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TRILLIUM ASSET MANAGEMENT®

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THE FINANCIAL CASE FOR GUN DIVESTMENT

Why Gun Companies Should be Removed from Mainstream Stock Indices

Executive Summary

A large percentage of the American public, most of whom are uncomfortable with the current state of gun regulations in their country, have exposure to the stock market through their 401(k) or IRA fund holdings. Many of these funds will be passive funds that track an index, as well as active funds that track one a little more loosely, since the fund manager stays within a tracking error limit of an index and that index is what their performance is evaluated against. The indices are designed to capture the "overall market" and a generally capitalization weighted with various rules to make the index "investable." Most of the US stock market indices (S&P500, R1000, etc) have gun manufacturers as part of the index constituents. This means that almost all US stock funds hold the equity of gun manufacturers as a "neutral" position. Considering the scale of this exposure, this paper asks the question: What impact would it have on the financial outcomes for the beneficiaries of these investments, and on the gun manufacturers themselves, if these companies were removed from the mainstream stock indices they are currently part of?

Removal from an index releases the passive investments that fund managers hold simply to have a neutral position against the index. This release of investment will raise the cost of capital for the excluded firm, as well as allowing that investment capital to be used for more socially productive activities. Our analysis suggests that this loss of passive investment would have serious financial consequences for the companies in question, removing more than a third of their stock market valuation. Meanwhile, the beneficiary of the fund managers' returns would have near zero change to their goal of tracking the "overall market." In other words, removing such low-weighted constituents from an index would be immaterial to the end investors. The asymmetry of these effects begs the question of whether there exists a strong enough argument to keep gun manufacturers in mainstream investment indices.

49.6%

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Introduction

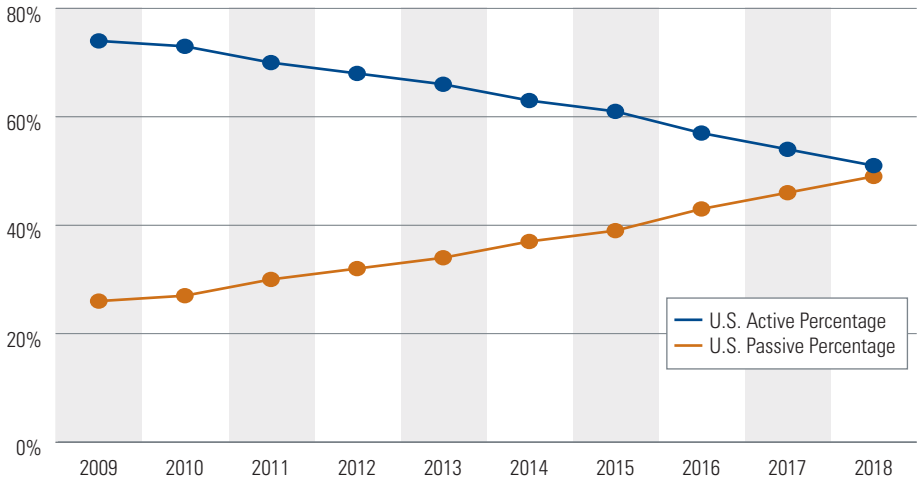
The topic of gun violence in America needs practically no introduction. As of September 30, 2019, 352 Americans have been killed and more than 1300 injured in 318 mass shootings, according to the Gun Violence Archive.[1] While almost all states (45) have enacted some form of gun restrictions since the tragedy at Sandy Hook Elementary School in 2012, according to the Giffords Law Center, and more than half of states (32) since the shooting at Marjory Stoneman Douglas High School in 2018, real action at the federal level remains stalled in the Senate.[2] A Gallup Poll conducted in October 2018 found that 61% of Americans believed that gun restrictions should be made stricter than they were at the time,[3] an opinion reported by more than 50% of Americans polled each year by Gallup since October 2015.

A research paper[4] published by the National Bureau of Economic Research in 2017 found that in 2016, 49.6% of American households had some investment in the equity market, either directly in stocks or through indirect investments such as mutual funds, with more than 43% of households having ownership through pension plans, which they largely cannot control. This same paper found that more than 73% of total US equity was held through these indirect investments. Passive investments, such as index and exchange-traded funds, rely on index providers to set the companies in the index, and then buy the companies included by the index. According to Morningstar, passive funds held a 38.8% market share at the end of 2018,[5] and in the third quarter of 2019 the amount of assets under management (AUM) in index-tracking US equity funds finally overtook active strategies, $4.27 trillion to $4.25 trillion.[6] A 2018 survey by Pensions & Investments showed that 59.9% of the top 200 defined benefit pension plans were invested in passive strategies.[7] However, even actively managed funds have an incentive to hold constituents in their passive weights if the fund manager wants to remain neutral and not incur tracking error.

FIGURE 1

U.S. Equity Active/Passive Percentage

Source: Morningstar Direct. Data as of 31 December 2018.



…index providers, such as Standard & Poor's (S&P) and FTSE Russell, continue to treat gun manufacturers the same as grocery stores or software firms: as acceptable investments for American households.

Combining these facts, it is reasonable to assume that a large percentage of the American public, most of which is uncomfortable with the current state of gun regulations in their country, has exposure to the stock market through investments that are either controlled by index providers or overseen by pension trustees. And yet index providers, such as Standard & Poor's (S&P) and FTSE Russell, continue to treat gun manufacturers the same as grocery stores or software firms: as acceptable investments for American households.

Recent research has explored the ability of investors to shift the cost of equity capital for a particular firm by their own capital allocation decisions of buying and selling stocks, and found that by doing so, investors "can influence the direction of economic development by making it cheaper for sustainable companies to raise additional capital and more expensive for unsustainable companies to do so."[8] Using this framework, what would the removal from leading indices mean for the gun manufacturers in question?

Is this the "silver bullet" solution to end gun violence? Of course not. But there are three reasons why removing civilian gun manufacturers from common investment indices is one of the reasonable solutions at this moment.

First, it is not political, and therefore can be implemented without the intervention of campaign contributions or lobbyists that have stymied action to combat gun violence at the federal level. Second, as discussed in the rest of this paper, ejecting gun manufacturers from the common indices would have little impact on investors, but a large impact on the manufacturers of civilian weapons, pushing them away from the mainstream of American business. And finally, teachers and other municipal workers in the sad society of cities from Newtown to Parkland to San Bernardino should not have to fear that the retirement investments that they don't control are profiting from, and propping up, the manufacturers of the weapons that were used to murder their colleagues, friends, neighbors and students.

THE BASICS OF THIS PAPER

The question we are seeking to answer is how meaningful the shift in the cost of capital would be for publicly listed gun manufacturers if they were removed from mainstream investment indices. Additionally, we will analyse whether there would be any material impact on the investors in the funds that track these indices.

Index providers decide which companies are part of their index and which should be omitted or dropped. Rules are set to be mechanical. But the overlapping prescriptions and exceptions complicate the decision-making to a point where most index providers have a committee to confirm the final decisions on whether a company should be a part of an index at any given time, and these decisions

Companies that are part of the index end up having their stocks bought by virtually all passive investors tracking the index, and even by many, if not most, active managers for risk tracking error management reasons.

are not always strictly mechanical. For example, in July 2017 the S&P Dow Jones Indices decided to bar companies with multiple share classes of stocks from joining their flagship US indices such as the S&P 500,[9] widely viewed as a reaction to the trend of companies restricting voting rights from their public equity investors. Companies that are part of the index end up having their stocks bought by virtually all passive investors tracking the index, and even by many, if not most, active managers for risk tracking error management reasons.

The addition and removal of companies from an index has become a playground for market participants who seek to systematically gain from these events. Winton, for example,[10] demonstrated average excess returns of almost 7% over a 30-day period for companies added to the market indices and around -14% average negative performance for companies deleted from an index.

The biggest and most direct impact of index providers on corporates' finances comes through the cost of capital. A quick analysis of a standard supply and demand curve shows that a reduction in demand (a downward shift in the demand curve) for shares in a company will result in a lower share price. A lower share price implies investors require a higher expected return. The opposite is true for an increase in demand. The demand curve moves upward and the price goes up, implying a lower expected return. This is the simple mechanism of shifting the cost of equity capital.

By influencing this allocation of capital (buying and selling), index providers have the power to shift companies' cost of capital. By shifting the cost of capital, they can influence the direction of economic development, by making it cheaper or more expensive for companies to raise additional capital. This phenomenon is well studied and understood by the capital markets.

Method

To answer our question on removing gun manufacturers from major indices, we present a simple framework involving two key factors:

1. An estimate of how much money is holding the gun manufacturers' shares simply because the stock is in the index used to benchmark investment managers. Let's call this "passive gun ownership."
2. An estimate of the price elasticity of demand, or how shifts in the demand for shares affect the price.

Price elasticity of demand involves estimating the degree to which shifting the demand curve moves the price. Another way to frame the question is: How much extra expected return will other investors require to add the divestment to their existing portfolios? We will proxy this using a market impact model. The model we apply here has been developed based on a large sample of trades as a measure of market liquidity. To assess the thresholds at which the price moves and by how much, we set out to estimate the price impact for various-sized trades. By using a dataset of literally millions of trades containing prices before and after our trades of various sizes, we came up with a surprisingly elegant rule of thumb to estimate price impact: trading two days' volume impacts the price by one day's standard deviation. For example, if the average stock has $40 million average daily volume and a daily volatility of 2%, a $40 million trade would move the price by 1%.

To estimate the amount of passive gun ownership, we looked at the share ownership of each company. Our assumption was that all passive fund holdings were clearly mechanically holding the shares and all institutionally benchmarked assets. We assumed retail, family offices and hedge funds held the share intentionally. We then divided this total amount by the average daily volume (ADV) of the stock to arrive at the number of trading days. This number of days (divided by two) compounds the average daily standard deviation (STD) of the equity share price to give us the estimated price change.

In notation, this calculation is expressed as follows:

$$\frac{Passive\ Money}{ADV} = Number\ of\ Days$$

$$(1 - STD)^{\frac{No.\ Days}{2}} = Price\ Change$$

Data

In the US, there are three publicly traded companies that derive the vast majority of their revenue from gun and ammunition sales, as verified by combing through the Bureau of Alcohol, Tobacco and Firearms' "Annual Firearms Manufacturing and Export Report" for fiscal year 2017.[11] One of these three, Vista Outdoor, has recently sold its gun manufacturing business, but still derives 50% of its revenues from ammunition sales.[12] While there are other participants in the chain of gun violence, including retailers who sell guns, these three were selected due to having at least half of their sales directly related to guns.[13]

NB all company specific data in the following sections has been collected via Factset and Bloomberg in the period from August 1 to October 22 2019.

Let's take the example of Vista Outdoor Inc.'s data to walk through the calculation in practice:

Sum of passive gun share owners = $174 million.

Average daily volume is $4.6 million, so this would be almost 38 days of volume.

Using our rule of two days' trading volume for one day's standard deviation of prices gives us:

$$\left(1 - STD(5.1\%)\right)^{18.9} = Negative\ Price\ Change\ of\ 37\%$$

Results

By inserting this index- and stock-specific information for each of the three companies into the model, we find the following:

VISTA OUTDOOR INC.

40%

…if Vista was dropped from the indices we are including in this analysis, the triggered sell-off of $174 million of its stock could cause its share price to fall by almost 40%.

Vista Outdoor Inc. is the most leveraged and lowest margin of the three companies in focus. The company is a case study in overexpansion, having made numerous debt-financed acquisitions in quick succession. It then had some market movements (decline in ammunition sales and a rise in copper prices) go against the business at the worst possible moment. A new CEO was brought in, who is frantically trying to turn the business around by any means necessary: cutting expenses, selling non-core assets, re-focusing core assets, etc. The company struggled for a year to sell its Savage Arms gun manufacturing business, and finally sold it in August 2019 to a group of investors led by Savage Arms' CEO, but still makes about 50% of its revenue in ammunition.

Vista Outdoor has a market cap of $303 million, with the bulk of its shareholders (57%) benchmark linked by our definition (passive capital or active benchmarked capital). The firm is loss making and has an operating margin of only about 0.5%. According to our model, and based on $4.6 million daily traded volume and one day's stock price standard deviation of 5.1%, if Vista was dropped from the indices we are including in this analysis, the triggered sell-off of $174 million of its stock would cause its share price to fall by almost 40%. The likely outcome is that the company would be split up and sold. Management would be forced to allow the copper for bullets to be used for other purposes, such as plumbing.

AMERICAN OUTDOOR BRANDS CORPORATION

American Outdoor Brands Corporation (AOBC), formerly Smith & Wesson, has a market cap of $314 million, a P/E of 29 and an operating margin of 7.5%. It has a debt/equity ratio of 0.45. Its debt is financed at very low rates (1.14%) and is mostly in long-term instruments. It appears that about 50% of its shareholders are benchmark-sensitive investors. A wholesale removal from indices would cause a price collapse of an estimated 45% under our model. This would put extreme pressure on its credit rating and potentially trigger downgrades. Combined with a 2% higher required return on its equity, AOBC would face a much higher cost of capital going forward, substantially hindering its growth prospects.

AOBC has published some responses to investor engagement letters in the past. An excerpt quoted by the Financial Times below summarizes its thinking about gun control laws (otherwise paraphrased as saying that, clearly, anything bad for the company must be bad for… the company):

> *The solution is not to take a politically motivated action that has an adverse impact on our company, our employees, our industry, our shareholders, the economies we support and, significantly, the rights of our law abiding customers, but results in no increase in public safety. We must collectively have the courage to ensure any actions are guided by data, by facts, and by what will actually make us safer — not by what is easy, expedient, or reads well in a headline.*

Note: as we were finalizing this paper for publication in mid-November 2019, American Outdoor Brands announced that at some point in 2020 they would be spinning off their gun manufacturing division to be a separately publically traded company named Smith & Wesson Brands Inc., owned by AOBC's investors. Investors initially reacted positively to the news; it seems not even AOBC's own management or investors are that keen to be manufacturing guns.

STURM, RUGER & CO., INC.

Sturm, Ruger & Co., Inc. (Ruger) is the smallest, least followed and most private of the three manufacturers. It has no debt financing, and a healthy operating margin of 13.5%. If it was removed from the major indices, we estimate a similarly sized price drop of 30% to 40%, raising its required return by about 3% (given its current P/E ratio of 18). Its operating margin is sufficient to cover this without taking on leverage, but it would cause a downward wealth shift for the current owners, and the firm would face higher hurdles to growth going forward.

RESULTS — SUMMARY

1 basis point

Removing any of the gun and ammunition manufacturers from the four indices in question causes less than 1 basis point of tracking error, which is below the threshold that commercial risk model providers even report in exact figures.

These impacts would be coming on top of the already weak performance of these firms' equity. Vista, AOBC and Ruger share prices slid 65%, 62% and 40% respectively over the 12-month period ending September 30, 2019. Their combined market capitalization is approximately $1.4 billion, or the size of home supplies retailer Bed Bath & Beyond.[14] This means that investors in the benchmarked and index-tracking strategies in question are already unlikely to miss them; but, even in pure tracking error terms, if a close reflection of the broad market is of importance, excluding these companies would cause an immaterial change to the indices. Removing any of them from the four indices in question causes less than 1 basis point of tracking error, which is below the threshold that commercial risk model providers even report in exact figures. For the sake of illustration, we used our own in-house risk model to place an exact value on the impact of removing Vista from the Russell 3000, and it returned an answer of 0.0000062, or 0.06bps. To further put this into perspective, a strategy is considered passive, so mimicking an index, when it incurs below about 20bps tracking error.

	INDEX WEIGHT TRACKING ERROR IMPACT OF REMOVAL FROM INDEX				ESTIMATED SHARE PRICE IMPACT FROM REMOVING PASSIVE CAPITAL
	RUSSELL 2000	RUSSELL 3000	S&P 600	MSCI USA SMALL CAP	
Vista Outdoor, Inc.	0.00019 <0.0001	0.00003 0.00006	0.000504 <0.0001	0.0001 <0.0001	-40%
American Outdoor Brands Corp	0.00019 <0.0001	0.000017 <0.0001			-45%
Sturm, Ruger & Co., Inc.	0.00038 <0.0001	0.000027 <0.0001	0.00103 <0.0001	0.00022 <0.0001	-30-40%

Conclusion

The gun and ammunition manufacturers are included in indices from three of the most significant index providers in the US: FTSE Russell, MSCI and S&P. Passive and benchmarked money automatically allocated to and invested in these companies distorts the signal about the risk that investors bear and the comfort they have with the risks inherent in these business models. Without this automatic money, the required rate of return would be higher, and therefore the profitability required to support the business would be higher.

Which raises the question: If the index providers did not include gun and ammunition manufacturers, and therefore deprived the companies of that automatic money, what impact could that have on the manufacturers? One likely possibility is that the higher required returns may force companies to rethink whether to even participate in this market—which seems to be the calculus that led American Outdoor Brands to rethink that company's involvement. Even for those that chose to persist in gun and ammunition manufacturing, it could put significant strain on them by requiring higher levels of profitability. For example, companies could be forced, after running out of ways to squeeze efficiency out of equipment and workers, to raise prices for their lethal products to support the higher margins demanded by capital markets. Either of these outcomes could have a significant result: fewer gun and ammunition sales, which in turn means fewer guns and bullets in society.

And what impact could it have on investors? From a financial perspective, very little. As demonstrated above, the removal of these three firms would have a negligible impact on the performance of the underlying indices and investment products based on them. However, from a psychological perspective, investors would experience a significant upside by escaping the cognitive dissonance of benefiting from, or, as has been the case more recently, being harmed by, investing in companies that make products they feel deeply uncomfortable with.

This seems like a simple solution; index providers have previously used index composition rules to express preferences, and should do so again to exclude companies that primarily manufacture guns and ammunitions from their indices. And, in fact, we are not the first ones to suggest they take this kind of action! In February 2019, a global group of investors representing $6.8 trillion of assets sent a letter to index providers asking them to exclude controversial weapons manufacturers from global mainstream indices.[15] In replies to the industry website Intelligence on European Pensions and Institutional Investment, the indexers demurred, pointing out that investors who want to avoid these weapons can choose from specialty indices that don't include them.[16]

But this is not a real choice, and the indexers know it. The average American investor (a 401(k) or pension plan participant) is stuck with what their trustees chose for them, and doesn't have any say or control over whether gun and ammunition manufacturers, benefiting from and perpetuating a lax regulatory context that a majority of Americans are deeply uncomfortable with, are included in the basket of stocks that constitute their life savings. It is the indexers that are making a choice, and they need to be held accountable for that choice. Will they choose to include and support gun and ammunition companies, or will they exclude them? We believe it is time for the indexers to acknowledge the choices and responsibilities they have, and to take action. We call on them to recognize that these three miniscule companies are beyond the mainstream and have no place in Americans' portfolios and stock indices.

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