressed to adopt a similar policy. Dimon noted that the firm conducts due diligence of their customers, which in the case of the gun industry are also audited by the Bureau of Alcohol, Tobacco, Firearms, and Explosives, (ATF), as well as required to adhere to federal and state regulations. These differing opinions on the topic makes it unclear how united or committed banks are to these new policies moving forward.

Other industries besides banking have also reduced their support of the firearm industry. United Airlines, Delta Airlines, Hertz, Enterprise, Avis, Chubb, Best Western, Wyndham, MetLife, and Symantec, have all severed ties with firearm manufacturers and the NRA. Additionally, a number of retailers that had formerly sold firearms have elected to no longer carry them. Dick’s Sporting Goods began to stop selling guns and ammunition in many of its stores in March of 2019. The company has stopped selling any assault style weapons in all stores. Walmart stopped selling “modern sporting rifles” in 2015, and also raised the age to purchase all firearms

and ammunition to 21. In 2001 Kmart stopped selling ammunition in all stores after meeting with advocate Michael Moore and victims of the Columbine High School shooting. As manufacturers have increasingly limited options to sell their merchandise, they could struggle to maintain their margins due to increasing costs.

The three shootings that have occurred during the Trump presidency: Parkland, Sutherland Springs, and Las Vegas, all show a negative direction in stock price 10 days following the shooting. Of the seven shootings that were prior to the Trump presidency, only Sandy Hook had a negative direction in stock price 10 days after the shooting. Of the six shootings that showed an increase in stock price 10 days after the shooting, the smallest increase in price was 4.5%, the largest was 12.2%. The Sandy Hook anomaly could potentially be explained by Ruger's headquarters being located in Connecticut, and fear of state legislature having a greater effect on the company's longevity than the short-run return expected by a predictable increase in gun sales following the event.

There are two possible explanations for the change in pattern during the Trump presidency. The first is that consumers may not feel pressured to rush out to buy products following a shooting as they were during the Obama administration, since Trump made clear during his campaign, he was supportive of second amendment rights. Consumers may have assumed during the three most recent shootings that since Trump holds executive power, and the Republicans controlled both the House of Representatives and the Senate, there is not a possibility of legislation that will prohibit particular items. More recent mass shootings following the democratic return to power in the House may reveal the validity of this assumptions if trends change. The falling stock price of Ruger following the surprise 2016 defeat of Clinton, a strong advocate for strict gun control, was a result of forecasted sales falling due to Trump's election

victory. As mentioned previously, the fear of losing access to specific products had abated, with forecasted falling sales, stock price fell.

This theory is flawed in a couple of ways. Although President Trump had voiced support for the Second amendment during his campaign, he has consistently shown that he is inclined to stricter gun control. Additionally, a number of other Republican politicians have weakened stances on gun control. The governor of Florida following the Parkland shooting mandated that the age to purchase rifles was increased from 18 to 21. Additionally, background checks have become more rigorous, and the buying period wait has increased.

The second possible explanation is that Trump, the NRA, and other Republican politicians, such as the Florida governor, have not been as lenient on gun control as would have been expected. The industry may have reached a tipping point in regards to unfettered support from conservatives, who are now more likely to support stricter gun control laws than previously. This calls into question the longevity of the industry. Concerns and lack of institutional support for the industry may be the explanation for the shootings occurring during the Trump presidency breaking the pattern set during the administrations of his predecessors. The average price change by day 10 of the shootings during the Trump presidency was -5.58%, the average change of the other seven shootings prior to his presidency were 5.70%; Day 15 following shootings during the Trump presidency was 2.47% and the other 7 shootings were 5.38%. Although both show an increase, the average stock price increase 15 days after a mass shooting prior to President Trump, price increase after 15 days was nearly double the increase during the Trump administration. It is possible that following each shooting the initial price decline is resulting from investors fear of association with the industry, and not expecting sales to increase in the future since President Trump is not expected to increase constraints. The price

increase in the later stages of the 15 day window could result from President Trump, as well as other conservative figures, making surprising announcements demonstrating favor of increasing controls; which then creates the “fear sales” mentality evident of increasing sales following a shooting during the period prior to his presidency, which causes stock price to recover at the later stages of the 15 day window.

There is not a definitive conclusion associated with the stock price following a mass shooting; it appears to largely be based on circumstances regarding potential future legislation. However, as institutional support fades for the industry, and the association with gun manufacturers becoming increasingly toxic, it will become more difficult for the industry to deliver their products to consumers, as well as receive the benefits of professional services. As demonstrated by 30 potential lenders refusing to extend credit services to Remington, manufacturers are already beginning to struggle. As support from the banking industry wanes, these manufacturers will struggle to have access to the capital required for large capital expenditures and other investments, or in the case of some, like Remington, to operate on a going concern. These limitations, constraints, and fear of negative publicity due to association, will drive institutional investors to reconsider the viability of equity and credit relationships with the industry. More research is needed to determine the potential future of the industry, but many signs point to less financial success unless public perception of the industry changes, which is unlikely to occur unless shootings of this nature cease to exist.

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