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Bans on the Sale of Gasoline- And Diesel-Powered Vehicles:

Why Are Policymakers Favoring Command-and-Control to the Point of Banning, and Does It Send Unintended Policy Signals?

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In recent years, the adoption of command-and-control policies, from mandating sales of zero-tailpipe-emission vehicles all the way to prohibiting future sales of gasoline- and diesel-powered vehicles via tailpipe carbon dioxide (CO_2) emissions standards or otherwise, has gained momentum globally in the new light-duty vehicle sector. This includes the zero-emissions vehicle (ZEV) mandate in California (CARB 2017), which was later adopted by other ZEV states in the United States, the new energy vehicle mandate in China (ICCT 2018), and the recently enacted laws in the European Union (Council of the European Union 2022) and California (CARB 2022) that effectively ban the sale of new gasoline- and diesel-powered vehicles after 2035. Why are policymakers favoring command-and-control policies all the way to banning? It is essential to note that when ZEV mandates were implemented, the stated rationale was merely to get the ball rolling to achieve sufficient economies of scale so that the ZEV market could eventually stand on its own (ZEV Program Implementation Task Force 2014). The mandates were not introduced with the intention of prescribing a 100% ZEV share. Absent another answer, it could be argued that banning the sale of new gasoline- and diesel-powered vehicles after 2035 is evidence that policymakers lack confidence that the ZEV market will be able to stand on its own to achieve the desired level of carbon emissions reduction within a specific timeframe without additional policy support. Banning these vehicle sales would be pointless if this were the case.

An oft cited plausible explanation for mandating an increasing ZEV sales share over time is that it is intended to coerce suppliers, the automakers in this case. One hears arguments that automakers make a great deal more money on gasoline- and diesel-powered vehicles than vehicles with zero-tailpipe emissions. This necessitates command-and-control policies mandating increasing sales shares of zero-tailpipe-emission vehicles over time. While such an argument has some merit, particularly during the formative years of new technologies entering the market, it is difficult to comprehend the need to limit future sales to vehicles with zero-tailpipe emissions based on this argument alone. One would assume that, at some point, new technologies would become cost-competitive with incumbent technologies and generate comparable profits. This is especially true given that the cost of gasoline- and diesel-powered vehicles is expected to increase to meet stricter CO_2 emissions standards, while the manufacturing cost of vehicles with zero-tailpipe emissions is expected to decrease. Therefore, the argument for completely limiting the profit-driven, capitalist automakers' hand seems somewhat tenuous. One could also argue that if selling vehicles with zero tailpipe emissions created decent profits, profit-maximizing agents would naturally gravitate toward these alternatives. In such a scenario, even if the incumbents prefer to continue producing gasoline- and diesel-powered combustion vehicles, one could foresee new entrants entering the market and causing disruption, which is what happened in the case of Tesla. To level the playing field and get the ball rolling until a natural tipping point is reached in terms of both vehicle and infrastructure deployment, it is understandable that early-stage action may need to be initiated through policy. However, requiring a policy that goes all the way to only allowing sales of zero-tailpipe-emission vehicles raises the question, What is happening in the market that concerns policymakers?

Perhaps the problem lies more on the demand side, i.e., with customers. Perhaps the real issue is that persuading consumers to change their behavior within the required timeframe appears to policymakers to be a lost cause, or an option for which the majority of policymakers are unwilling to pay the political price.

Without policy intervention, most consumers are unlikely to be persuaded on moral grounds to care enough about the societal impact of climate change and be willing to pay the associated costs. Sticking to the topic at hand, how many of us have been persuaded enough by the climate issue that we decided not to purchase a gasoline- or diesel-powered combustion vehicle and/or switched to alternative lower emission modes to signal to automakers to produce more zero-tailpipe-emission vehicles? Do we truly believe that if a sizable portion of consumers desired such technologies badly enough, profit-driven corporations would still need to be regulated to produce them? Another frequently cited argument is that the consumer-preferred models are not currently offered. Why would profit seeking agents not offer them if they believe there is substantial demand from consumers willing to pay the actual price for such models? Is it possible that automakers suspect or have observed that such 'stated' demand tends to dwindle if the actual cost is passed on to the consumer?

Policymakers' intention to ban the sale of new gasoline- and diesel-powered vehicles after 2035 may be a sign that they do not believe consumers are likely to gain an adequate understanding of the societal climate change damage associated with their actions. In other words, policymakers' do not anticipate that environmental friendliness will become a primary factor for most consumers' vehicle-purchasing decisions. From the standpoint of vehicle characteristics, the primary utility offered by zero-tailpipe-emission vehicles relative to internal combustion engine vehicles (ICEVs), i.e., zero-tailpipe emissions, is unlikely to become a major draw for most consumers. It is noteworthy that no social planners were required to persuade consumers or manufacturers to switch to smartphones, despite their higher price when they first appeared on the market. While this is certainly not an apples-to-apples comparison, the point is that consumers favored smartphones for their superior utility compared to traditional phones. Consequently, if the major utility offered by zero-tailpipe-emission vehicles over alternatives had proven appealing to a broader set of consumers, it is difficult to imagine that their adoption would require regulation, especially all the way to achieving a 100% market share.

The preceding discussion makes one question whether citing problems with supply-side capitalistic automakers as an explanation for mandating increased shares of zero-tailpipe-emission vehicle sales is merely an easy target among activist groups, or whether there is something else at play. Given that there are fewer suppliers than consumers, it may be easier for policymakers to compel suppliers to restrict the options they offer to consumers. Given policymakers' assessment of society's inability to value the climate change issue, they may feel they have no choice but to indirectly restrict consumers' options by regulating the suppliers. It seems somewhat similar to a parent removing options from their child's menu to steer them toward the option that the parent believes is best for them. The latter scenario is seen in the total cost of ownership argument, discounting whether consumers are myopic about future operating costs. If the remaining option were the best one for the chooser, would it be necessary to limit the chooser's menu of options?

Alternatively, one could argue that these announcements are simply meant to provide automakers with a policy signal indicating the direction in which investments will continue to be required. One could argue that most of us prefer consistent over contradictory messages, even if the consistent messages are intended to force us out of our comfort zones. In addition to providing regulatory certainty, such mandates provide demand certainty by restricting the sale of vehicles to those with zero-tailpipe emissions. Investors may value such certainty because it safeguards their investments in the sector. Nonetheless, this raises the question of how well policymakers perform in choosing winners to direct future investments to, particularly when a policy is based on tailpipe emissions alone and not the life cycle emissions. Even more worrisome is the possibility that it could end up limiting investment in other viable emission reduction technologies, such as CO2 neutral fuels and tailpipe and direct air capture, which could be used to directly reduce or offset mobile carbon emissions.

An unintended policy signal is that such zero-tailpipe-emission vehicle technologies would require policy crutches all the way up to a 100% market share. This is likely not the signal developed economies would wish to send to developing economies such as India. It signals that such technologies are unlikely to become cost competitive in the market on their own, which is a major concern for consumers and, correspondingly, suppliers in developing nations. Given that providing access to electricity and mobility is currently one of the more pressing issues in these developing nations, what encouragement do these policy signals provide?

Lastly, some critics argue that bans on ICEVs are merely a ploy by political parties to gain favor with environmentally conscious voters, and that a 100% sales share of zero-tailpipe-emission vehicles would have been reached within the intended timeframe regardless of the ban. Some also argue that the adoption of such policies in countries with the largest automotive markets, such as the United States, the European Union, and China, as part of their climate and/or industrial strategies will be sufficient to cause diffusion among the countries that are late adopters and laggards, given the global nature of the automotive industry. Regardless of the political and/or industrial aspirations behind such enactments, it is undeniable that command-and-control policies are highly effective at achieving their objectives and concealing the reason why prices, in this case car prices, are rising. This is in stark contrast to the tax instruments that economists favor to directly address emission externalities. However, someone, most likely consumers, must still pay the additional cost of emissions reduction bundled up in the prices of such technologies compared to conventional technologies. Unless technological breakthroughs, economies of scale, learning-by-doing, and/or other mechanisms come to the rescue of policymakers in making these technologies cost competitive, the hope of policymakers that consumers will not realize that their policies are the cause of rising auto prices may be dashed sooner rather than later. This is particularly noteworthy this year, as the price of li-ion battery packs for electric vehicles, the most expensive component of an electric vehicle, rose for the first time after a decade of declines (BloombergNEF 2022).

References

BloombergNEF. 2022. “Lithium-ion Battery Pack Prices Rise for First Time to an Average of $151/kWh.” https://about.bnef.com/blog/lithium-ion-battery-pack-prices-rise-for-first-time-to-an-average-of-151-kwh/.

California Air Resources Board (CARB). 2017. “Zero-Emission Vehicle Program.” https://ww2.arb.ca.gov/our-work/programs/zero-emission-vehicle-program/about#:~:text=The%20ZEV%20regulation%20is%20designed,the%20very%20cleanest%20cars%20available.

———. 2022. “California moves to accelerate to 100% new zero-emission vehicle sales by 2035.” https://ww2.arb.ca.gov/news/california-moves-accelerate-100-new-zero-emission-vehicle-sales-2035.

Council of the European Union. 2022. “First ‘Fit for 55’ proposal agreed: the EU strengthens targets for CO2 emissions for new cars and vans.” https://www.consilium.europa.eu/en/press/press-releases/2022/10/27/first-fit-for-55-proposal-agreed-the-eu-strengthens-targets-for-CO_2-emissions-for-new-cars-and-vans/.

International Council on Clean Transportation (ICCT). 2018. “China‘s New Energy Vehicle Mandate Policy (Final Rule).” https://theicct.org/sites/default/files/publications/China-NEV-mandate_ICCT-policy-update_20032018_vF-updated.pdf.

ZEV Program Implementation Task Force. 2014. “Multi-State ZEV Action Plan.” https://dem.ri.gov/sites/g/files/xkgbur861/files//zevplanmou.pdf.

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