Economic Project

Microeconomics – Macroeconomics – Data Analysis

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‘Should the Australian Government consider subsidising electric cars?’

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Introduction

As the world becomes more environmentally aware, electric vehicles (EV's) are being developed. To increase the uptake of this technology *'Should the Australian Government consider subsidising electric cars?'*. To address this question a range of topics surrounding the volatile automotive industry are explored, such as what does a subsidy mean for consumers, will the subsidy positively affect the electric car industry and how might this impact other taxes. Through addressing these points and other surrounding ones it can be seen that it's highly probable that the Australian Government should subsidise EV's.

Context

The Australian Automotive Industry is worth approximately AU$138.9 billion [1], it's said only 0.7% of the vehicles in the market are electric.[2] A government subsidy can benefit EV's consumers as by definition a subsidy is a "*direct or indirect payment to individuals or firms"*.[3] Therefore a subsidy for EV's would encourage the purchase of an EV, and more people may consider buying an EV. The purpose of this incentive is to increase the amount of EV's sold in Australia, which previously has been difficult as within the last decade approximately 20,000 EV's have been sold in a market where roughly a million new cars are purchased each year.[4] Currently there is no national policy in place to encourage people to buy EV's, which is likely behind the slow uptake of EV's.[5] Each state has different policies on the sale of EV's, Victoria being the most advanced where stamp duty on EV's has been abolished within the last six months.[6] Whilst the policies in Australia are developing, when compared to policies globally it's clear why our EV industry is so small.

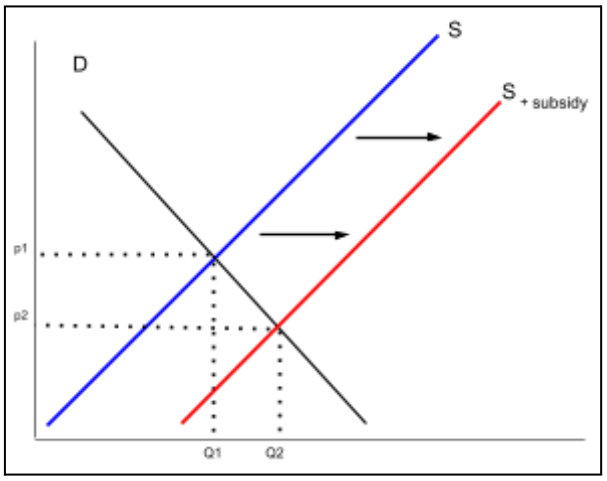

Figure 1: The effect a subsidy would have on the supply and demand of the EV industry.

[1] IBISWorld - Industry Market Research, Reports, and Statistics (2021). Available at: https://www.ibisworld.com/au/market-size/automotive-industry/ (Accessed: 6 September 2021).
[2] How many electric cars are there in Australia? (2021). Available at: https://www.carsguide.com.au/ev/advice/how-many-electric-cars-are-there-in-australia-83262#:~:text=Electric%20car%20sales%20in%20Australia%20accounted%20for%20a%20mere%200.7,and%20European%20Union%20in%202020 (Accessed: 6 September 2021).
[3] *Subsidy Definition* (2021). Available at: https://www.investopedia.com/terms/s/subsidy.asp (Accessed: 1 July 2021).
[4] How many electric cars are there in Australia? (2021). Available at: https://www.carsguide.com.au/ev/advice/how-many-electric-cars-are-there-in-australia-83262 (Accessed: 13 July 2021).
[5] Want To Buy An EV? Here Are The Incentives On Offer In Each Australian State (2021). Available at: https://www.gizmodo.com.au/2021/06/heres-a-state-by-state-guide-to-electric-vehicle-ev-incentives/ (Accessed: 13 July 2021).
[6] Rabe, T 2021, NSW to abolish stamp duty on electric cars in an effort to boost uptake, viewed 13 July 2021, <https://www.smh.com.au/national/nsw/nsw-to-abolish-stamp-duty-on-electric-cars-in-an-effort-to-boost-uptake-20210619-p582g4.html>.

China has a progressive EV policy which offers a rebate of AU$8500 to owners of cars that have a range of 150km to 399km, and a rebate of AU$10,600 for owners of cars with a range of at least 400km. This inturn has directly contributed to the approximate 1.3 million EV's sold overall in China.[7] The idea behind providing a government subsidy for EV's is to reduce the cost which will increase the quantity demanded for EV's and boost their uptake (Figure 1).[8] As the subsidy is introduced a new market equilibrium is created, this is now the price optimum as this would be the new socially acceptable price. Primarily because there are positive production externalities, as more EV's are produced the wellbeing of the public is increased as a result (Figure 2).[9]

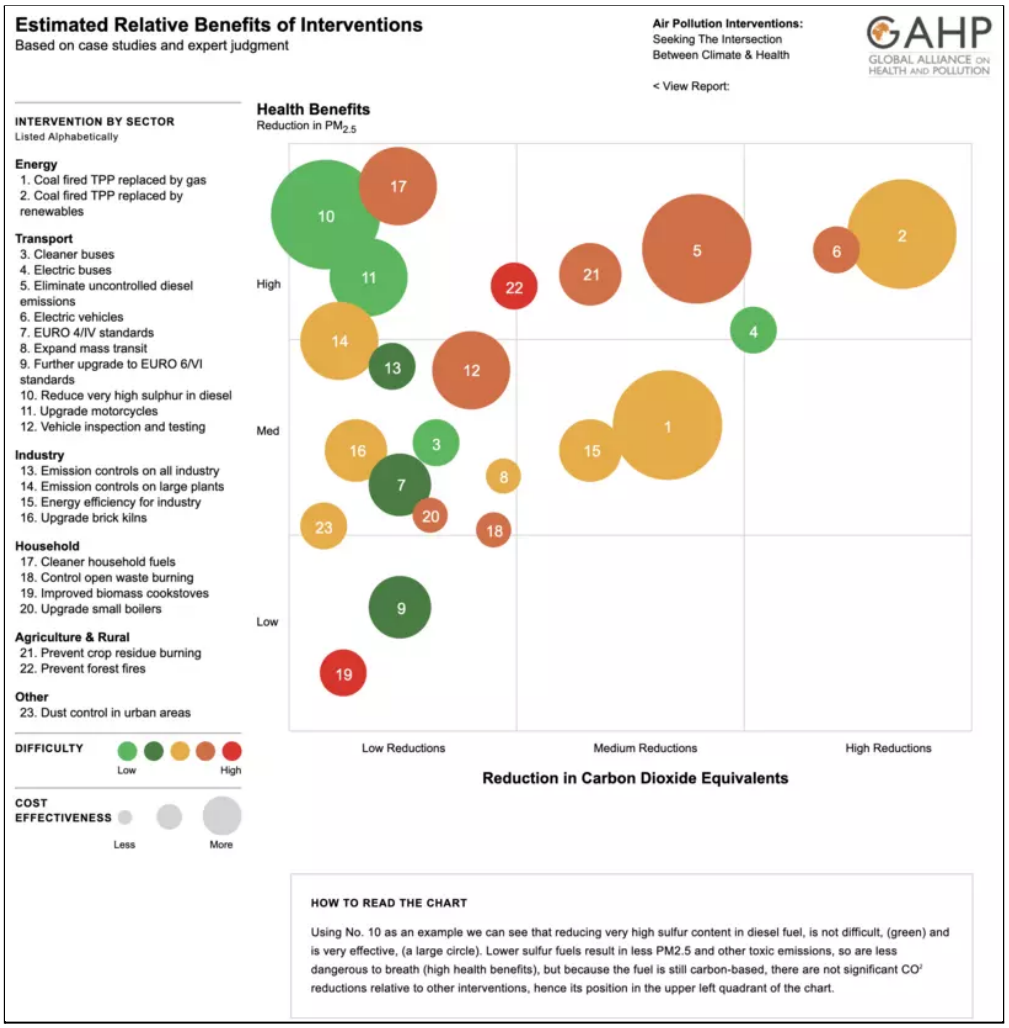

Figure 2: Benefits of increasing EV's when addressing emissions

An example of an Australian subsidy that seems to have worked is the recent HomeBuilder subsidy. This subsidy is where home owners who rebuild or significantly renovate an existing home receive a grant upto

[7] Corby, S 2021, Chinese electric cars: Top five electric vehicles from China, viewed 13 July 2021, <https://www.carsguide.com.au/ev/advice/chinese-electric-cars-top-five-electric-vehicles-from-china-82842>.
[8] Author Created
[9] Best Ways To Reduce Air Pollution & Tackle Climate Change Together (2021). Available at: https://www.weforum.org/agenda/2020/07/best-ways-reduce-air-pollution-climate-change-together/ (Accessed: 23 September 2021).

AU$25,000. The effects can be seen as new residential building from March 2020 to March 2021 was up 2.5% (Figure 3).[10]

	Mar qtr 21 $m	Dec qtr 20 to Mar qtr 21 % change	Mar qtr 20 to Mar qtr 21 % change
Seasonally adjusted estimates(a)			
Total value of work done	30,386.2	3.0	-1.1
New residential building	16,198.8	4.8	2.6
Alterations and additions to residential building	2,857.7	11.4	18.5
Non-residential building	11,329.8	-1.4	-9.6

a. Reference year for chain volume measures is 2018-19

Figure 3: New residential building rates 2020-21

Ideally a similar effect will occur within the EV market if they become subsidised. Specifically because consumers currently are not willing to pay the asking price for EV's, therefore a subsidy will create a new market equilibrium.

A benefit of Australia subsidising and increasing the uptake of EV's is that we become more self sufficient. This is because currently 91% of transport oil is being imported, evidently Australia is reliant on international suppliers.[11] Australia has previously spent AU$25.1 billion on refined petroleum in 2018, if EV's are adopted then not only does Australia become more independent but we would be able to repurpose a portion of the AU$25.1 billion spent on importing petroleum.[12] Likely, the money saved on importing oil can then go towards subsidising EV's

Through subsidising EV's this could cause a form of flow on effect, as consumers have purchased the vehicles and now there is an increase in demand for complementary goods. In the case of EV's the complementary good is the chargers. As demand for the EV's would have risen and correspondingly the demand for the chargers would have risen (Figure 4).[13]

[10] Building Activity, Australia, March 2021 (2021). Available at: https://www.abs.gov.au/statistics/industry/building-and-construction/building-activity-australia/mar-2021 (Accessed: 6 September 2021).
[11] Chapter 3 – Parliament of Australia (2021). Available at: https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Electric_Vehicles/ElectricVehicles/Report/c03 (Accessed: 6 September 2021).
[12] Composition of Trade Australia 2018-19 2020, Australian Goverment, pdf, viewed 7 September 2021, <https://www.dfat.gov.au/sites/default/files/cot-2018-19.pdf>.
[13] Author created

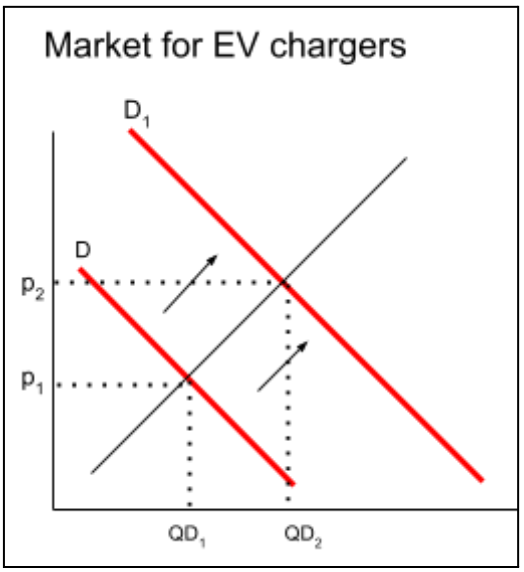

Figure 4: Increase in demand EV chargers

Along with this it can be seen across 25 years, Figure 5, new car sales overall have been experiencing a steady increase.[14] This indicates there is no better time to introduce a subsidy for EV's. Therefore providing a cheaper means to buy a new innovative vehicle may be welcomed as the demand is high.

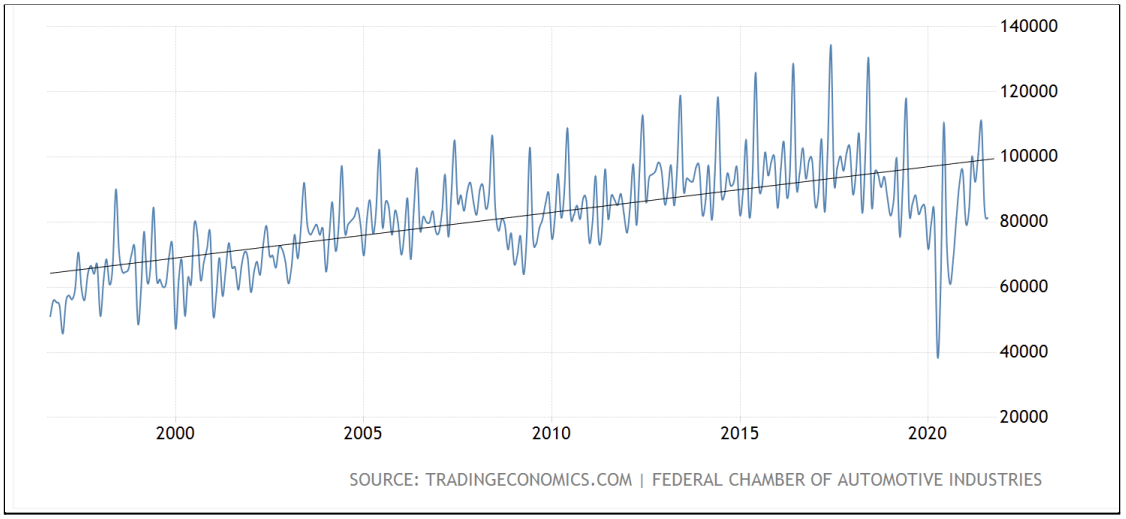

Figure 5: 25 year outlook of new car sales

Regardless of cost Australia's new automotive industry is dominated by SUV's (Figure 6), as 49.59% of new cars sold in 2020 were SUV's.[15] Therefore it's clear Australian consumers prefer large SUV to 4WD vehicles, currently most EV's are passenger vehicles designed for city life. Due to EV's largely being in their infancy there is a limited model and body style selection, as a result of this Australian consumers tastes of vehicle types appear to not be met. To overcome this taste and preference of consumers demand a government subsidy would be beneficial, as primarily it would decrease how large of a percentage this purchase would take from a consumer's income.

[14] Australia New Vehicles Sales | 1994-2021 Data | 2022-2023 Forecast | Calendar (2021). Available at: https://tradingeconomics.com/australia/total-vehicle-sales (Accessed: 7 September 2021).
[15] Latest Australian car sale statistics from Budget Direct (2021). Available at: https://www.budgetdirect.com.au/car-insurance/research/australian-car-sales-statistics.html (Accessed: 6 September 2021).

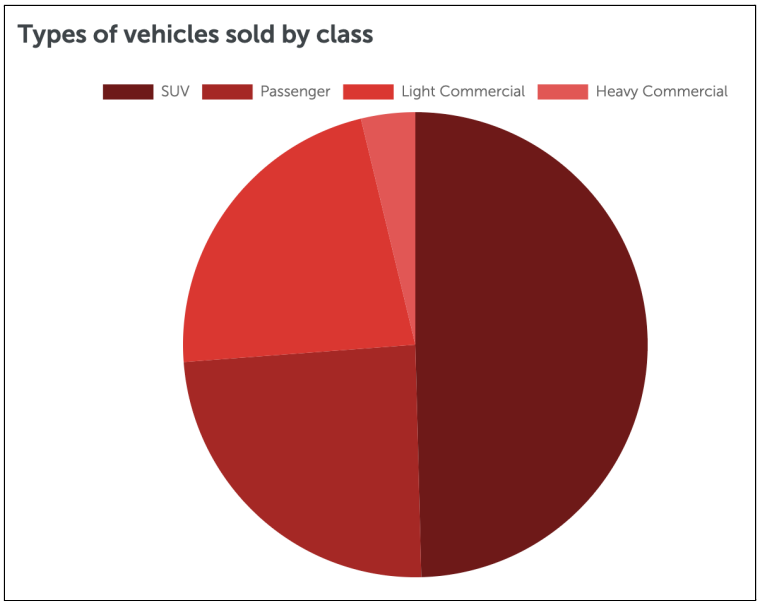

Figure 6: Types of vehicles sold in 2020 divided by class

Outcome

Through implementing a government subsidy on EV's there could be a large positive impact on both consumers and producers (Figure 7).[16] As stated before the purpose of this economic subsidy is to sell more EV's through providing an incentive. To put it simply this benefits the consumer as they receive a benefit for purchasing a car and the producer will sell more cars. In addition to this there are a myriad of other effects this subsidy could have throughout the world. As a long term result of this there may be the positive externality of a decreased amount of pollution, due to reduced emissions because of the increased amount of EV's.

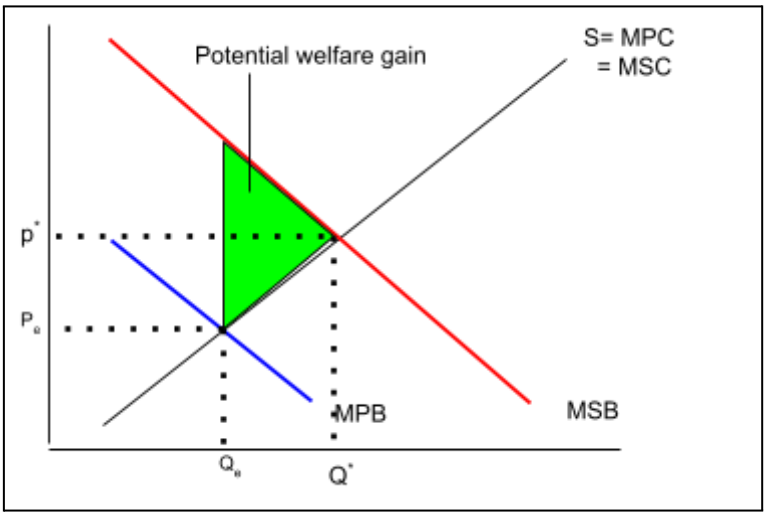

Figure 7: Positive externality diagram of EV's
P^* is the optimum price for EV's
Q* is the optimal production for EV's
Q^e is the standard production amount for EV's
P^e is the standard cost for EV's
The standard price for EV's is shifting to the optimum price for EV's, therefore EV production is increased to the optimum level of EV's. which creates a welfare gain.

[16] Author created

The positive externality allows the welfare loss to be more positively geared for both producers and consumers. As it has reached a far more socially acceptable level. This means Marginal private benefits are then expanded to marginal social benefits, meaning that this benefits far more people.

EV's as alluded to are rising in global popularity, but one reason why they are not as popular in Australia is because of the cost. The cost is what is limiting consumer demand. For example, one of the cheapest EV's in Australia is the Hyundai Ioniq Electric Elite, which retails for approximately $48,970; whereas the traditional combustion equivalent is the Hyundai i30 elite which retails for approximately $30,790.[17] The main reason why EV's are so expensive is because of the import tax the Australian Government implements. The luxury car tax (LCT) is also one of the major taxes on EV's, the LCT is said to be a 33% ad valorem tax for the cost of the vehicle, (Figure 8), and suddenly a low priced entry level EV is increased to a higher priced vehicle.[18] Whilst eliminating the LCT would be best, the government should limit the effect of this tax. Through implementing the subsidy, some vehicles would be reduced in cost which may increase demand

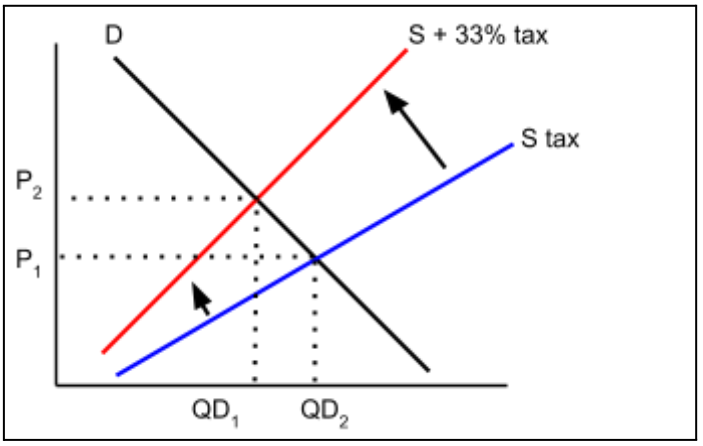

Figure 8: Ad valorem Tax at 33%

The ad valorem tax represents how the amount of tax increases, such as if $30 is taxed it will become $39.90 whereas if $10000 is taxed then the amount of tax will increase accordingly to $13300

One of the largest problems with the uptake of EV's is consumer confidence. Simply consumers are uncertain about the functionality and practicality of EV's. The largest concerns are reportedly the reliability of EV's and their flagship technology, additionally the costs are a major concern both once off and recurring costs. The practicality of EV's are also a concern as charging infrastructure can be few and far between, as well as the charging times being an overarching point of discussion. When you partner these concerns with the current financial situation of many families due to COVID, it can be seen the uptake may be limited.[19]

[17] Australians want electric vehicles, but car makers won't ship them here. Here's why (2021). Available at: https://www.abc.net.au/news/science/2021-04-20/australians-want-to-buy-electric-cars-what-is-stopping-us/100071550 (Accessed: 7 September 2021).

[18] Astbury, H. and Astbury, H. (2021) Luxury car tax threshold raised for electric vehicles in 2021-22 | Savings.com.au, Savings.com.au. Available at: https://www.savings.com.au/car-loans/luxury-car-tax-threshold-raised-again-for-electric-vehicles#:~:text=The%20regular%20threshold%20also%20got,the%20vehicle%20above%20this%20threshold (Accessed: 7 September 2021).

[19] Blanco, S. (2021) Consumer Confidence In Self-Driving And Electric Vehicles Needs Some Work, Forbes. Available at: https://www.forbes.com/sites/sebastianblanco/2019/07/30/study-consumers-not-exactly-confident-about-autonomous-electric-vehicles/?sh=3e236e175b1c (Accessed: 7 September 2021).

Therefore the subsidisation of EV's may be needed more than ever to jump start the uptake, especially when taking into account that as of May 2020 870,000 people have lost their jobs due to COVID.[20]

Evaluation

EV's have a myriad of positive externalities (Figure 7) that are produced as a result of their presence. The first and most notable is that no greenhouse gasses are produced from EV's.[21] Fueling EV's can be done so through utilising a range of renewable sources like solar power. That being said, even though EV's can be powered through renewable sources, the electricity used to power EV's is likely to be produced through fossil fuels. This production of electricity would have an impact on the environmental benefits EV's have.[22] If a Federal subsidy was implemented there evidently would be a wide scale uptake of EV's reducing emissions. To conclude EV's are the future of the automotive industry globally, currently they are one of the easiest methods to decrease emissions. The national uptake of electric vehicles is currently extremely limited. When overlooking the situation realistically, even if the Government were to subsidise EV's it may have to be a reasonably long term subsidisation. This is because on average Australians keep their cars for roughly 9.9 years.[23] Even then there has to be other changes in not only the types of EV's produced, to meet consumers taste and preference. Additionally a large scale EV infrastructure project would have to commence to support the long term viability of EV's.

Like all things COVID has impacted the automotive industry, specifically the supply chain. The supply chain has been subject to numerous road blocks, first and foremost outbreaks of COVID have reduced the productivity and output of most automotive factories.[24] Following this the industry was struck by multiple supply chain disruptions, from lack of parts due to shipping problems, a shortage of shipping containers and most notably the Suez Canal blockage also disrupted the industry.[25] Currently there is a major shortage of semiconductors, which are computer chips in cars. A shortage of semiconductors is significant to EV's as whilst the average car has roughly AU$300 worth of semiconductors in them, an electric car has AU$3500 worth of semiconductors.[26] Whilst initially this is a bad thing, it can be positive as it can be an opportunity to combat limited consumer confidence, through placing EV chargers throughout major cities. As this shortage of semiconductors is global it provides needed time to set up a Government subsidy for EV's as well as building the complimentary infrastructure.

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[20] One year of COVID-19: Aussie jobs, business and the economy (2021). Available at: https://www.abs.gov.au/articles/one-year-covid-19-aussie-jobs-business-and-economy (Accessed: 7 September 2021).

[21] Factcheck: How electric vehicles help to tackle climate change (2019). Available at: https://www.carbonbrief.org/factcheck-how-electric-vehicles-help-to-tackle-climate-change (Accessed: 27 July 2021).

[22] Why electric cars are only as clean as their power supply (2016). Available at: https://www.theguardian.com/environment/2016/dec/08/electric-car-emissions-climate-change (Accessed: 23 September 2021).

[23] Australian car statistics: Surprising stats about Aussie cars, drivers (2018). Available at: https://www.finder.com.au/car-statistics (Accessed: 7 September 2021).

[24] Chris Isidore, C. (2021) Get used to high car prices: Auto production isn't returning to normal, CNN. Available at: https://edition.cnn.com/2021/08/19/business/auto-production-covid-surge/index.html (Accessed: 23 September 2021).

[25] Impact of Suez Canal Blockage on Auto Industry - EconoTimes (2021). Available at: https://www.econotimes.com/Impact-of-Suez-Canal-Blockage-on-Auto-Industry-1608278 (Accessed: 23 September 2021).

[26] (2021) Usitc.gov. Available at: https://www.usitc.gov/publications/332/executive_briefings/ebot_amanda_lawrence_john_verwey_the_automotive_semiconductor_market_pdf.pdf (Accessed: 7 September 2021).

Conclusion

Through subsidising EV's there are a range of consequences. The intended ones are obviously to reduce the carbon emissions from vehicles, but as a result of this it will force the pre-existing petrol stations to shutdown or adapt by implementing charging infrastructure. Charging infrastructure is also intended to be implemented in the owners house to make charging convenient, but because of this it may result in the home owners power bill increasing.[27] Similarly, charging infrastructure will have to be implemented throughout the country, as charging an EV takes time EV owners will be around chargers for a prolonged period. As a result of this, the businesses and facilities surrounding EV chargers will be positively affected as the EV owners will be likely to spend money in those businesses (e.g buy coffee or food). This will benefit the local economies, especially for rural towns where travelers typically merely pass by and don't engage with the economy. The large scale implementation of EV chargers throughout Australia will also create numerous jobs as the EV charging industry is said to be a multibillion dollar industry.

Recommendation

It is recommended the Australian government should begin to subsidise EV's. Specifically in order to increase the uptake of EV's and reduce the carbon emissions of australia. Additionally by subsidising EV's it will make Australia far more independent and environmentally friendly.

[27] Charging An Electric Car (2021). Available at: https://www.ergon.com.au/network/smarter-energy/electric-vehicles/charging-your-electric-vehicle (Accessed: 23 September 2021).

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