

# EXHIBIT T

**Comment on Notice of Proposed Rulemaking, Docket No. ATF 2021R-08**  
**Factoring Criteria for Firearms with Attached Stabilizing Braces**

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**September 7, 2021**

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I was asked by counsel for SB Tactical, LLC (“SB Tactical”), to review and comment upon the Regulatory Impact Analysis (“RIA”) prepared by the Bureau of Alcohol, Tobacco, Firearms, and Explosives (“ATF”) in this Notice of Proposed Rulemaking (the “Proposed Rule”). This report summarizes my conclusions, which are based on my education and experience as an economist, and the available economic evidence.

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## I. Background

### A. Current Regulation of Pistol Stabilizing Braces

The National Firearms Act of 1934 (“NFA”) regulates possession of certain types of firearms, including “short-barreled rifles” (“SBRs”), which are defined in the statute as weapons “designed or redesigned, made or remade, and intended to be fired from the shoulder” with certain features and having “an overall length of less than 26 inches or a barrel or barrels of less than 16 inches in length.”<sup>3</sup> Under the NFA, SBRs are required to be registered with Federal authorities, and the making or transfer of SBRs triggers tax liability.<sup>4</sup>

Several companies, including SB Tactical, manufacture “pistol stabilizing braces” that connect to a pistol’s platform and create an additional point of contact with the forearm of the user, thereby providing improved accuracy and control.<sup>5</sup> SB Tactical, which originated the concept of the pistol stabilizing brace, has been selling these braces since May 2013.<sup>6</sup> SB Tactical does not manufacture or sell firearms; other manufacturers, however, sell firearms with pistol stabilizing braces attached.

In 2012, the ATF determined that SB Tactical’s original pistol stabilizing brace design “was not a shoulder stock and therefore could be attached to a firearm without that act constituting the making of an NFA firearm.”<sup>7</sup> In 2015, the ATF published an “open letter” that “confirmed its previous determination that the use of stabilizing braces, as designed, would not create a short-barreled rifle when attached to a firearm.”<sup>8</sup> In 2017, the ATF stated that “incidental, sporadic, or situational ‘use’ of an arm-brace (in its original approved configuration) equipped firearm from a firing position at or near the shoulder” did not constitute a “redesign” of an SBR.<sup>9</sup>

### B. The Proposed Rule

In the Proposed Rule, ATF presents a “worksheet” that assigns point values to various features of a firearm with a pistol stabilizing brace; firearms that receive sufficiently high total point values would be considered by ATF to be SBRs.<sup>10</sup> The Proposed Rule explains that if the weapon has “objective design features and characteristics that indicate that the firearm is

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3. 26 USC Section 5845(a) and (c). Under the NFA, the statutory term for SBRs and other NFA regulated weapons is “firearm.” For simplicity, I refer to these weapons as SBRs.
  4. William J. Krouse (2012) “Gun Control Legislation,” Congressional Research Service, November 14, 2012, at p. 14.
  5. <https://www.sb-tactical.com/product-category/brace/>.
  6. <https://www.sb-tactical.com/about/company/>.
  7. Letter from Marvin G. Richardson (ATF Assistant Director, Enforcement Programs and Services) to Mark Barnes, Esq., March 21, 2017.
  8. *Id.*
  9. *Id.*
  10. Factoring Criteria for Firearms With Attached “Stabilizing Braces,” 86 Fed. Reg. 30826, at p. 30829.

designed to be fired from the shoulder,” as indicated in this worksheet, the firearm would be designated an SBR and be subject to the registration, taxation, and other requirements of the NFA.<sup>11</sup> I understand that many of the popular firearms for which pistol stabilizing braces are commercially available today would (if connected to a brace) likely be categorized as SBRs under the Proposed Rule.

The Proposed Rule would require compliance by manufacturers and federal firearms licensees (“FFLs”) selling pistols with attached stabilizing braces.<sup>12</sup> It would also require action by existing owners of firearms with pistol stabilizing braces. In particular, individuals who own firearms that would be classified as SBRs under the Proposed Rule would be required to either: (i) “[p]ermanently remove or alter the ‘stabilizing brace’ such that it cannot be reattached ... as long as [the firearm] was originally configured without a stock and as a pistol,” (ii) reconfigure the firearm with a longer barrel, (iii) destroy the firearm, (iv) turn the firearm in to the ATF, or (v) register the firearm as an SBR and pay tax as required under the NFA.<sup>13</sup>

### C. The ATF’s Regulatory Impact Analysis

On June 5, 2021, the ATF published the RIA, in which it discusses certain costs and benefits of the Proposed Rule.<sup>14</sup> The RIA asserts that the Proposed Rule would “prevent manufacturers and individuals from circumventing the requirements of the NFA,”<sup>15</sup> and that it is “intended to significantly enhance public safety and could reduce the criminal use of such firearms [SBRs], which are easily concealable from the public and first responders.”<sup>16</sup> The RIA does not provide any estimate of the expected reduction in criminal use of firearms due to the Proposed Rule, nor does it attempt to quantify the value of any such reduction.

The RIA presents three scenarios for the cost of the Proposed Rule, depending on the assumed number of existing pistol stabilizing braces for which action would be required. The RIA estimates between 3 million and 7 million such braces have been sold to date but proposes 3 million as the “primary” estimate because “manufacturers may have likely inflated their sales estimates” and “based on overall manufacturing of all firearms in general.”<sup>17</sup>

The RIA therefore presents a “Low” scenario (based on the “primary” estimate) assuming 3 million existing braces, a “Mid-Range” scenario assuming 5 million existing braces, and a “High” scenario assuming 7 million existing braces. Future sales of affected braces over the following 10 years are extrapolated from the number of existing braces assumed in each

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11. *Id.*, at 30829.

12. *Id.*, at 30843-44.

13. *Id.* See also 26 USC Section 5845(a)(4) (defining “firearm” to include “a weapon made from a rifle if such weapon as modified has an overall length of less than 26 inches or a barrel or barrels of less than 16 inches in length.”).

14. ATF, “Preliminary Regulatory Analysis and Initial Regulatory Flexibility Analysis,” June 2021 (“RIA”).

15. *Id.*, at p. 9.

16. *Id.*, at p. 41.

17. *Id.*, at p. 16.

scenario, although with some diminishment in future sales due to an assumption that, absent the Proposed Rule, the ATF’s “individual enforcement actions against existing FFLs would change the market perception of these ‘stabilizing braces’ and may affect the overall demand for these items.”<sup>18</sup>

The table below summarizes the 10-year cost estimates in the RIA under each of these three scenarios and using the two discount rates applied to future costs in the RIA, 3% and 7% per year.

**Summary of RIA 10-Year Cost Estimates of Proposed Rule  
Under Three Scenarios and Two Discount Rates  
(\$ Millions)**

Anticipated Owner Action	Low		Middle		High	
	\$	%	\$	%	\$	%
<b>3% Discount Rate</b>						
Remove/Give Up Brace	\$807.3	82%	\$1,389.2	83%	\$1,978.4	83%
Convert to Long-Barrel Rifle	\$121.5	12%	\$201.1	12%	\$280.7	12%
Register Under NFA	\$49.8	5%	\$81.9	5%	\$113.9	5%
<b>Total</b>	<b>\$978.5</b>	<b>100%</b>	<b>\$1,672.1</b>	<b>100%</b>	<b>\$2,373.1</b>	<b>100%</b>
<b>7% Discount Rate</b>						
Remove/Give Up Brace	\$718.0	81%	\$1,232	82%	\$1,752.1	82%
Convert to Long-Barrel Rifle	\$116.9	13%	\$194	13%	\$270.2	13%
Register Under NFA	\$47.9	5%	\$79	5%	\$109.7	5%
<b>Total</b>	<b>\$882.8</b>	<b>100%</b>	<b>\$1,504.4</b>	<b>100%</b>	<b>\$2,132.0</b>	<b>100%</b>

The total 10-year cost of the Proposed Rule estimated by RIA is between \$883 million and \$979 million in the Low scenario (depending on whether a 3% or 7% discount rate is applied), between \$1.5 billion and \$1.7 billion in the Mid-Range scenario, and between \$2.1 billion and \$2.4 billion in the High scenario.

As indicated in the table, these total cost estimates reflect the sum of three separate calculations related to anticipated actions by owners of pistol stabilizing braces. First, the RIA assumes that approximately 63% of existing owners of affected firearms (including FFLs) will respond to the Proposed Rule by permanently removing or altering the brace, and all braces that would have been sold in the future will no longer be sold.<sup>19</sup> The RIA estimates the cost of these lost braces to be \$236 per brace, based on the average retail cost of a new brace.<sup>20</sup> This cost

18. *Id.*, at p. 17.

19. *Id.*, at pp. 32-33 (indicating 905,471 individuals, 10,677 Type 1 FFLs, and 1,263 Type 7 FFLs assumed to “Permanently Remove or Alter Existing,” and indicating 1,447,563 total affected individuals and FFLs across all anticipated actions).

20. *Id.*, at p. 33.

constitutes, in total, more than 80% of the estimated total cost of the Proposed Rule under any scenario or discount rate.

Second, the RIA assumes that approximately 10% of existing owners of affected firearms will respond to the Proposed Rule by converting the firearm to a long-barrel rifle at an average cost of \$410 per firearm.<sup>21</sup> This cost constitutes, in total, approximately 12% to 13% of the estimated total cost of the Proposed Rule, depending on the discount rate applied.

Finally, the RIA assumes that approximately 26% of existing owners of affected firearms will respond to the Proposed Rule by applying for registration and taxation under the NFA.<sup>22</sup> The RIA makes assumptions about the amount of time required to apply under the NFA, and values that time at average wage rates for individuals and employees of firearms dealers and manufacturers.<sup>23</sup> These time costs constitute, in total, approximately 5% of the estimated total cost of the Proposed Rule.

I discuss some of the assumptions underlying these calculations in further detail later in this Comment.

The RIA does not include in its cost estimates the tax payable under the NFA (which is \$200 per firearm) because these are assumed to be “a transfer payment from industry to the Federal government” and “not a net societal cost to the economy.”<sup>24</sup> These tax payments would be \$151 million in the Low scenario, \$252 million in the Mid-Range scenario, and \$352 million in the High scenario.<sup>25</sup> The RIA states that it also does not account for any enforcement costs for the Proposed Rule that would be incurred by the government.<sup>26</sup>

## II. Summary of Conclusions

Based on my training and experience, as well as a review of the RIA and the available economic evidence, I formed the following three primary conclusions:

- (1) It is critical that regulators perform a comprehensive cost-benefit analysis of important proposed rules, accounting for all major potential consequences and quantifying costs and benefits where feasible using accepted methodologies.

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21. *Id.*, at pp. 24-25.

22. *Id.*, at p. pp. 32-33 (indicating 375,000 individuals, 1,679 Type 1 FFLs, and 1,764 Type 7 FFLs assumed to “Apply under NFA,” and indicating 1,447,563 total affected individuals and FFLs across all anticipated actions).

23. *Id.*, at pp. 27-30.

24. *Id.*, at p. 27.

25. *Id.*, at p. 37. The RIA does not indicate a transfer payment value for the Mid-Range and High scenarios; I have estimated it assuming a proportional increase in costs, *i.e.*, the payment under the Mid-Range scenario is calculated as (5/3) x \$151 million, and the payment under the High scenario is calculated as (7/3) x \$151 million.

26. *Id.* (“At this time, ATF has not calculated the government cost to enforce these actions.”).

- (2) The economic literature recognizes that performing a comprehensive cost-benefit analysis is particularly important in the case of regulations related to issues like firearms control, which involve significant non-monetary categories of costs and benefits, and which often generate heated political debate and public commentary.
- (3) The RIA's cost-benefit analysis is fundamentally flawed and deficient and is not appropriately comprehensive. In particular, the RIA:
  - Fails to provide a sound basis demonstrating that regulation of pistol stabilizing braces can improve upon market processes;
  - Fails to quantify any benefits from the Proposed Rule (or even demonstrate that the benefits are expected to be material);
  - Fails to include important categories of costs including lost consumer value from pistol stabilizing braces, enforcement costs, and losses in efficiency from increased government tax revenues; and
  - Fails to support the assumptions made in its estimate of the cost of the Proposed Rule, rendering its cost-benefit calculation unreliable.

I explain the basis for these conclusions in further detail in the remainder of this Comment. In Section III, I explain that cost-benefit analysis ("CBA") is recognized in the academic literature as a critical element of policymaking, increasing the benefits the public receives from well-crafted regulation and improving the operation of government. To achieve these benefits, CBA must be comprehensive, including a recognition of potential unintended consequences and the likely adaptation or response of individuals and others affected by the proposed regulation. It must also be highly quantitative; accepted economic methodologies exist to quantify and value non-monetary effects of a proposed regulation, such as a reduction in crime. CBA is recognized as particularly valuable in such cases, since the scientific approach inherent in CBA helps to avoid flawed policymaking based on political positioning.

In Section IV, I explain why the CBA produced by the ATF for the Proposed Rule is fundamentally flawed and deficient. I first address the RIA's claim that the rationale for regulation in this case is an "externality" caused by use of pistol stabilizing braces. However, the RIA fails to demonstrate that externality in question affects people directly (as is required by the definition of an externality), and also fails to engage with the academic literature on appropriate responses to externalities, which includes a range of other solutions besides regulation.

I then discuss the RIA's claimed benefits from the Proposed Rule. The RIA provides no quantification whatsoever of any benefits from the Proposed Rule. It is not consistent with the principles of CBA to provide no quantification at all and not even evidence suggestive of significant benefits. With respect to the asserted benefit from the Proposed Rule in reducing crime, the RIA notes that pistol stabilizing braces were allegedly attached to weapons used in two mass shootings, but fails to note that this is a very small minority of mass shootings, and there is no evidence that the braces facilitated either case. More generally, the RIA fails to show that pistol stabilizing braces are frequently used in crimes. It also does not explain why the Proposed Rule will reduce crime when other similar rules have been shown to have no effect on crime. The RIA also fails to evaluate potential criminal adaptation to the Proposed Rule (as is required in a comprehensive CBA), and how that adaptation could reduce or eliminate any

benefits. Further, the RIA does not attempt to value any alleged reduction in crime in dollars, despite the availability and widespread use by other regulatory bodies of methodologies to value lives saved (or other benefits of reduced crime).

I then turn to the RIA's estimate of costs of the Proposed Rule. This cost estimate is fundamentally flawed because it overlooks several important categories of costs. First, it understates losses to owners of pistol stabilizing braces because it assumes they value these items no more than their price, or in other words, that there is no "consumer surplus," inconsistent with economic theory. The RIA also misstates losses to manufacturers and sellers of pistol stabilizing braces and ignores the potential costs of unemployment for employees of these businesses. Second, the RIA unrealistically assumes zero costs of enforcing the Proposed Rule (despite the apparent availability of evidence on the costs of enforcement of the NFA) and no socially inefficient spending by individuals seeking to avoid detection or taxation. Third, the RIA assigns no social cost to the additional taxes paid by firearm owners under the NFA, failing to recognize the widely-understood loss in efficiency for government spending relative to private spending.

Moreover, the RIA's estimate of cost categories that *are* included in its analysis reflects a series of key unsupported and flawed assumptions that make any conclusion about the costs of the Proposed Rule unreliable. First, the RIA assumes, without clear basis, that only 3 million pistol stabilizing braces have been sold, and does not address other available estimates indicating sales up to an order of magnitude or more higher. Second, the RIA also does not explain or support its assumptions that 63%, 10%, and 26% shares of pistol stabilizing brace owners will remove their braces, convert their weapons into long-barrel rifles, and register their weapons under the NFA, respectively. These assumptions do not take into account that many, if not most, pistol stabilizing braces are sold as part of a completed firearm, which could be categorized as an SBR under the Proposed Rule, meaning that, under the Proposed Rule's terms, the brace could not be legally removed, and the only options would be to convert to a long-barrel rifle or register under the NFA. Third, the RIA provides no evidence to support its assumption that, even absent the Proposed Rule, future sales of pistol stabilizing braces would be significantly reduced due to the ATF's enforcement actions; the RIA fails to recognize that this is inconsistent with the fact that sales of pistol stabilizing braces have increased substantially in recent years. Fourth, the RIA provides no factual basis for its assumption that ownership of pistol stabilizing braces can be estimated based on divestitures of bump stocks, a different product used for a different purpose that was banned for a different reason.

I explain these points in further detail in the remainder of this comment.

### **III. A Thorough Cost-Benefit Analysis is Critical for Regulations Like the Proposed Rule**

#### **A. The Importance of Cost-Benefit Analysis to Effective Regulation**

CBA has been required for major federal regulations for over 40 years.<sup>27</sup> It is widely recognized that CBA has improved the overall quality of federal policymaking. Cass Sunstein,

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27. Executive Order 12291 "Federal Regulation," February 17, 1981.

who served as Administrator of the Office of Information and Regulatory Affairs from 2008 to 2012, has written,<sup>28</sup>

As it has developed since the early 1980s, cost-benefit analysis has made governments work much better than they did before—at least when that analysis has been done properly and when the highest-level officials insisted on acting in accordance with it. In terms of saving money and saving lives, the cost-benefit revolution has produced immeasurable improvements. It has stopped bad things, spurred good things, and turned good things into better things.

CBA has bipartisan support, with significant executive orders affirming the value of CBA for federal regulation being signed by Presidents Reagan, Clinton, and Obama.<sup>29</sup> As President Obama put it, CBA is “what the American people want, and that’s what they deserve.”<sup>30</sup> CBA is recognized as being generally consistent with most major political and philosophical perspectives.<sup>31</sup>

The key value of CBA is that it focuses attention on overall social welfare, insisting that a regulation must benefit Americans, net of its costs.<sup>32</sup> Absent a comprehensive commitment to CBA, it is often easy to focus on a regulation’s good intentions, instead of good consequences, with predictably unsatisfying results.<sup>33</sup>

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28. Cass R. Sunstein (2018) *The Cost-Benefit Revolution*, MIT Press, at pp. 214-215.

29. Executive Order 12291 “Federal Regulation,” February 17, 1981; Executive Order 12866 “Regulatory Planning and Review,” September 30, 1993; Executive Order 13563 “Improving Regulation and Regulatory Review,” January 18, 2011. Presidents H.W. Bush, W. Bush, Trump, and Biden retained these Executive Orders during their administrations, or made minor amendments.

30. Quoted in Cass R. Sunstein (2018) *The Cost-Benefit Revolution*, MIT Press, at p. 19.

31. Matthew D. Adler and Eric A. Posner (1999) “Rethinking Cost-Benefit Analysis,” *Yale Law Journal* 109:165-247, at p. 168 (“CBA, properly understood, is consistent with every political theory that holds that the government should care about the overall well-being of its citizens – including non-utilitarian theories that supplement ‘overall well-being’ with additional moral considerations, and non-preference-based theories that incorporate a different view about the nature of well-being. The use of CBA by agencies in suitable circumstances is consistent with commitments to distributive justice, deontological rights, and other moral values, and it is consistent with the view that objective values, hedonic pleasures, and other factors beyond preference-satisfaction figure in human welfare.”).

32. Richard L. Revesz and Michael A. Livermore (2008) *Retaking Rationality: How Cost-Benefit Analysis Can Better Protect the Environment and Our Health*, Oxford University Press, at p. 10 (“The goal of cost-benefit analysis is straightforward: It seeks to maximize the net benefits of regulation. Net benefits are calculated by subtracting the *costs* of regulation—such as compliance costs, job loss, and the reduced consumer well-being resulting from price increases—from the *benefits*—such as lives saved or protected from disease and disability, wilderness preservation, and the creation of jobs or recreational opportunities.”).

33. Jean Dréze and Nicholas Stern (1987) “The Theory of Cost-Benefit Analysis,” pp. 909-989 in *Handbook of Public Economics, Vol. II* (A.J. Auerbach and M. Feldstein, eds.), Elsevier, at p. 909 (“The purpose of cost-benefit analysis is to provide a consistent procedure for evaluating decisions in terms of their consequences.”).

It is also common, absent the discipline of CBA, for government to elevate the welfare of “insiders,” including politicians, bureaucrats, and powerful interest groups above that of others.<sup>34</sup> For instance, regulations where the benefits are small, but concentrated among a few people, while the costs are large, but dispersed among many people, are often proposed by political pressure groups formed by the few, and CBA serves as an important check on such proposals.<sup>35</sup> By the same token, regulations where the costs are small but concentrated, while the benefits are large but dispersed, may fail to garner sufficient political interest, and CBA stands as a powerful advocate for such policies.

In addition, CBA brings to the practice of regulation specialized expertise, science, and facts.<sup>36</sup> It replaces intuition with rigor.<sup>37</sup> And it promotes democracy by subjecting bureaucratic decisions to greater transparency and by opening to public comment and checks the assumptions underlying regulation.<sup>38</sup>

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34. Cass R. Sunstein (2000) “Cognition and Cost-Benefit Analysis,” *Journal of Legal Studies* 29(S2):1059-1103, at p. 1063 (“... cost-benefit analysis might be defended partly as a corrective to interest-group power, operating as a kind of technocratic check on measures that would do little good or even produce net harm ...”). See also Richard L. Revesz and Michael A. Livermore (2008) *Retaking Rationality: How Cost-Benefit Analysis Can Better Protect the Environment and Our Health*, Oxford University Press, at p. 13 (“Because of the technical nature of many regulatory decisions, bureaucrats and experts deep in the bowels of the federal government wield substantial power over our lives. Cost-benefit analysis can be used to ensure that their decisions are based on reasoned analysis and not, for instance, on the unaccountable whim of an official or a bargain-hunting special interest.”).
35. Mancur Olson (1971) *The Logic of Collective Action: Public Goods and the Theory of Groups*, Harvard University Press, at p. 128 (“The privileged and intermediate groups often triumph over the numerically superior forces in the latent or large groups because the former are generally organized and active while the latter are normally unorganized and inactive.”).
36. Cass R. Sunstein (2018) *The Cost-Benefit Revolution*, MIT Press, at p. xi (“Cost-benefit analysis insists that difficult questions of fact should be answered by those who are in a good position to answer them correctly. The reason is that consequences matter, and scientists and economists can help us get a handle on consequences.”).
37. Eric A. Posner and Cass R. Sunstein (2017) “Moral Commitments in Cost-Benefit Analysis,” *Virginia Law Review* 103(8):1809-1860, at p. 1822 (“A signal virtue of cost-benefit analysis is that intuitive guesswork is replaced with a more rigorous style of reasoning, one that provides for far greater transparency about crucial variables and that should reduce the scope for error, at least if it is working well.”).
38. Richard L. Revesz and Michael A. Livermore (2008) *Retaking Rationality: How Cost-Benefit Analysis Can Better Protect the Environment and Our Health*, Oxford University Press, at p. 12 (“Cost-benefit analysis also makes decisionmakers more accountable by making their decisions more transparent ... By providing a more accurate assessment of the real costs and benefits of a decision, formalized cost-benefit analysis reveals the distortions of politics—the backroom deals and special-interest politics—for what they are. And when the bum deals are measured against an objective scale, it is easier for voters to act by ‘throwing the bums out.’”). See also Matthew D. Adler and Eric A. Posner (1999) “Rethinking Cost-Benefit Analysis,” *Yale Law Journal* 109:165-247, at p. 237 (“Courts, congressional committees, and other interested parties can more easily review the CBA procedure than direct multidimensional assessment. Reviewing CBA means confirming the data on which the agency relies and checking the agency’s calculations. In the agricultural pesticide case study, USDA pointed out that EPA’s results assumed 239,000 hospitalizations per year, when in the past they had amounted to only 300-450 per year. The challenge put EPA in the position of either producing better data or scuttling the project. This kind of give-and-take contributes to the quality of regulatory action by forcing agencies to reveal their assumptions and to evaluate options carefully.”).

## B. The Economic Literature Stresses a Comprehensive and Quantitative Approach to Cost-Benefit Analysis

A comprehensive CBA considers all of the consequences of a regulation to consumers, the owners and employees of business firms, and other parties. This includes potential “unintended consequences” (whether good or bad) beyond the specified rationale for which the regulation was proposed.<sup>39</sup> A selective approach to identifying and quantifying costs and benefits foregoes the value of CBA described above and creates a suspicion (correct or not) of bureaucratic or interest group advocacy masquerading as science.

An analysis of the potential consequences of a regulation should also take account of the way consumers and business firms are likely to adapt to the regulation, including attempts to circumvent or offset the intended effects.<sup>40</sup> As two CBA scholars explain,<sup>41</sup>

[C]onsideration of how industry will respond to regulation is little different from analyzing the countervailing risks or ancillary benefits of regulation. Both require analysts to look at the secondary effects of regulation—the variety of ways in which regulations affect individuals and firms and how people react to new regulations ... Though some market dynamics will be too far removed and unforeseeable for cost-benefit analysis to realistically take them into account, it is not too much to ask regulators to anticipate some of the major and predictable responses of industry to regulation in order to more accurately estimate the true economic costs of regulation.

Quantification in dollars of the consequences of a proposed regulation is also important. Sometimes, certain costs or benefits of a regulation are difficult to value. Economists have developed methodologies, elucidated in leading textbooks, for valuing some of the most common

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39. Cass R. Sunstein (1994) “Political Equality and Unintended Consequences,” *Columbia Law Review* 94:1390-1414, at p. 1390 (“It is a familiar point that government regulation that is amply justified in principle may go terribly wrong in practice ... Unintended consequences of this kind can make regulation futile or even self-defeating ... We do not lack examples of both of these phenomena.”).

40. The classic study of such adaptation is Sam Peltzman (1975) “The Effects of Automobile Safety Regulation,” *Journal of Political Economy* 83(4):677-725. For a more modern example, *see, e.g.*, Greg Buchak, Gregor Matvos, Tomasz Piskorski, and Amit Seru (2018) “Fintech, regulatory arbitrage, and the rise of shadow banks,” *Journal of Financial Economics* 130(3):453-483.

41. Richard L. Revesz and Michael A. Livermore (2008) *Retaking Rationality: How Cost-Benefit Analysis Can Better Protect the Environment and Our Health*, Oxford University Press, at p. 139.

non-monetary effects of regulations, such as consequences for health,<sup>42</sup> crime,<sup>43</sup> risk of death,<sup>44</sup> and time savings.<sup>45</sup>

Nevertheless, there may be instances in which a particular benefit or cost cannot be precisely quantified. A comprehensive CBA should clearly explain such cases, and a reasonable range of values should be provided, or at the very least, a rationale provided for why the benefit or cost in question is likely to be small or large relative to other costs and benefits of the proposed regulation.<sup>46</sup> As one CBA textbook states,<sup>47</sup>

... about those expected external effects that we know about yet which currently elude reliable methods of measuring their dollar value. Granted that the economist cannot include them in his calculus, he can at least make clear the area of ignorance. Thus, after seeking to measure all that can be measured with honesty, he can, first, also provide a physical description of these unmeasurable spillovers, and some idea of their significance. Second, he may offer a guess, or a range of guesses, at the value of damage to be expected.

### **C. A Comprehensive and Quantitative Cost-Benefit Analysis is Particularly Important in Cases like the Proposed Rule**

As discussed in the following Section, the Proposed Rule may involve benefits that are non-monetary in nature. This is an important reason why a thorough application of CBA is particularly valuable. For policies with clear pecuniary consequences, it may be straightforward

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42. E.J. Mishan and Euston Quah (2021) *Cost-Benefit Analysis*, sixth edition, Routledge, at p. 261 (“Economic evaluation has been developed to provide a useful framework for helping to make the necessary choices faced in the field of healthcare.”).
43. Anthony E. Boardman, David H. Greenberg, Aidan R. Vining, and David L. Weimer (2018) *Cost-Benefit Analysis: Concepts and Practice*, fifth edition, Cambridge University Press, at pp. 475-479 (section on “Cost of Crime”).
44. Cass R. Sunstein (2018) *The Cost-Benefit Revolution*, MIT Press, at p. 39 (“When government conducts cost-benefit analysis, some of its numbers come from a single figure, called the *value of a statistical life* (VSL) ... [T]he figure is central to monetizing the benefits of life-saving regulations.”).
45. E.J. Mishan and Euston Quah (2021) *Cost-Benefit Analysis*, sixth edition, Routledge, at p. 249 (“Turning to those cases which the cost-benefit economist more frequently addresses, those in which any time saved is unambiguously a good, the valuation of time saved will obviously vary according to the circumstances.”).
46. Cass R. Sunstein (2000) “Cognition and Cost-Benefit Analysis,” *Journal of Legal Studies* 29(S2):1059-1103, at p. 1093 (“Agencies should identify the advantages and disadvantages of proposed courses of action and also attempt to quantify the relevant effects to the extent that this is possible. When quantification is not possible, agencies should discuss the relevant effects in qualitative terms and also specify a range of plausible outcomes—for example, annual savings of between 150 and 300 lives, or savings of between \$100 million and \$300 million, depending on the rate of technological change.”). See also U.S. General Accounting Office, “Regulatory Reform: Agencies Could Improve Development, Documentation, and Clarity of Regulatory Economic Analyses,” May 1998, at p. 22 (“When possible, dollar values should be assigned to benefits and costs to enhance the consideration of regulatory alternatives that may produce equal or greater benefits at lower costs. However, if dollar values cannot be assigned, the benefits and costs should be expressed in consistent quantitative or qualitative terms.”).
47. E.J. Mishan and Euston Quah (2021) *Cost-Benefit Analysis*, sixth edition, Routledge, at p. 312.

to make judgments without a searching analysis, but when the effects are more subtle, CBA clarifies decision-making that might otherwise reflect preconceived notions and political rhetoric. As one recent book on CBA put it, “[i]f anything, formal cost-benefit analysis is especially useful in confronting imperfect information; it allows us to clarify the contours of our uncertainty and the distribution of potential outcomes, thereby improving our ability to make smart choices in the face of the unknown.”<sup>48</sup>

CBA is also recognized as being particularly valuable in evaluating regulations on “hot button” issues subject to heated debate. As Professor Sunstein writes, “[j]ust as the Senate was designed to have a cooling effect on the passions of the House of Representatives, so cost-benefit analysis might ensure that policy is driven not by hysteria or unfounded alarm but by a full appreciation of the effects of relevant risks and their control. If the hysteria survives an investigation of consequences, then the hysteria is fully rational, and an immediate and intensive regulatory response is entirely appropriate.”<sup>49</sup>

Debates over gun control regulation are often divisive and can sometimes also serve as a proxy for broader clashes between urban and rural ways of life or philosophical disputes over the proper role of government in society, among other things. CBA serves as a scientific antidote to these tendencies, which would otherwise warp policymaking.

#### **IV. The RIA is Fundamentally Flawed and Not Appropriately Comprehensive**

##### **A. The RIA Fails to Provide a Sound Basis Demonstrating that Regulation Can Improve Upon Market Processes in This Case**

Economic theory recognizes that market processes may fail to maximize social welfare when there are external effects, also known as “externalities.”<sup>50</sup> An externality occurs when “a person engages in an activity that influences the well-being of a bystander but neither pays nor receives compensation for that effect.”<sup>51</sup> Most, if not all, economic rationales for government regulation of free markets rely on the existence of an externality.

The RIA appears to recognize this, stating, “[a] negative externality addressed by this rule is that individuals and affected entities may try to use purported ‘stabilizing braces’ and affix them to firearms to circumvent the requirements of the NFA, which requires registration

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48. Richard L. Revesz and Michael A. Livermore (2008) *Retaking Rationality: How Cost-Benefit Analysis Can Better Protect the Environment and Our Health*, Oxford University Press, at p. 14. See also John F. Morrall III and James W. Broughel (2014) “The Role of Regulatory Impact Analysis in Federal Rulemaking,” Mercatus Center at George Mason University, at p. 28 (“‘It’s complicated’ is not an excuse for not doing benefit-cost analysis. In fact it is a reason to do it. Imperfect information is better than no information as long as it is not intentionally biased.”).

49. Cass R. Sunstein (2000) “Cognition and Cost-Benefit Analysis,” *Journal of Legal Studies* 29(S2):1059-1103, at p. 1071.

50. Hal R. Varian (2014) *Intermediate Microeconomics*, ninth edition, at p. 664 (“If externalities are present, the market will not necessarily result in a Pareto efficient provision of resources.”).

51. N. Gregory Mankiw (2018) *Principles of Economics*, eighth edition, Cengage Learning, at p. 190.

and taxes to be paid on the making and transfer of NFA weapons.”<sup>52</sup> The RIA further notes that “Congress chose to regulate these items more stringently, finding them to be especially dangerous to the community if not regulated since they are used for violence and criminal activity,” and so, the RIA alleges, purchases of pistol stabilizing braces mean “these weapons can continue to proliferate and could pose an increased public safety problem.”<sup>53</sup>

With respect to the first claim regarding “circumvention” of NFA requirements, this does not constitute an externality and is not an economically appropriate rationale for regulation. This is because (legally) circumventing a law, in and of itself, does not harm “the well-being of a bystander,” as required by the definition of an externality. Nor does a reduction in NFA tax revenue constitute an externality, properly considered.<sup>54</sup> From an economic perspective, the government is an institution intended to serve citizens, not a person with “well-being” that can be harmed. In other words, it is people that matter, not the government. As one CBA textbook states, “[i]mpacts that do not have any positive or negative utility to human beings are not counted.”<sup>55</sup>

Indeed, there are many ways that individuals and businesses legally avoid costly regulation and tax liability, but which do not form a basis for increased regulation. A substantial economic literature discusses the efficient level of enforcement of laws, and a fundamental finding of that literature is that it is typically optimal for laws to be less-than-fully enforced.<sup>56</sup>

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52. RIA, at pp. 14-15.

53. *Id.*, at p. 15.

54. As two CBA scholars explain, “budgets and tax burdens do not capture the economic costs imposed by governmental regulation. It is harder to discern these economic costs because they are borne by individuals and private firms rather than directly by the government.” Richard L. Revesz and Michael A. Livermore (2008) *Retaking Rationality: How Cost-Benefit Analysis Can Better Protect the Environment and Our Health*, Oxford University Press, at p. 13.

55. Anthony E. Boardman, David H. Greenberg, Aidan R. Vining, and David L. Weimer (2018) *Cost-Benefit Analysis: Concepts and Practice*, fifth edition, Cambridge University Press, at p. 9. The classic economic work on this issue is James M. Buchanan and Gordon Tullock (1962) *The Calculus of Consent: Logical Foundations of Constitutional Democracy*, University of Michigan Press, at p. 18 (“Collective action is viewed as the action of individuals when they choose to accomplish purposes collectively rather than individually, and the government is seen as nothing more than the set of processes, the machine, which allows such collective action to take place. This approach makes the State into something that is constructed by men, an artifact.”).

56. Steven Shavell (2004) *Foundations of Economic Analysis of Law*, Harvard University Press, at pp. 484-485 (“One of the basic insights that applies to optimal law enforcement when the state chooses both the probability of imposing sanctions and their magnitude is that a low probability-high magnitude sanction policy is socially advantageous. The reasons are twofold: A social savings in enforcement effort can be achieved by allowing sanctions to be imposed only with a low probability; and sanctions can be raised to avoid dilution of deterrence from the low probability of sanctions. This strategy for conserving enforcement resources without sacrificing deterrence has the apparent implication that enforcement effort and probabilities of sanctions should be very low, but be accompanied by very high sanctions. Such a draconian conclusion will shortly be seen to hold if parties are risk neutral. But this strong conclusion does not hold if parties are risk averse (or if any of a variety of other factors are relevant, as will be noted later), even though the conclusion contains an important element of the truth about optimal policy under all circumstances.”).

The RIA does not engage with this literature and fails to explain why stopping the alleged “circumvention” would increase economic efficiency.

With respect to the RIA’s second suggestion, that purchases of pistol stabilizing braces may lead to a higher level or severity of crime, this could constitute an externality, because crime harms people (not just the government). As I discuss in the following subsection, the RIA provides no sound basis to conclude that this is so. However, even assuming that pistol stabilizing braces do increase crime, this does not necessarily create an economic rationale for the proposed regulation.

The first reason why is that the government already does many things to reduce crime (including other firearms regulations), and the RIA does not consider whether the alleged externality is already addressed by other policies. Second, while the existence of an externality provides a reason why market processes may fail to attain the theoretical maximum social welfare, that in itself does not mean that government regulation can improve upon unregulated market processes. As Judge Richard Posner writes in his textbook on law and economics, “in deciding whether government intervention in the economic system is appropriate, it is not enough to demonstrate that the market would operate imperfectly without intervention; government also operates imperfectly. Comparison between the actual workings of the market and of government in the particular setting is necessary.”<sup>57</sup> The RIA provides no such comparison.

Moreover, there is a substantial economic literature on the various private and public solutions available to deal with externalities other than regulation, including corrective taxes and subsidies (alone), expansion of non-governmental organizations, application of tort law, public service advocacy (as in the case of wildfire prevention and vaccination drives), and private contracting.<sup>58</sup> Often, regulation is considered the last resort when no other approaches are feasible, because effective regulation may require bureaucrats to have unrealistically detailed information about the specific industries and institutional arrangements being regulated, as well as appropriate incentives for government to monitor and enforce regulations in a socially optimal way.<sup>59</sup> The RIA demonstrates no engagement with this literature, but instead assumes without basis that regulation is the best solution to the alleged externality issue.

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57. Richard A. Posner (2007) *Economic Analysis of Law*, seventh edition, Aspen Publishers, at p. 51.

58. N. Gregory Mankiw (2018) *Principles of Economics*, eighth edition, Cengage Learning, at pp. 195-206.

59. Susan Rose-Ackerman (1986) “Reforming Public Bureaucracy through Economic Incentives?” *Journal of Law, Economics, & Organization* 2(1):1-44, at p. 131 (“All public bureaucracies must resolve two fundamental problems. First, they must specify individual tasks in a way that is consistent with each official’s information-processing capabilities, and, second, they must motivate officials to carry out their duties conscientiously. It is pointless for low-level officials to know what they ought to do if they are not motivated to do it and equally futile to design a sophisticated motivational system that is ineffective because bureaucrats lack crucial information.”).

Even when regulation is warranted, a central principle of economics is that an externality should be dealt with in the lowest-cost manner.<sup>60</sup> If the availability of so-called “unregulated SBRs” created with pistol stabilizing braces increases crime, one approach (that suggested by the ATF) is to regulate such items. But an alternative policy approach would be to make greater investments in law enforcement resources in order to fight crime.<sup>61</sup> Perhaps such investment would be more socially costly than the Proposed Rule, but there is no way to know without analyzing the question, which the RIA fails to do.

## **B. The RIA Fails to Quantify Any Benefits from the Proposed Rule**

As discussed above, quantification is a critical element in a thorough CBA. It is widely recognized that, in cases where precise quantification may be infeasible, a range of estimates should be provided, or at least indicia of the materiality of the cost or benefit in question. The RIA presents no quantification whatsoever of any benefits from the Proposed Rule. Nor does the RIA provide any sound basis to conclude that the benefits are significant, even if not quantifiable.

### *1. The RIA Fails to Demonstrate that the Proposed Rule Would Significantly Reduce Mass Shootings or Other Crimes*

As one CBA textbook explains, “[m]any criminal justice and training programs have crime reduction as one of their primary goals and, therefore, benefits. In order to estimate the benefits of crime reduction, it is necessary to estimate the number of crimes of each type that will be avoided during each time period and the social cost of each type of crime.”<sup>62</sup> The RIA fails to attempt either.

As noted above, the RIA asserts that the Proposed Rule is “intended to significantly enhance public safety and could reduce the criminal use of” SBRs.<sup>63</sup> While the ATF’s intention is presumably good, that is of no relevance to a CBA, and the RIA does not appear to assert that the Proposed Rule either likely: (i) *would* (as opposed to “could”) reduce the criminal use of SBRs, or (ii) would lead to significantly reduced levels of crime itself.

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60. Richard A. Posner (2007) *Economic Analysis of Law*, Seventh Edition, Aspen Publishers, at p. 53 (“Since transactions are never costless in the real world, efficiency is promoted by assigning the legal right to the party who would buy it ... if it were assigned initially to the other party.”).

61. The classic example on this issue is that of a railroad that emits sparks which sometimes cause fires on adjacent crop land. This is an externality that potentially causes inefficiency. An obvious regulatory solution is to require the railroad operator to install anti-spark devices on its cars (or to make the railroad operator liable if it fails to do so and its sparks cause a fire). But the cost of this approach must be compared with an alternative solution of allowing railroads to operate as they wish, and instead requiring farmers to leave unplanted a certain amount of land adjacent to railways (and, if they fail to do so, making them bear the cost of any fires that occur). The total social cost of the latter approach may be lower if there are “transactions costs” that make bargaining between railroad operators and farmers costly. Ronald H. Coase (1960) “The Problem of Social Cost,” *Journal of Law & Economics* 3:1-44, at pp. 29-34.

62. Anthony E. Boardman, David H. Greenberg, Aidan R. Vining, and David L. Weimer (2018) *Cost-Benefit Analysis: Concepts and Practice*, Fifth Edition, Cambridge University Press, at p. 475.

63. RIA, at p. 41.

The only facts presented in the Proposed Rule or the RIA that might suggest an actual benefit in the form of reduced crime are that, in passing the NFA in 1934, Congress found SBRs to be “especially dangerous,”<sup>64</sup> and that “firearms with ‘stabilizing braces’ have been used in at least two mass shootings.”<sup>65</sup> However, the RIA presents no evidence that Congress (either in 1934 or today) believed that pistols with stabilizing braces were similarly dangerous as the SBRs that were contemplated in the NFA. If it did believe these weapons were similarly dangerous, Congress presumably could amend the NFA to explicitly include firearms with pistol stabilizing braces. However, I am not aware of any imminent legislation of that nature.

With respect to the two mass shootings noted in the Proposed Rule, neither the Proposed Rule nor the RIA appear to claim that pistol stabilizing braces facilitated either,<sup>66</sup> or that the Proposed Rule, had it been in effect at the time, would have stopped either shooter from perpetrating their crimes. There have been 60 mass shooting events since pistol stabilizing braces were first sold in May 2013;<sup>67</sup> that firearms with these braces are believed to have been used in two such events does not support a claim that braces significantly contribute to mass shootings.

Moreover, the RIA fails to claim, much less demonstrate, that the registration requirements, the \$200 tax, or any other element of the NFA, if applied to firearms with stabilizing braces, would deter future mass shooters. The empirical literature does not demonstrate that state-level restrictions on NFA-type weapons reduce mass shootings,<sup>68</sup> and the RIA provides no basis to conclude that greater federal-level restrictions would have any different effect.

As discussed previously, a key element in any CBA is a consideration of how individuals and businesses would adapt to a proposed regulation. The RIA does not even express a view on this question, much less provide evidence supportive of its view. As noted previously, the RIA assumes that owners of firearms with pistol stabilizing braces generally will react in one of three ways. Approximately 26% of owners are assumed to keep their weapons as-is and register under the NFA; if potential mass shooters respond to the Proposed Rule similarly, there is no basis to

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64. RIA, at p. 15.

65. Factoring Criteria for Firearms With Attached “Stabilizing Braces,” 86 Fed. Reg. 30826, at p. 30828.

66. Ben Markus, “The Firearm The Accused Boulder Shooter Bought Looks Like A Rifle, But It’s Regulated Like a Pistol,” *Colorado Public Radio News*, March 24, 2021 (“It’s not clear that the Boulder King Soopers shooter used the brace as a stock.”).

67. Mark Follman, Gavin Aronsen, and Deanna Pan, “US Mass Shootings, 1982-2021: Data From Mother Jones’ Investigation,” *Mother Jones*, May 26, 2021. This count includes “spree” killings that take place in multiple locations.

68. Benjamin M. Blau, Devon H. Gorry, and Chip Wade (2016) “Guns, laws and public shootings in the United States,” *Applied Economics* 48(49):4732-4746, at p. 4732 (“common state and federal gun laws that outlaw assault weapons are unrelated to the likelihood of an assault weapon being used during a public shooting event. Moreover, results show that the use of assault weapons is not related to more victims or fatalities than other types of guns. However, the use of hand guns, shot guns and high-capacity magazines is directly related to the number of victims and fatalities in a public shooting event. Finally, the gunman’s reported mental illness is often associated with an increase in the number of victims and fatalities.”).

conclude there will be any effect on mass shootings. The RIA assumes that 10% of owners will convert their weapons to long-barrel rifles; again, it is unclear that doing so would significantly reduce a mass shooter's ability to perpetrate crimes. The RIA assumes that all other owners will "[p]ermanently remove or alter" the pistol stabilizing brace,<sup>69</sup> but, as I discuss in the following subsection, the RIA does not explain how it will enforce such compliance, and, as the RIA recognizes, "braces themselves are not regulated items."<sup>70</sup> It is therefore unclear why the ATF believes that the Proposed Rule would limit the availability of firearms with pistol stabilizing braces to mass shooters.

It might be objected to these criticisms that quantification of the effect of the Proposed Rule on mass shootings or other crimes is difficult. However, CBAs have been performed by state and federal agencies on policies intended to reduce crime for many years.<sup>71</sup> Nevertheless, mass shootings are rare events, often reflecting unique circumstances, and the motives of mass shooters are frequently opaque. The difficulty of quantifying benefits in such cases is, however, an argument against the Proposed Rule, since it reflects a fundamental uncertainty as to whether the Proposed Rule would have material benefits, or whether other policies might have much greater benefits.

As discussed below, while the magnitude of the costs of the Proposed Rule may be debated, the RIA recognizes costs of at least \$883 million. If the benefits of the Proposed Rule are of this magnitude or greater, the ATF should be able to demonstrate some indicia of a significant likelihood of reductions in mass shootings or some other form of crime. It may be understandable that precise quantification of the benefits from the Proposed Rule is complicated, but it is not consistent with the principles of CBA to provide no quantification at all or even suggestive evidence that the benefits are significant.

## 2. *The RIA Fails to Value Any Alleged Reduction in Mass Shootings or Other Crimes Due to the Proposed Rule*

Even if it could be demonstrated that the Proposed Rule would reduce mass shootings or any other form of crime, that does not mean that the Proposed Rule would pass a cost-benefit

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69. RIA, at p. 21.

70. *Id.*, at p. 18. *See also id.*, at p. 19 ("stabilizing braces' are not regulated by ATF"), 20 ("stabilizing braces' will continue to be an unregulated product, these non-FFL manufacturers may continue to sell firearm accessories"), 21 ("ATF does not have seizure authority of these items [braces] alone.").

71. *See, e.g.*, S. Lee, S. Aos, and A. Pennucci, "What Works and What Does Not? Benefit-Cost Findings from WSIPP," *Washington State Institute for Public Policy*, February 2015, at p. 1 ("Since the late 1990s, the Washington State Legislature has directed the Washington State Institute for Public Policy (WSIPP) to calculate the return on investment to taxpayers from a variety of education, prevention, and intervention programs and policies"), 5-7 (describing results of CBA for various juvenile and adult criminal justice, prison and policing strategies); Marc Schabbes, "Cost Benefit Analysis for Criminal Justice: Deployment and Initial Application of the *Results First* Cost Benefit Model," New York State Division of Criminal Justice Services Report No. CBA-1, October 2013; John Roman (2013), "Cost-Benefit Analysis of Criminal Justice Reforms," *National Institute of Justice Journal* 272:31-38; Ted R. Miller, Mark A. Cohen, and Brian Wiersema, "Victim Costs and Consequences: A New Look," U.S. Department of Justice National Institute of Justice, February 1996.

test. The reason is that lives saved (or crimes averted) have a finite value from a CBA perspective, which may not be sufficient to outweigh the costs of the Proposed Rule.<sup>72</sup>

It is widely accepted by government agencies (as well as other organizations) that a finite “value of statistical life” (“VSL”) should be applied to calculate the benefits of policies that save lives, such as environmental<sup>73</sup> or automobile safety regulations<sup>74</sup> and public health interventions.<sup>75</sup> There is a substantial literature on the economic theory supporting VSL, as well as many empirical studies, and popular CBA textbooks emphasize the importance of applying VSL calculations in analyzing regulations intended to save lives.<sup>76</sup>

Though it is sometimes surprising to people not familiar with the principles of CBA, applying a finite monetary value to lives saved is critical because society’s resources are limited and therefore, not all methods of saving lives can be pursued. Some approach to distinguishing which methods to pursue must be used, and a quantitative approach is more scientific as well as more transparent.<sup>77</sup> Moreover, individuals willingly accept heightened mortality risks all the

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72. There are also recognized methodologies to place a finite value on reductions in non-fatal crimes such as robbery, assault, and rape. Anthony E. Boardman, David H. Greenberg, Aidan R. Vining, and David L. Weimer (2018) *Cost-Benefit Analysis: Concepts and Practice*, Fifth Edition, Cambridge University Press, at pp. 475-479 (section on “Cost of Crime” discussing five empirical studies of the tangible and intangible social losses associated with various types of crimes).
73. U.S. Environmental Protection Agency, “Mortality Risk Valuation,” <https://www.epa.gov/environmental-economics/mortality-risk-valuation> (“when conducting a benefit-cost analysis of new environmental policies, the Agency uses estimates of how much people are willing to pay for small reductions in their risks of dying from adverse health conditions that may be caused by environmental pollution. In the scientific literature, these estimates of willingness to pay for small reductions in mortality risks are often referred to as the ‘value of a statistical life.’”).
74. U.S. Department of Transportation, “Departmental Guidance on Valuation of a Statistical Life in Economic Analysis,” <https://www.transportation.gov/office-policy/transportation-policy/revised-departmental-guidance-on-valuation-of-a-statistical-life-in-economic-analysis> (“Departmental guidance on valuing the reduction of fatalities and injuries by regulations or investments has been published periodically by the Office of the Secretary since 1993.”).
75. U.S. Department of Health and Human Services Office of the Assistant Secretary for Planning and Evaluation, “Appendix D: Updating Value per Statistical Life (VSL) Estimates for Inflation and Changes in Real Income,” June 29, 2021, <https://aspe.hhs.gov/reports/updating-vsl-estimates> (“The HHS Guidelines for Regulatory Impact Analysis (2016) discuss an approach to valuing mortality risk reductions, commonly referred to as the value per statistical life (VSL).”).
76. Anthony E. Boardman, David H. Greenberg, Aidan R. Vining, and David L. Weimer (2018) *Cost-Benefit Analysis: Concepts and Practice*, Fifth Edition, Cambridge University Press, at p. 466 (Section on Value of a Statistical Life, noting that “[t]he VSL literature is now vast”); E.J. Mishan and Euston Quah (2021) *Cost-Benefit Analysis*, Sixth Edition, Routledge, at p. 264 (Section on “The value of statistical life”).
77. Cass R. Sunstein (2018) *The Cost-Benefit Revolution*, The MIT Press, at p. 39 (“Whether or not regulators say that they are using a VSL, they will inevitably be using one. Any chosen level of stringency depends, at least implicitly, on some judgment about how much money should be spent to save lives. So there is no avoiding some kind of monetary valuation. The real issues are what the value should be, what method we use to come up with it, and whether we should be transparent about it.”). See also Organisation for Economic Co-operation and Development (2012) *Mortality Risk Valuation in Environment, Health and Transport Policies*, OECD Publishing, at p. 13 (“Whilst people object sometimes on ethical grounds to explicit

time in the jobs they take, the vehicles they drive, and the foods and beverages they consume, in return for higher earnings or higher quality of life. There is no reason a government that seeks to increase the social welfare of individuals should not take those same tradeoffs into account in policymaking.<sup>78</sup>

However, the RIA does not mention, much less apply, this widely accepted methodology to value the benefits of the Proposed Rule.

### **C. The RIA Fails to Include Important Categories of Costs of the Proposed Rule**

#### *1. The RIA Fails to Include Lost Consumer Surplus from Pistol Stabilizing Braces, and Misstates the Lost Value to Owners, Employees, and Suppliers of Manufacturers and Retailers*

As noted previously, the RIA assumes that approximately 63% of existing owners of pistol stabilizing braces will “permanently remove or alter” their braces such that they can no longer be used with a firearm. The RIA states that “[w]e assume that the lost value to owners of a ‘stabilizing brace’ would be at least as much as the cost of a new ‘stabilizing brace,’” which the RIA calculates as \$236, on average.<sup>79</sup> While the RIA recognizes lost value of “at least as much” as \$236, the cost calculations performed in the RIA in fact assume \$236, and not more.<sup>80</sup>

Economic theory demonstrates that the price of a pistol stabilizing brace understates the consumer loss from the Proposed Rule. This is because the value a consumer places on a product he purchases is at least equal to (and generally, greater than) the price of the product. If it were not so, the consumer would not buy. In other words, buyers of pistol stabilizing braces receive “consumer surplus” which would be lost due to the Proposed Rule, in addition to the

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valuations, the use of implicit values is pervasive and is the default situation, even if it is not so visible. Explicit values derived from carefully conducted valuation techniques will improve the information base for decision makers and can yield more consistent policy making and lead to more efficient allocation of scarce resources across sectors.”).

78. Richard L. Revesz and Michael A. Livermore (2008) *Retaking Rationality: How Cost-Benefit Analysis Can Better Protect the Environment and Our Health*, Oxford University Press, at pp. 33-34 (“To compare the regulatory benefit with the economic costs of a regulation, the life-saving value of the regulation must be translated into dollars. Traditionally, this is done by looking at the marketplace, where people make dollar-denominated decisions about risk all the time – when they purchase a vehicle, decide where to live and what kinds of products to buy, or what kind of job to take. For instance, people choose between spending on a safety feature on a car, or forgoing the safety feature in order to spend money elsewhere. Or, in comparing jobs, people will typically demand a higher income for work that entails a higher risk of injury.”).

79. RIA, at p. 33.

80. *Id.*, at p. 34 (n.30).

price they paid.<sup>81</sup> Estimates of consumer surplus from new and innovative products are frequently large.<sup>82</sup>

In addition, a standard result in behavioral economics is that “people often demand much more to give up an object than they would be willing to pay to acquire it.”<sup>83</sup> The endowment effect would further increase the consumer loss from requiring owners to disable pistol stabilizing braces that they already own.

The RIA also assumes that the Proposed Rule would eliminate all future sales of pistol stabilizing braces, and similarly values these lost sales at \$236 per brace. This again ignores consumer surplus from these purchases. It also misstates the loss to manufacturers and retailers of braces. As a conceptual matter, the proper calculation of the cost of the Proposed Rule to manufacturers is not the lost revenue of \$236 per brace, but the loss of asset value and displacement of resources caused. Owners of companies that manufacture or sell pistol stabilizing braces hold equity that may produce current and future income. The value of that equity is the discounted sum of expected future income.<sup>84</sup> If the Proposed Rule reduces sales of pistol stabilizing braces, then the value of those manufacturing companies (including the value of facilities and other capital assets) is reduced (or eliminated, if a company fails and is liquidated), and that loss in value is a cost suffered by owners.

In addition, the contractors and employees of manufacturers and retailers may experience at least temporary unemployment due to reduced sales.<sup>85</sup> Further, the Proposed Rule may cause displacement of employees and other resources at companies that supply intermediate goods and services to manufacturers of pistol stabilizing braces. In the case of SB Tactical, its monthly average procurements from vendors decreased by 78% in June through August 2021, after the Proposed Rule was published, relative to the first five months of 2021. Owners of these affected

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81. Dennis W. Carlton and Jeffrey M. Perloff (2005) *Modern Industrial Organization*, Fourth Edition, Pearson Addison-Wesley, at p. 70 (“Typically, consumers value the goods they purchase above the amount they actually pay for them. Consumer surplus is the amount above the price paid that a consumer would willingly spend, if necessary, to consume the units purchased.”).
82. See, e.g., Eric Brynjolfsson, Yu (Jeffrey) Hu, and Michael D. Smith (2003) “Consumer Surplus in the Digital Economy: Estimating the Value of Increased Product Variety at Online Booksellers,” *Management Science* 49(11):1445-1615, at p. 1445 (“Our analysis indicates that the increased product variety of online bookstores enhanced consumer welfare by \$731 million to \$1.03 billion in the year 2000, which is between 7 and 10 times as large as the consumer welfare gain from increased competition and lower prices in this market.”). See also Peter Cohen, Robert Hahn, Jonathan Hall, Steven Levitt, and Robert Metcalfe (2016) “Using Big Data to Estimate Consumer Surplus: The Case of Uber,” National Bureau of Economic Research Working Paper 22627, at p. 1 (“For each dollar spent by consumers, about \$1.60 of consumer surplus is generated.”).
83. Daniel Kahneman, Jack L. Knetsch, and Richard H. Thaler (1991) “Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias,” *Journal of Economic Perspectives* 5(1):193-206, at p. 193.
84. Joshua Rosenbaum and Joshua Pearl (2020) *Valuation, LBOs, M&A, and IPOs*, Third Edition, Wiley & Sons, Inc., at p. 115 (“the value of a company, division, business, or collection of assets (‘target’) can be derived from the present value of its projected *free cash flow* (FCF).”).
85. Executive Order 13563 directs agencies to “promot[e] economic growth, innovation, competitiveness, and job creation.”

supplier companies may suffer additional losses if the Proposed Rule is enacted and may need to lay off employees as well.

From an economic perspective, employment is the cost society pays for goods and services generated. Employees who lose jobs and labor income due to the Proposed Rule may ultimately find other work. This does not mean, however, that unemployment can be ignored, particularly if unemployment spells caused by the Proposed Rule are lengthy. As one article on CBA concludes,<sup>86</sup>

[R]ecent literature has made clear that unemployment costs are high and persistent. A senior worker who is laid off will on average experience a long-term reduction in income of as much as twenty percent, probably because the worker loses significant firm- and industry-specific human capital as a result of the layoff. We suggest that the cost to workers of unemployment could be as high as \$100,000 per worker ... Agencies should collect information about the nature of job loss caused by proposed regulations, better estimate these layoffs, and incorporate unemployment costs in cost-benefit analyses of major regulations.

The RIA fails to consider, much less value, any job losses caused by the Proposed Rule.

## 2. *The RIA Fails to Include Costs of Enforcing the Proposed Rule*

The RIA assumes, without basis, that all owners of pistol stabilizing braces will comply with the Proposed Rule, such as by permanently removing or altering their braces. To truly ensure compliance, the ATF would need to seize (or at least inspect) all existing braces. The RIA states the ATF does not have the legal authority to do,<sup>87</sup> but even if it did, the cost would presumably be very high, particularly given the lack of federal registration for non-NFA firearms (or for pistol stabilizing braces).

The RIA states that, “[s]ince 2013, ATF has brought 3 actions against manufacturers of firearms with ‘stabilizing braces’ that do not comply with the intent of the law” and projects that these actions will “change the market perception” of pistol stabilizing braces and reduce future demand for braces.<sup>88</sup> The ATF presumably knows the costs it has incurred in these three actions, and therefore could potentially extrapolate the cost of the additional efforts that would be required to enforce the Proposed Rule at a desired level. Nevertheless, the RIA states that, “[a]t this time, ATF has not calculated the government cost to enforce these actions.”<sup>89</sup>

Of course, if the ATF chose to enforce a lower level of compliance with the Proposed Rule through less draconian measures, the costs would be lower (as would the costs to owners of

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86. Jonathan S. Masur and Eric A. Posner (2012) “Regulation, Unemployment, and Cost-Benefit Analysis,” *Virginia Law Review* 98:579-634, at p. 583.

87. RIA, at p. 21.

88. *Id.*, at p. 17.

89. *Id.*, at p. 37.

affected firearms, since some owners would choose not to comply with the Proposed Rule). But in that case, whatever benefits the Proposed Rule may have would presumably also be proportionately reduced.

### 3. *The RIA Fails to Include Efficiency Losses from Increased Tax Payments*

The RIA assumes that some owners of pistol stabilizing braces will respond to the Proposed Rule by registering their firearms under the NFA and paying the \$200 per item tax.<sup>90</sup> However, the RIA does not include this tax payment as a cost of the Proposed Rule because it is “a transfer payment from industry to the Federal government, and thus is not a net societal cost to the economy.”<sup>91</sup>

This claim relies on an implicit assumption that the Federal government’s use of the additional tax money it receives under the Proposed Rule will generate as much social value as that same money would in the hands of private citizens.<sup>92</sup> This assumption is incorrect in most cases. For instance, in its recent analysis of proposed new Federal government infrastructure investments, the Congressional Budget Office assumed that government investments would generate a return of 12.4%, compared with a 15.6% return on private sector investments.<sup>93</sup> Public spending is often less efficient than private spending because public spending reflects, in part, political objectives other than efficiency.<sup>94</sup>

The RIA’s claim also assumes individuals will not incur any costs in attempting to minimize or avoid tax payments under the NFA, whereas tax avoidance and evasion are commonplace and individuals’ efforts to minimize tax liability are a central issue in determining optimal taxation levels and structure.<sup>95</sup>

In sum, the RIA assumes, contrary to economic theory and evidence, that the increased tax payments caused by the Proposed Rule create no loss in efficiency, and therefore the RIA fails to account for additional social costs associated with such losses.

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90. *Id.*, at p. 26.

91. *Id.*, at p. 27.

92. Alternatively, if the increased tax revenue generated by the Proposed Rule was offset by reductions in other taxes, the net societal cost may be zero. The Proposed Rule does not suggest any such offset is likely.

93. Congressional Budget Office, “Effects of Physical Infrastructure Spending on the Economy and the Budget Under Two Illustrative Scenarios,” August 2021, at p. 4 (“On the basis of published studies on the U.S. economy, CBO estimates that an additional dollar’s worth of infrastructure capital increases real potential (maximum sustainable) GDP by 12.4 cents, on average ... (For comparison, CBO used a similar method to estimate that an additional dollar’s worth of private fixed capital increases real potential GDP by 15.6 cents.”)

94. As former Rep. Elmer “Bud” Shuster once stated, “Angels in heaven don’t decide where highways are going to be built. This is a political process.” Quoted in Eric Pianin and Charles R. Babcock, “Highway Earmarks Hold Record Pork,” *Washington Post*, April 1, 1998.

95. Joel Slemrod and Shlomo Yitzhaki (2002) “Tax Avoidance, Evasion, and Administration,” chapter 22 in *Handbook of Public Economics, Volume 3* (A.J. Auerbach and M. Feldstein, eds.), Elsevier, at p. 1427 (“consideration of evasion, avoidance, and administration is essential to the positive and normative analysis of taxation.”).

#### D. The RIA's Cost Estimate of the Proposed Rule is Unsupported and Unreliable

The RIA's cost calculations rely on a series of unsupported assumptions. As described above, a key benefit of CBA is transparency into the rationale for government regulation. Failing to state a factual basis for the assumptions underlying a CBA thereby undermines its value. The RIA's unsupported assumptions also render unreliable any conclusion based on the RIA methodology as to whether the benefits of the Proposed Rule outweigh the costs.

##### 1. *The RIA's Assumption About the Total Number of Affected Pistol Stabilizing Braces is Unsupported*

The number of existing pistol stabilizing braces is a critical input into the RIA cost estimates. For every 1% increase in the number of assumed pistol stabilizing braces, the methodology in the RIA implies a more than 1% increase in the cost of the Proposed Rule.<sup>96</sup>

The RIA states that it relied on "anecdotal evidence" indicating sales of between 3 million and 7 million braces, although it does not describe the source or nature of this evidence.<sup>97</sup> The RIA focuses on the lower bound of this range, 3 million, because "[s]ubject matter experts ('SMEs') estimate that the manufacturers may have likely inflated their sales estimates."<sup>98</sup> Again, the RIA fails to identify the factual basis for the SMEs' belief that manufacturer sales estimates "may have likely" been inflated, or by how much. The RIA further attempts to support the 3 million figure "based on overall manufacturing of all firearms in general," but does not explain what firearms manufacturing statistics it relied upon, or why those statistics are consistent with an assumption of 3 million pistol stabilizing braces.

Clarifying the assumptions relied upon in the RIA is particularly important when there are other available estimates of the number of pistol stabilizing braces. For instance, in an April 2021 report, the Congressional Research Service stated, "unofficial estimates suggest that there are between 10 and 40 million stabilizing braces and similar components already in civilian hands."<sup>99</sup> Putting aside any other unsupported or incorrect assumptions in the RIA methodology, if the correct number of pistol stabilizing braces was 10 million, then the cost of the Proposed Rule would be between approximately \$3.0 billion (under a 7% discount rate) and \$3.3 billion (under a 3% discount rate).<sup>100</sup> If the correct number of pistol stabilizing braces was 40 million,

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96. The RIA's "High" scenario involves 133% more braces than the "Low" scenario (7 million versus 3 million). Under a 3% discount rate, the RIA cost estimate under the High scenario (\$2.4 billion) is 143% greater than under the Low scenario (\$979 million). Under a 7% discount rate, the RIA cost estimate under the High scenario (\$2.1 billion) is 141% greater than under the Low scenario (\$883 million). *See* RIA, at p. 40 (Table 7.6).

97. RIA, at p. 16.

98. *Id.* Presumably the RIA intended to assume that inflated sales estimates *are* likely, not "may" be likely.

99. William J. Krause, "Handguns, Stabilizing Braces, and Related Components," Congressional Research Service, April 19, 2021, at p. 2.

100. These figures reflect scaling of the RIA cost estimates of \$883 million (7% discount rate) and \$979 million (3% discount rate) by a factor of 3.33 (= 10 million / 3 million). As noted above, this is an underestimate,

the RIA's methodology would imply costs of the Proposed Rule between approximately \$11.8 billion (under a 7% discount rate) and \$13.0 billion (under a 3% discount rate).<sup>101</sup>

2. *The RIA's Assumption About the Share of Pistol Stabilizing Brace Owners Selecting Each Method of Compliance is Unsupported*

Another key input in the RIA methodology is the share of pistol stabilizing brace owners that are assumed to register their weapons under the NFA (26%), convert their weapons into long-barrel rifles (10%), or permanently remove the brace (63%).<sup>102</sup> These assumptions are important in determining the total cost of the Proposed Rule because the RIA assumes significantly different costs for each of the three options. In particular, the RIA assumes a per-firearm cost of \$66 for individuals to register under the NFA,<sup>103</sup> \$410 to convert to a long-barrel rifle,<sup>104</sup> and \$236 to remove the brace (costs for FFLs are different, but also vary significantly across the three options).<sup>105</sup> In other words, if the RIA were to assume more brace owners will remove the brace than it does (and less will register under the NFA), the per-firearm cost of the Proposed Rule would increase for those owners by 258%.<sup>106</sup> Or if the RIA were to assume more brace owners will convert to a long-barrel than it does (and less will register under the NFA), the per-firearm cost of the Proposed Rule would increase for those owners by 521%.<sup>107</sup>

The RIA fails to provide any factual basis for the assumed share of pistol stabilizing brace owners that will select each of the three outcomes. The RIA states that the assumed share of individuals who are expected to register under the NFA is “[b]ased on SMEs,” but does not explain how the SMEs came to such a conclusion.<sup>108</sup> The RIA similarly states that the 10% of weapons that would be converted to long-barrel rifles is “[b]ased on SME commentary” relating to the share of firearm models that are capable of such a conversion.<sup>109</sup> Again, the RIA provides no explanation of the data or other evidence relied upon by the SMEs for this estimate. The RIA assumption for the share of pistol stabilizing braces that will be permanently removed appears to

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because costs under the RIA methodology increase by more than 1% for every 1% increase in the assumed number of braces.

101. These figures reflect scaling of the RIA cost estimates of \$883 million (7% discount rate) and \$979 million (3% discount rate) by a factor of 13.33 (= 40 million / 3 million).

102. *Supra*, Section I.C.

103. RIA, at p. 27 (indicating \$132 for registration of two firearms).

104. *Id.*, at p. 25.

105. *Id.*, at p. 33.

106.  $258\% = (\$236 - \$66) / \$66$ .

107.  $521\% = (\$410 - \$66) / \$66$ .

108. RIA, at p. 26 (“Based on SMEs, ATF estimates that 25 percent of individuals may opt to file a Form 1 under the NFA or 375,000 individuals”). This statement is not precisely correct, since the RIA in fact assumes that 1,430,523 total individuals will be affected by the Proposed Rule, and 375,000 is 26.2% (not 25%) of that total. *Id.*, at p. 18 (n.5). The RIA does not explain this discrepancy.

109. *Id.*, at p. 24.

be based on nothing at all, except the residual of the 3 million assumed total braces, less those assumed to fall into the other two categories.<sup>110</sup>

The RIA also does not explain how the 63% of braces that are assumed to be removed is consistent with the Proposed Rule's qualification that permanent removal is a means of compliance only "as long as it [the firearm] was originally configured without a stock and as a pistol."<sup>111</sup> Approximately 57% of SB Tactical's pistol stabilizing braces are sold to firearms manufacturers who install them to sell as a complete unit. In other words, many of the pistol stabilizing braces that have been sold are part of firearms that would be, under the Proposed Rule, categorized as SBRs, not pistols. The RIA does not explain whether removal of the brace would even be legal in such cases, much less whether it is reasonable to assume 63% of braces could be legally removed. If removal were not legal, then for these 57% of SB Tactical's sales, the only relevant options considered in the RIA would be conversion to a long-barrel rifle or registration under the NFA.

### *3. The RIA's Assumption About Future Sales of Pistol Stabilizing Braces is Unsupported*

The RIA appears to assume that, as a consequence of the Proposed Rule, there will be no future sales of pistol stabilizing braces.<sup>112</sup> However, the RIA assumes that, absent the Proposed Rule, future sales of pistol stabilizing braces would have declined anyway, thereby making the estimated incremental cost of the Proposed Rule lower. (The RIA does not, however, appear to recognize that this assumption also means that any alleged benefits of the Proposed Rule are also proportionately lower.)

Specifically, the RIA states that "ATF has been using and will continue to use enforcement actions" against those not complying with the "intent of the law," and that these actions "would change the market perception of these 'stabilizing braces.'"<sup>113</sup> The RIA assumes that purchases of pistol stabilizing braces will decrease by more than 40% in the future.<sup>114</sup> The RIA provides no basis for these assertions. In fact, to the contrary, the RIA recognizes that, "[i]n recent years, there has been an increase in the production of" pistol stabilizing braces.<sup>115</sup> Indeed, SB Tactical's sales of pistol stabilizing braces increased substantially in recent years, with revenue increasing by more than 140% from 2018 to 2020, and January – May 2021 revenue up by 90% over January – May 2020. These facts are not consistent with the ATF's assertion that

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110. *Id.*, at pp. 31-33.

111. Factoring Criteria for Firearms With Attached "Stabilizing Braces," 86 Fed. Reg. 30826, at p. 30843.

112. RIA, at pp. 34-35 ("ATF estimates that the overall future demands of 'stabilizing braces' would decrease by the estimated amount attributed to Type 1 and Type 7 FFLs, making the primary estimate of future 'stabilizing braces' affected 211,178 per year. As ATF stated above, ATF estimates that this would be a loss in sales of 211,178 'stabilizing braces' each year.").

113. *Id.*, at p. 34.

114. *Id.*, at p. 17 (n.3) (indicating 375,000 braces sold per year in the past, and 211,178 braces sold per year in the future).

115. *Id.*, at p. 13.

its enforcement actions have reduced demand for pistol stabilizing braces, or would likely do so in the future absent the Proposed Rule.

If, instead, future sales of pistol stabilizing braces were assumed not to decline absent the Proposed Rule, but simply to remain the same (and taking as given the RIA's unsupported assumption of 3 million total sales since 2013), the RIA's methodology would indicate additional 10-year costs from the Proposed Rule (over and above those estimated in the RIA) of between \$235 million (7% discount rate) and \$292 million (3% discount rate).<sup>116</sup> In other words, the total cost of the Proposed Rule would be more than 25% higher than estimated in the RIA.

*4. The RIA's Assumptions About Individuals' and FFLs' Ownership of Pistol Stabilizing Braces is Unsupported*

The RIA estimates the average number of pistol stabilizing braces owned by individuals and Type 1 FFLs “[b]ased on information gleaned from individuals and FFLs who turned in bump-stock-type devices.”<sup>117</sup> It is unclear exactly which data on bump stocks were collected or used for this calculation.

The RIA attempts to support its assumption by stating that “the demand for ‘stabilizing braces’ would have been similar to the demand for bump stock type devices since the demand for both items stems from the desire to have NFA items without paying for and undergoing the NFA regulatory regime.”<sup>118</sup> The RIA provides no basis for this claim. Indeed, as recognized in the Proposed Rule, “some accessories marketed as ‘stabilizing braces’ may make it easier for a person to fire a weapon with one hand.”<sup>119</sup>

In any case, even assuming that the demand for pistol stabilizing braces reflects nothing other than avoidance of NFA regulations, pistol stabilizing braces and bump stocks are not otherwise similar products. The ATF banned bump stocks on the basis that they allow users to mimic the action of a machine gun, a type of firearm that is illegal to possess under Federal law (if manufactured after 1986).<sup>120</sup> By contrast, the ATF's stated basis for the Proposed Rule is that pistol stabilizing braces allow a user to mimic the form of an SBR, a legal weapon that is popular at shooting ranges. There is no basis to assume that demand for machine guns is the same as demand for SBRs.

To estimate the average number of pistol stabilizing braces held by Type 7 FFLs, the RIA does not apply the same “bump stock” methodology, but instead starts with its estimate of the average number of stabilizing braces sold per year in the past (375,000), divides by three for

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116. An additional 163,822 (= 375,000 – 211,178) braces would be sold each of years 2 through 10, at a per-brace cost of \$236. \$235 million and \$292 million are the net present values of these costs at a 7% or 3% discount rate, respectively.

117. *Id.*, at p. 21.

118. *Id.*, at p. 18 (n.4).

119. Factoring Criteria for Firearms With Attached “Stabilizing Braces,” 86 Fed. Reg. 30826, at p. 30827.

120. ATF, “Bump Stocks,” February 21, 2019, <https://www.atf.gov/rules-and-regulations/bump-stocks>.

unknown reasons, and then divides by the total number of existing Type 7 FFLs (13,210), multiplied by 25%.<sup>121</sup> This calculation produces an estimate of 32 braces per Type 7 FFL. The RIA provides no rationale for this byzantine calculation, nor does it explain why Type 7 FFLs would hold so many more pistol stabilizing braces than Type 1 FFLs.

## **V. Qualifications**

I am an Executive Vice President at Compass Lexecon, where I have been employed since 2008. I have consulted on behalf of major corporations as well as the U.S. federal government on a wide range of regulatory, litigation, merger and other matters, including by testifying as an expert witness and supporting other expert witnesses. I am also on the social sciences faculty and teach university economics courses at the School of the Art Institute of Chicago.

Prior to joining Compass Lexecon, I served for five years on the faculty of the economics department at Clemson University, and taught in the undergraduate, professional, and graduate programs at that university. Among other courses, I taught classes on the economics of public policy evaluation for economics and public policy masters and doctoral students at Clemson.

I have published more than a dozen articles in academic economics journals and collected volumes on the topic of applied economic theory, and which employ statistical and econometric methods. Much of my research has been policy-oriented.

I received a bachelor's degree in mathematics from the University of Chicago in 1998 and a doctorate in economics from the University of Chicago in 2003.

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121. RIA, at p. 27.