U.S CONSUMER PREFERENCE AND POLICY

IN BEV 2018-2020

By

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Abstract

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Battery electric vehicles have gained market growth in the United States due to government policies and consumer preferences. Government policy can be an incentive to consumers purchasing electric vehicles, but if consumer preference was strong enough would these incentives still be required? In the retail market, consumer preferences have shown to be strong enough to not require incentives in "green" products. The consumer preferences for “green” retail products could imply that the automotive market may work similarly and that incentives may not be necessary for the purchase of electric vehicles. However, the automotive market has higher costs that may dissuade consumers and require incentives for decision making.

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CHAPTER I: INTRODUCTION

Consumer preferences have shifted towards greener products, likely due to an uptick in the understanding of climate change and environmental issues (Kronthal-Sacco & Whelan, 2021). Retail products have been able to quickly shift to a "green" label by either innovation or "green-washing"[1] their products, however this paper will focus on the auto industry. The automotive industry is a slow moving market due to the high fixed costs and the level of innovation needed to make these products "green," such as developing new batteries for electric vehicles and lighter material to create the vehicle with. Battery electric vehicles (BEVs) were not popularized until the 1990s by General Motors, which was discontinued by 2001 (Maltuka, 2014). Tesla Inc. created their BEV in 2008, popularizing electric vehicles once again and since creating a diversified market (Marci, 2018). Federal subsidies for BEVs began in 2010 to incentivize consumer purchasing and decrease carbon emissions ("Federal Tax," 2021). These subsidies are affected by the quantity of BEVs sold by each company and do decrease to zero for the consumer as the units sold of BEVs reaches 200,000. State subsidies are also available depending on the state the consumer resides in or purchased the vehicle in; over 70% of states do not offer incentives as of 2020 ("Electric Car," 2021). Consumers should be influenced by these incentives, affecting their purchasing of BEVs. In the United Kingdom, it was found that BEVs require subsidies in order to compete in the automotive market (Santos & Rembalski, 2021). However, according to the NYU CSB study, it should be considered that auto purchasing could mimic retail purchasing so that incentives would not be necessary for consumers to purchase "green" auto (BEVs).

In 1992, the United Nations Conference on Environment and Development stated that consumers and production need to be held accountable and are the "major cause of the continued deterioration of the global environment" (p.18). This paper will focus on consumers and the preferences they have due to incentives from government policy. Policy, such as subsidies, is an incentive that should affect consumer preferences towards the purchase of electric vehicles. Without policy there must be an assumption made that the automotive market can work in parallel to the retail market if circumstances allow in order for incentives to make no difference in the BEV market.

The NYU CSB study has shown that the "green" retail market has the most interest from: younger generations, the highly educated, and the high income (Kronthal-Sacco & Whelan, 2021). The assumption being that the more overlap between these three sectors, the more BEVs that will be purchased. Data shows that over 60% of millennials' income would qualify them in this target range, however due to housing prices and student debt, the ability to obtain high-priced retail products (such as vehicles) is an unattainable goal

[1] Green-washing is when products are marketed as "green" products but are not actually more "green" than similar products.

(Hoffower, 2021). The consumer preference for BEVs exists, but the costs are still too high for many (Ajanovic & Haas, 2020). This should be considered when looking at the results of this paper and understanding the availability of lower priced BEV options that have only began to become available in recent years, as well as the concept that many consumers keep vehicles for upward of 11.8 years on average ("Average Age," 2019). Consumers have a preference for "green" retail products, with "green"-marketed products having market growth of 54.7% from 2015-2019; "green" vehicles (BEVs) have slower market growth in comparison due to the high cost for the consumer (Kronthal-Sacco & Whelan, 2021). In order to combat the high cost, government incentives are utilized to increase BEV market share (Azarafshar & Vermeulen, 2020). Strong tax incentives can allow for BEVs to compete fairly cost-wise with non-BEVs by affecting the overall ownership costs (Yan, 2018). If consumers have strong preferences, incentives should not make a difference, similar to the "green" retail market (Kronthal-Sacco & Whelan, 2021).

CHAPTER II: MODEL

i. Research Hypotheses

0.i.i. Consumers and Policy

Consumers are incentivized by state subsidies to purchase battery electric vehicles (Breetz & Salon, 2018). Purchase rebates, income tax credits, and tax reductions help to combat the overall cost of the vehicle and increase the consumer preference for a BEV (Liao et al, 2016). The increase in consumer preference for BEVs will then increase the market share of BEVs.

$$H1: \textit{State subsidies will impact market share of BEVs.}$$

0.i.ii. Consumers versus Policy

If incentives were to be taken away at the state level, consumer preferences should be strong enough for BEV market share to go unchanged. This assumption can be made based on the interest in "green" retail products that have an increase in cost to the consumer and no government incentive, yet has increased in market share, and apply it to the automotive market (Kronthal-Sacco & Whelan, 2021).

$$H2: \textit{Probability of purchasing BEVs when state subsidies are applied will be}$$
$$\textit{equal to the probability of purchasing BEVs when state subsidies are not applied.}$$

ii. Estimating Equation

The equation below was utilized to estimate the model and the hypotheses in the previous section. The dependent variable estimates the market share of vehicles sold from 2018-2020. The treatment variables being BEV, $BEV * state\ subsidy$, $BEV * federal\ subsidy$, $state\ subsidy$, and $federal\ subsidy$ allowing for a more distinct understanding of market share between the BEV and non-BEV market. The following variables being tested in the equation would be considered controls. Tabulated state variables are accounted for by the Berry transformation as γ_S from $\beta_{9-58} * (s1 - s49)$ for the first 49 U.S. states (Berry, 1994).

$$log(insideshare) - log(outsideshare) = \beta_0 + \beta_1 * BEV + \beta_2 * BEV * statesubsidy + \beta_3 * BEV * federalsubsidy + \beta_4 * state\,subsidy + \beta_5 * federal\,subsidy + \beta_6 * median\,state\,income + \beta_7 * average\,msrp + \beta_8 * y2019 + \gamma_S + \varepsilon$$

$$, BEV = \begin{cases} 1, & if\ BEV \\ 0, & if\ not\ BEV \end{cases}$$

$$y2019,\ represents\ tabulated\ year\ of\ 2019 \qquad (s1 - s49),\ represents\ tabulated\ first\ 49\ states^2$$

A multinomial logit model was an attractive model choice since it does not assume normality, linearity, or homoscedasticity, but instead only makes an assumption of independence between the independent and dependent variables (Starkweather & Moske, 2011). These assumptions make this type of model more agreeable when dealing with a market of varying characteristics that consumers may have preferences for and therefore need to be controlled.

The use of an outside share or outside alternative is representative of not purchasing BEV or non-BEV vehicles, essentially not purchasing any products. The presence of this outside option allows the model to aggregate these vehicles in terms of both prices and other characteristics when otherwise they would not be able to due to how different these vehicles are in: type, price, luxury, and consumer preference (Berry et al, 1995). By including the outside option, all terms of BEVs and non-BEVs are able to be appropriately measured. In order to understand the estimating left hand side of the regression above:

$$Prob(market\ share\ of\ BEV\ vehicles) = \frac{exp(x_i'\beta)}{exp(x_i'\beta) + exp(x_j'\beta) + 1}$$

$$where, \begin{cases} x_{i,} & represents\ BEV\ characteristics \\ x_j & represents\ non - BEV\ characteristics \end{cases}$$

$$inside\ share:\ log(s_i) = log(exp(x_i'\beta)) - log(exp(x_i'\beta) + exp(x_j'\beta) + 1)$$

$$outside\ share:\ log(s_0) = log(\frac{1}{exp(x_i'\beta) + exp(x_j'\beta) + 1}) = -log(exp(x_i'\beta) + exp(x_j'\beta) + 1)$$

$$inside\ share - outside\ share:\ log(s_i) - log(s_0) = log(exp(x_i'\beta)) = x'\beta$$

The last line of this mathematical approach then helps to explain the right-hand side of the equation and why BEV characteristics in non-log form are being considered. The right-hand side of this equation comes out to $x_i'\beta$, where $x_i$can be interpreted as the indicator variable BEV. In order to gain more insight this indicator variable BEV will be multiplied by state and federal subsidies to understand the interaction that occurs on BEVs in the market share. To gain a complete understanding that subsidies have on market share, state and federal subsidies will also be on the right-hand side of the equation without the BEV indicator term to encompass non-BEVs in the market share. The rest of the terms on the right-hand side of the

[2] See Appendix (Table 6) for state labels s1-s49

equation will be control variables. To separately understand how inside share and outside share was created in the estimation equation:

$$inside\,share = \tfrac{quant\,sold}{state\,pop}$$

$$outside\,share = 1 - \tfrac{tot\,veh\,sold}{state\,pop}, \quad where: \; tot\,veh\,sold = \Sigma\,(quantity\,sold\,by\,state\,and\,year)$$

CHAPTER III: DATA

The data on quantity of BEVs per state per year was based on only 13 different BEVs from 10 different companies[3] totalling 300 data points[4] from 2018-2020 on all 50 states from the Alliance for Automotive Innovation. This is enough to assume a general quantity of vehicles sold based on the variation of vehicle type, as well as an understanding that the quantity of non-BEVs was based of the quantity and market share of this data. This allowed data that is specific to vehicle type to be determined and averaged, such as: price of vehicle (avg_msrp), holdback fee (avg_holdback), and state subsidy (avg_state_sub).[5] State subsidies are determined by the policy, some of which are decided by the vehicle msrp and brand ("Electric Car," 2021). The choice to include median state income, average msrp, the tabulation of state variables, and tabulated year was to create some control around the treatment of federal and state subsidies. These general controls that are known to affect consumer choices help to ensure statistical significance is reliable and reduce the percent of the error term.

While Table 1 displays all the basic data summarized, it does not include all variables used in the estimating equation. However, all variables in the estimating equation use the original variables seen in Table 1. The subsidies utilized in the estimating equation are maximized and sorted by state and year, then separated by interaction with BEV or no interaction. Inside share and outside share utilize quantity sold and state population in order to create the left hand side of the equation. It should also be noted that holdback fee was left out of the estimation in the model due to collinearity just as the tabulated years 2018 and 2020 were along with state 50 (Wyoming), where they were omitted.

Table 1: Summary Statistics

Variable	Mean	Std. Dev.	Min.	Max.
year	2019	0.818	2018	2020
BEV	0.500	0.501	0.000	1.000
market share by state	0.500	0.490	0.001	0.999
qaunt. sold (thousands)	150.033	285.897	.048	1865.288
avg. msrp (hundreds)	440.075	70.165	356.100	526.675
fed. sub. (hundreds)	30.560	31.504	0.000	75.000
avg. state sub. (hundreds)	2.423	7.595	0.000	50.000
avg. holdback (hundreds)	6.564	2.746	3.534	9.74
state pop. (thousands)	6561.863	7331.826	576.851	39538.223
med. state income (hundreds)	679.943	111.574	441.000	967.650

[3]See Appendix (Table 8) for list of make and models.

[4]N = 300

[5]A holdback fee is a price that is paid back to the dealer by the manufacturer, this is usually a percentage of the MSRP.

CHAPTER IV: RESULTS

i. Discussion

0.i.i. Consumers and Policy

$$log(insideshare)-log(outsideshare) = \beta_0+\beta_1*BEV+\beta_2*BEV*state\ subsidy+\beta_3*BEV*federal\ subsidy+\beta_4*state\ subsidy+\beta_5*federal\ subsidy+\beta_6*median\,state\,income+\beta_7*average\,msrp+\beta_8*y2019+\gamma_S+\varepsilon$$

$$,BEV = \begin{cases} 1, & if\ BEV \\ 0, & if\ not\ BEV \end{cases}$$

The model shown was able to explain that most of the variation of the dependent variable was generated by the independent variables ($adj-R\,squared$), which allows the model to be trusted and significance levels to be considered valuable (Table 2). While the mean-squared error was not zero, it did fall below 0.5, allowing for an interpretation that along with the higher $adj-R\,squared$ and $Prob > F = 0.000$ significance of the independent variables are credible. The data is homeskedastictic after running a Breusch-Pagan Cook-Weisberg test on the regression[6]. Homoskedasticity allows for more reliability in the results of the regression and less concern on the mean-squared error.

In the observation of Table 2, statistical significance can be found in the treatment variables: BEV, $BEV\,X\,statesub2$ (interaction of BEV and $state\,subsidy$), $BEV\,X\,fedsub2$ (interaction of BEV and $federal\,subsidy$) at the .05 level of significance. This indicates that these variables do have a significant effect and their log odds of effecting market share can be explained by their coefficients. $Median\,state\,income$ and $average\,msrp$ were seen to have no significant effect while their coefficients still made intuitive sense in relation to market share. [7] Both $median\,state\,income$ and $average\,msrp$ were positive, if there was a one unit inrease in these then we would suspect this to cause an increase in the market share of vehicles to a certain extent, this again was not significant and should not be the focus of this regression.

BEV leading with a negative coefficient implies that a vehicle being a BEV causes a decrease in market share. This is reasonable as the market is predominantly made up of non-BEVs and it should not be positive; BEV means a smaller piece of the market share is electric out of overall vehicles. $BEV\,X\,fedsub2$ being negative can be explained by the federal subsidies decreasing every year due to Tesla and GM reaching their maximum on funding from 200,000 units sold, causing a decrease in the market share for BEVs ("Federal Laws," n.d.). This decrease in BEV market share does allow for the increase of the non-BEV market share for $fedsub2$, while not significant, it does provide explanation that the federal subsidy is actually increasing

[6] See Appendix (Table 7).

[7] See Appendix (Table 9) for full regression with State and Year variables.

non-BEVs. The $BEVXstatesub2$ does increase market share for BEVs while decreasing the market share for non-BEVs (not significant) as suspected. Overall, this implies that the hypothesis $H1$ was correct and will not be rejected, in that state subsidies do impact market share of BEVs.

Table 2: Logit Specific

	(1)
	logshare_sub_logout
BEV	-5.535*
	(-2.01)
BEVXstate_sub2	0.000311***
	(6.05)
BEVXfed_sub2	-0.000240***
	(-3.44)
state_sub2	-0.000170
	(-1.73)
fed_sub2	0.000302
	(1.02)
med_state_income	0.00000546
	(0.45)
avg_msrp	0.000144
	(0.65)
N	300
adj. R^2	0.968

t statistics in parentheses

F(57,242) = 159.79

Prob > F = 0.0000

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

0.i.ii. Consumers versus Policy

$$Prob(market\ share\ of\ BEV\ vehicles) = \frac{exp(x_i'\beta)}{exp(x_i'\beta)+exp(x_j'\beta)+1}$$

$$where, \begin{cases} x_{i,} & represents\, BEV\ characteristics \\ x_j & represents\, non-BEV\ characteristics \end{cases}$$

The next section of this utilizes the above formula used to create the regression, and by entering the coefficient estimates from Table 2 to then construct the probability of: BEV market share, non-BEV market share, and outside share. As seen in Table 4, the only states with any differences between shares with subsidies and without, were those that established state subsidies in those years. While the difference in probability of market share is near zero, it does not equal zero and therefore $H2$ must be rejected. The probability of market share with and without subsidy may seem very close to zero, however the percent change between the two is large. For example, looking at California in 2018 from Table 4, the probability of purchasing with a subsidy in 2018 is 0.10177% and the probability of purchasing without a subsidy is 0.06619%, that is a 34.96119% change. The difference between having a state subsidy and not having a subsidy does make a difference in the probability of BEV market share in some states more than others, however they do all reside above a 5% change. States with smaller differences may have small subsidies or may have a more sustainably forward state that does not rely on the subsidy as much for purchasing BEVs. To have a clearer image of the probability of market share in BEVs and non-BEVs and how close the difference is, Table 3 can be analyzed. The ProbPurchase of BEVs with subsidy versus no subsidy appears to have the same minimum, but has a larger maximum value which indicates that subsidies allow for a larger probability of purchase in BEVs. Reiterating, by comparing ProbPurchase of Non-BEVs with subsidy versus no subsidy, the maximum value is larger, indicating without subsidies the probability of purchasing a non-BEV is also larger. Table 3 also clarifies the percent changes in probability of market shares of BEVs subsidy versus no subsidy.

When looking at the elasticity of state subsidy in relation to the probability of purchasing BEVs, elasticity is equal to 0.0701, indicating an inelastic relationship. A 10% state subsidy increase corresponds with a 0.7% increase in the probability of purchasing a BEV. This gives an indication to how policy can affect consumer preferences in BEVs. While having a state subsidy has a positive effect on the probability of purchasing a BEV, increasing this subsidy does not necessarily equate to an increase in the market share of BEV sales. Consumer preference seems to lie mostly on the existence of the state subsidy itself but not the amount.

Table 3: Overall Probabilities With Changes

ProbPurchase Subsidy	BEV	.	NonBEV	.
ProbPurchase No Subsidy	.	BEV	.	NonBEV
Mean	0.000381	0.000338	0.046541	0.050995
Std. Dev.	0.000237	0.000156	0.019948	0.023409
Min.	0.000095	0.000095	0.014225	0.014225
Max	0.001392	0.000905	0.112375	0.131268
Mean Change ProbPurchase	.	0.112861	.	0.09570057

Table 4: Probabilities With Changes

State	Year	ProbPurchase Subsidy	ProbPurchase No Subsidy	Change ProbPurchase
CA	2018	0.0010177	0.0006619	0.349119
CA	2019	0.0012639	0.0008172	0.3534299
CA	2020	0.0013916	0.0009048	0.3498132
CO	2018	0.0010275	0.0004819	0.5309976
CO	2019	0.0012073	0.0005695	0.5282863
CO	2020	0.0012051	0.000662	0.450668
CT	2018	0.0004226	0.0003481	0.1762896
CT	2019	0.0005333	0.0004433	0.1687605
CT	2020	0.0005656	0.0004673	0.1737977
DE	2018	0.0004368	0.0003341	0.235119
DE	2019	0.0005257	0.0004143	0.2119079
DE	2020	0.0005631	0.000444	0.2115077
LA	2018	0.0002256	0.0001572	0.3031915
LA	2019	0.0002684	0.0001872	0.3025335
LA	2020	0.0002923	0.0002041	0.3017448
MA	2018	0.0005531	0.0004211	0.2386549
MA	2019	0.000638	0.0005013	0.2142633
MA	2020	0.0006988	0.0005494	0.2137951
MD	2018	0.0005585	0.0004034	0.2777081
MD	2019	0.0006675	0.0005	0.2509363
MD	2020	0.0006324	0.0005472	0.1347249
ME	2018	0.0003282	0.0002655	0.191042
ME	2019	0.0003946	0.000327	0.1713127
ME	2020	0.0004014	0.0003532	0.1200797
NJ	2020	0.0008886	0.0006517	0.2665991
NY	2018	0.0003631	0.0003226	0.1115395
NY	2019	0.0004534	0.0003904	0.1389502
NY	2020	0.0004834	0.0004214	0.1282582
OR	2018	0.0005556	0.0004231	0.2384809
OR	2019	0.0008591	0.0005145	0.4011174
OR	2020	0.0009505	0.0005736	0.3965281
PA	2019	0.0003653	0.0003402	0.0687106
PA	2020	0.0004002	0.0003727	0.0687156
TX	2019	0.0004156	0.0002883	0.3063041
TX	2020	0.0004564	0.0003173	0.3047765
VT	2020	0.0007739	0.0006403	0.1726321

ii. Implications

$$H1: \textit{State subsidies will impact market share of } BEVs.$$

$$H2: \textit{Probability of purchasing } BEVs \textit{ when state subsidies are applied will be equal to the probability of purchasing } BEVs \textit{ when state subsidies are not applied.}$$

State subsidies have an impact on market share of BEVs, proving that policy does make a difference on how consumers purchase in the automotive market. There has been a proposal to raise the current maximum federal subsidy from $7500 to $12500 and include more limitations in order to encourage more employment and manufacturing within the United States, this has not yet passed (Shepardson, 2021). If this does pass, it may appeal to more consumers and encourage higher market share levels of BEVs considering the effects policy has made on consumer purchasing thus far.

The probability of purchasing BEVs when state subsidies are applied is not equal to the probability of purchasing BEVs when state subsidies are not applied. While the probability of purchasing with subsidies versus without is not noticeably large, the percent change between the two proves otherwise (Table 4). This proves that the automotive market does not parallel the "green" retail market. The automotive market is high cost and longer term than most goods in the retail market and it may take more time for consumers to develop strong enough preferences when an incentive is not present to purchase BEVs at the same level as when incentives are present, if this is to ever occur.

iii. Limitations

Battery electric vehicles in the automotive industry have only recently become popularized which has led to less data on the subject. The data presented only utilized about 13 BEVs that lead in high levels of consumption, specifically in this market. Still, the percentage of BEVs consumed per state and consumer interest overall was low. With the lack of BEVs in the market, there are a low number of public charging points in both rural and low interest areas of the United States (Bui et al, 2021). Due to the lack of charging opportunities, many consumers' preference for electric vehicles have decreased, leaving them to purchase a non-BEV. Another issue with BEVs being new is lack of knowledge or education on them, many consumers do not understand the concept of the battery lifetime and range, unlike gasoline vehicles which have been around for decades (Long et al, 2019).

CHAPTER V: CONCLUSION

This paper has shown that state subsidies do have a positive impact on market share of battery electric vehicles (BEVs). The probability of market share of BEVs with a state subsidy is not equal to that without a state subsidy (Table 4). Incentives that include tax credits, tax reductions, and purchase rebates as seen in state programs do impact BEVs in such a way that not having these incentives would decrease the market share of BEVs (Liao et al, 2016). The automotive market is slow moving and high cost for consumers, causing it to require incentives in order for BEVs to increase in market share.

If this were to be completed again in the next five to ten years, the younger generations of sustainable activists may have increased their income and BEVs could have increased in the market to the point where subsidies are still existent, but consumer behavior shows that consumers will purchase a BEV without the need of a subsidy ($H2$ is not rejected). While millennials are currently at this higher income, the generation below them may allow for preferences to strengthen so that incentives or not, probability of BEV market share will increase the same. In time, it may be possible for the retail and automotive market to parallel. By waiting to complete this study again, the BEV market would have time to build on: consumer knowledge, charging station accessibility, and quantity produced by different manufacturers with more differentiation. With the willingness to pay for electric vehicles being highly based on miles per charge and charging time, it would be expected that willingness to pay should increase as innovation increases over time, allowing for market share of BEVs to increase (Hidrue et al, 2011). It would also be beneficial to look at carbon policies and whether a carbon tax federally is ever implemented, as well as the carbon policies that do exist state by state, to see if gasoline prices cause a shift in BEV market share ("What You," n.d.). This would allow for a more complete idea of consumer preference towards a more sustainable future and a willingness to change to BEVs without government incentives.

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APPENDIX

APPENDIX ONE: REFERENCE TABLES

Table 5: Probabilities

State	Year	BEV	ProbPurchase	ProbOutPurchase	RepProbPurchase	Rep ProbOutPurchase
AK	2018	0	0.0292179	0.9706348	0.0292179	0.9706348
AK	2018	1	0.0001473	0.9706348	0.0001473	0.9706348
AK	2019	0	0.0276122	0.9722052	0.0276122	0.9722052
AK	2019	1	0.0001827	0.9722052	0.0001827	0.9722052
AK	2020	0	0.0225603	0.9772442	0.0225603	0.9772442
AK	2020	1	0.0001956	0.9772442	0.0001956	0.9772442
AL	2018	1	0.0001618	0.9677544	0.0001618	0.9677544
AL	2018	0	0.0320838	0.9677544	0.0320838	0.9677544
AL	2019	1	0.0001974	0.96997	0.0001974	0.96997
AL	2019	0	0.0298326	0.96997	0.0298326	0.96997
AL	2020	1	0.0002141	0.9750891	0.0002141	0.9750891
AL	2020	0	0.0246968	0.9750891	0.0246968	0.9750891
AR	2018	1	0.0001423	0.9716415	0.0001423	0.9716415
AR	2018	0	0.0282163	0.9716415	0.0282163	0.9716415
AR	2019	0	0.0260177	0.9738101	0.0260177	0.9738101
AR	2019	1	0.0001721	0.9738101	0.0001721	0.9738101
AR	2020	1	0.0001844	0.9785398	0.0001844	0.9785398
AR	2020	0	0.0212758	0.9785398	0.0212758	0.9785398
AZ	2018	0	0.0797226	0.9198754	0.0797226	0.9198754
AZ	2018	1	0.000402	0.9198754	0.000402	0.9198754
AZ	2019	1	0.0004969	0.9243942	0.0004969	0.9243942
AZ	2019	0	0.0751088	0.9243942	0.0751088	0.9243942
AZ	2020	1	0.0005367	0.9375542	0.0005367	0.9375542
AZ	2020	0	0.0619091	0.9375542	0.0619091	0.9375542
CA	2018	1	0.0010177	0.9121168	0.0006619	0.8680702
CA	2018	0	0.0868655	0.9121168	0.1312679	0.8680702
CA	2019	0	0.0807382	0.917998	0.1235119	0.8756709
CA	2019	1	0.0012639	0.917998	0.0008172	0.8756709
CA	2020	1	0.0013916	0.9310358	0.0009048	0.8947232
CA	2020	0	0.0675726	0.9310358	0.104372	0.8947232
CO	2018	0	0.0431206	0.9558519	0.0955747	0.9039434
CO	2018	1	0.0010275	0.9558519	0.0004819	0.9039434
CO	2019	0	0.0386126	0.9601802	0.0860834	0.9133471
CO	2019	1	0.0012073	0.9601802	0.0005695	0.9133471
CO	2020	0	0.0401303	0.9586647	0.0763692	0.9229688
CO	2020	1	0.0012051	0.9586647	0.000662	0.9229688
CT	2018	0	0.0562135	0.943364	0.0690323	0.9306196
CT	2018	1	0.0004226	0.943364	0.0003481	0.9306196
CT	2019	0	0.0550537	0.944413	0.067003	0.9325538
CT	2019	1	0.0005333	0.944413	0.0004433	0.9325538
CT	2020	1	0.0005656	0.9556742	0.0004673	0.9456301
CT	2020	0	0.0437602	0.9556742	0.0539026	0.9456301
DE	2018	0	0.0497481	0.949815	0.0662695	0.9333963
DE	2018	1	0.0004368	0.949815	0.0003341	0.9333963
DE	2019	0	0.0484723	0.951002	0.0626228	0.9369628

DE	2019	1	0.0005257	0.951002	0.0004143	0.9369628
DE	2020	1	0.0005631	0.9600096	0.000444	0.9483423
DE	2020	0	0.0394274	0.9600096	0.0512137	0.9483423
FL	2018	1	0.0004059	0.9191041	0.0004059	0.9191041
FL	2018	0	0.0804901	0.9191041	0.0804901	0.9191041
FL	2019	0	0.0741002	0.9254096	0.0741002	0.9254096
FL	2019	1	0.0004903	0.9254096	0.0004903	0.9254096
FL	2020	0	0.0620961	0.9373656	0.0620961	0.9373656
FL	2020	1	0.0005383	0.9373656	0.0005383	0.9373656
GA	2018	0	0.0566082	0.9431064	0.0566082	0.9431064
GA	2018	1	0.0002854	0.9431064	0.0002854	0.9431064
GA	2019	1	0.0003388	0.9484476	0.0003388	0.9484476
GA	2019	0	0.0512135	0.9484476	0.0512135	0.9484476
GA	2020	1	0.000377	0.9561381	0.000377	0.9561381
GA	2020	0	0.0434849	0.9561381	0.0434849	0.9561381
HI	2018	1	0.0005666	0.8870583	0.0005666	0.8870583
HI	2018	0	0.1123751	0.8870583	0.1123751	0.8870583
HI	2019	0	0.1056585	0.8936424	0.1056585	0.8936424
HI	2019	1	0.000699	0.8936424	0.000699	0.8936424
HI	2020	1	0.0007464	0.9131484	0.0007464	0.9131484
HI	2020	0	0.0861051	0.9131484	0.0861051	0.9131484
IA	2018	0	0.0344763	0.9653499	0.0344763	0.9653499
IA	2018	1	0.0001738	0.9653499	0.0001738	0.9653499
IA	2019	1	0.0002019	0.9692882	0.0002019	0.9692882
IA	2019	0	0.0305099	0.9692882	0.0305099	0.9692882
IA	2020	0	0.0258177	0.9739585	0.0258177	0.9739585
IA	2020	1	0.0002238	0.9739585	0.0002238	0.9739585
ID	2018	0	0.0351677	0.964655	0.0351677	0.964655
ID	2018	1	0.0001773	0.964655	0.0001773	0.964655
ID	2019	0	0.0328541	0.9669286	0.0328541	0.9669286
ID	2019	1	0.0002174	0.9669286	0.0002174	0.9669286
ID	2020	0	0.0275317	0.9722297	0.0275317	0.9722297
ID	2020	1	0.0002387	0.9722297	0.0002387	0.9722297
IL	2018	1	0.0003103	0.938154	0.0003103	0.938154
IL	2018	0	0.0615358	0.938154	0.0615358	0.938154
IL	2019	0	0.056633	0.9429923	0.056633	0.9429923
IL	2019	1	0.0003747	0.9429923	0.0003747	0.9429923
IL	2020	0	0.0473359	0.9522538	0.0473359	0.9522538
IL	2020	1	0.0004103	0.9522538	0.0004103	0.9522538
IN	2018	0	0.0387663	0.9610382	0.0387663	0.9610382
IN	2018	1	0.0001955	0.9610382	0.0001955	0.9610382
IN	2019	0	0.0361322	0.9636288	0.0361322	0.9636288
IN	2019	1	0.0002391	0.9636288	0.0002391	0.9636288
IN	2020	0	0.0301588	0.9695798	0.0301588	0.9695798
IN	2020	1	0.0002614	0.9695798	0.0002614	0.9695798
KS	2018	1	0.0001805	0.9640215	0.0001805	0.9640215
KS	2018	0	0.035798	0.9640215	0.035798	0.9640215
KS	2019	1	0.0002235	0.9659985	0.0002235	0.9659985
KS	2019	0	0.033778	0.9659985	0.033778	0.9659985
KS	2020	0	0.02817	0.9715858	0.02817	0.9715858
KS	2020	1	0.0002442	0.9715858	0.0002442	0.9715858
KY	2018	1	0.0001432	0.9714612	0.0001432	0.9714612
KY	2018	0	0.0283956	0.9714612	0.0283956	0.9714612
KY	2019	1	0.0001698	0.9741684	0.0001698	0.9741684

KY	2019	0	0.0256618	0.9741684	0.0256618	0.9741684
KY	2020	0	0.0215341	0.9782792	0.0215341	0.9782792
KY	2020	1	0.0001867	0.9782792	0.0001867	0.9782792
LA	2018	0	0.0205854	0.979189	0.031176	0.9686667
LA	2018	1	0.0002256	0.979189	0.0001572	0.9686667
LA	2019	0	0.0186605	0.9810711	0.0282898	0.971523
LA	2019	1	0.0002684	0.9810711	0.0001872	0.971523
LA	2020	0	0.0155081	0.9841997	0.0235498	0.9762461
LA	2020	1	0.0002923	0.9841997	0.0002041	0.9762461
MA	2018	1	0.0005531	0.9364576	0.0004211	0.9160551
MA	2018	0	0.0629893	0.9364576	0.0835238	0.9160551
MA	2019	1	0.000638	0.9405291	0.0005013	0.9237299
MA	2019	0	0.0588329	0.9405291	0.0757688	0.9237299
MA	2020	1	0.0006988	0.9503657	0.0005494	0.9360722
MA	2020	0	0.0489354	0.9503657	0.0633783	0.9360722
MD	2018	0	0.0569241	0.9425175	0.0800077	0.9195889
MD	2018	1	0.0005585	0.9425175	0.0004034	0.9195889
MD	2019	0	0.0557593	0.9435732	0.0755811	0.9239188
MD	2019	1	0.0006675	0.9435732	0.0005	0.9239188
MD	2020	0	0.054072	0.9452955	0.063121	0.9363318
MD	2020	1	0.0006324	0.9452955	0.0005472	0.9363318
ME	2018	0	0.0417607	0.9579111	0.0526639	0.9470705
ME	2018	1	0.0003282	0.9579111	0.0002655	0.9470705
ME	2019	1	0.0003946	0.9594347	0.000327	0.9502543
ME	2019	0	0.0401707	0.9594347	0.0494188	0.9502543
ME	2020	1	0.0004014	0.9642755	0.0003532	0.9588993
ME	2020	0	0.0353231	0.9642755	0.0407474	0.9588993
MI	2018	0	0.0418172	0.957972	0.0418172	0.957972
MI	2018	1	0.0002109	0.957972	0.0002109	0.957972
MI	2019	1	0.0002537	0.9614112	0.0002537	0.9614112
MI	2019	0	0.0383351	0.9614112	0.0383351	0.9614112
MI	2020	0	0.0320253	0.967697	0.0320253	0.967697
MI	2020	1	0.0002776	0.967697	0.0002776	0.967697
MN	2018	1	0.0002813	0.9439349	0.0002813	0.9439349
MN	2018	0	0.0557839	0.9439349	0.0557839	0.9439349
MN	2019	0	0.0527663	0.9468846	0.0527663	0.9468846
MN	2019	1	0.0003491	0.9468846	0.0003491	0.9468846
MN	2020	1	0.0003773	0.9560986	0.0003773	0.9560986
MN	2020	0	0.0435241	0.9560986	0.0435241	0.9560986
MO	2018	0	0.0467376	0.9530267	0.0467376	0.9530267
MO	2018	1	0.0002357	0.9530267	0.0002357	0.9530267
MO	2019	1	0.0002765	0.9579363	0.0002765	0.9579363
MO	2019	0	0.0417872	0.9579363	0.0417872	0.9579363
MO	2020	1	0.0003054	0.9644653	0.0003054	0.9644653
MO	2020	0	0.0352293	0.9644653	0.0352293	0.9644653
MS	2018	0	0.0187435	0.981162	0.0187435	0.981162
MS	2018	1	0.0000945	0.981162	0.0000945	0.981162
MS	2019	0	0.0170256	0.9828618	0.0170256	0.9828618
MS	2019	1	0.0001126	0.9828618	0.0001126	0.9828618
MS	2020	0	0.0142247	0.985652	0.0142247	0.985652
MS	2020	1	0.0001233	0.985652	0.0001233	0.985652
MT	2018	1	0.0002097	0.9581977	0.0002097	0.9581977
MT	2018	0	0.0415926	0.9581977	0.0415926	0.9581977
MT	2019	1	0.0002508	0.9618406	0.0002508	0.9618406

MT	2019	0	0.0379086	0.9618406	0.0379086	0.9618406
MT	2020	1	0.0002696	0.968633	0.0002696	0.968633
MT	2020	0	0.0310974	0.968633	0.0310974	0.968633
NC	2018	0	0.0526168	0.9471179	0.0526168	0.9471179
NC	2018	1	0.0002653	0.9471179	0.0002653	0.9471179
NC	2019	0	0.0493749	0.9502984	0.0493749	0.9502984
NC	2019	1	0.0003267	0.9502984	0.0003267	0.9502984
NC	2020	0	0.0412	0.9584429	0.0412	0.9584429
NC	2020	1	0.0003572	0.9584429	0.0003572	0.9584429
ND	2018	1	0.0001369	0.9727114	0.0001369	0.9727114
ND	2018	0	0.0271517	0.9727114	0.0271517	0.9727114
ND	2019	1	0.0001643	0.975008	0.0001643	0.975008
ND	2019	0	0.0248278	0.975008	0.0248278	0.975008
ND	2020	1	0.0001736	0.9798052	0.0001736	0.9798052
ND	2020	0	0.0200212	0.9798052	0.0200212	0.9798052
NE	2018	0	0.0400081	0.9597902	0.0400081	0.9597902
NE	2018	1	0.0002017	0.9597902	0.0002017	0.9597902
NE	2019	1	0.0002448	0.9627481	0.0002448	0.9627481
NE	2019	0	0.037007	0.9627481	0.037007	0.9627481
NE	2020	1	0.0002667	0.968969	0.0002667	0.968969
NE	2020	0	0.0307643	0.968969	0.0307643	0.968969
NH	2018	1	0.0003751	0.9252381	0.0003751	0.9252381
NH	2018	0	0.0743868	0.9252381	0.0743868	0.9252381
NH	2019	0	0.0689214	0.9306226	0.0689214	0.9306226
NH	2019	1	0.000456	0.9306226	0.000456	0.9306226
NH	2020	1	0.0005052	0.9412203	0.0005052	0.9412203
NH	2020	0	0.0582745	0.9412203	0.0582745	0.9412203
NJ	2018	1	0.0004712	0.906083	0.0004712	0.906083
NJ	2018	0	0.0934458	0.906083	0.0934458	0.906083
NJ	2019	1	0.0005976	0.9090705	0.0005976	0.9090705
NJ	2019	0	0.0903319	0.9090705	0.0903319	0.9090705
NJ	2020	1	0.0008886	0.9449164	0.0006517	0.9241669
NJ	2020	0	0.054195	0.9449164	0.0751814	0.9241669
NM	2018	0	0.0397469	0.9600527	0.0397469	0.9600527
NM	2018	1	0.0002004	0.9600527	0.0002004	0.9600527
NM	2019	0	0.0367029	0.9630542	0.0367029	0.9630542
NM	2019	1	0.0002428	0.9630542	0.0002428	0.9630542
NM	2020	1	0.0002631	0.9693873	0.0002631	0.9693873
NM	2020	0	0.0303496	0.9693873	0.0303496	0.9693873
NV	2018	0	0.0766804	0.922933	0.0766804	0.922933
NV	2018	1	0.0003866	0.922933	0.0003866	0.922933
NV	2019	0	0.0724735	0.927047	0.0724735	0.927047
NV	2019	1	0.0004795	0.927047	0.0004795	0.927047
NV	2020	0	0.0579226	0.9415753	0.0579226	0.9415753
NV	2020	1	0.0005021	0.9415753	0.0005021	0.9415753
NY	2018	0	0.0564135	0.9432234	0.0639783	0.935699
NY	2018	1	0.0003631	0.9432234	0.0003226	0.935699
NY	2019	1	0.0004534	0.9493189	0.0003904	0.9406006
NY	2019	0	0.0502277	0.9493189	0.059009	0.9406006
NY	2020	1	0.0004834	0.9577222	0.0004214	0.9509668
NY	2020	0	0.0417944	0.9577222	0.0486117	0.9509668
OH	2018	0	0.0557174	0.9440017	0.0557174	0.9440017
OH	2018	1	0.0002809	0.9440017	0.0002809	0.9440017
OH	2019	0	0.0509662	0.9486966	0.0509662	0.9486966

OH	2019	1	0.0003372	0.9486966	0.0003372	0.9486966
OH	2020	0	0.0417236	0.9579147	0.0417236	0.9579147
OH	2020	1	0.0003617	0.9579147	0.0003617	0.9579147
OK	2018	0	0.0741374	0.9254888	0.0741374	0.9254888
OK	2018	1	0.0003738	0.9254888	0.0003738	0.9254888
OK	2019	1	0.0004542	0.9308931	0.0004542	0.9308931
OK	2019	0	0.0686527	0.9308931	0.0686527	0.9308931
OK	2020	0	0.0556892	0.943828	0.0556892	0.943828
OK	2020	1	0.0004828	0.943828	0.0004828	0.943828
OR	2018	1	0.0005556	0.9361626	0.0004231	0.9156739
OR	2018	0	0.0632818	0.9361626	0.0839031	0.9156739
OR	2019	1	0.0008591	0.9541049	0.0005145	0.9217224
OR	2019	0	0.045036	0.9541049	0.0777631	0.9217224
OR	2020	1	0.0009505	0.960829	0.0005736	0.9332564
OR	2020	0	0.0382206	0.960829	0.0661699	0.9332564
PA	2018	0	0.0553517	0.9443692	0.0553517	0.9443692
PA	2018	1	0.0002791	0.9443692	0.0002791	0.9443692
PA	2019	0	0.0476009	0.9520339	0.0514265	0.9482332
PA	2019	1	0.0003653	0.9520339	0.0003402	0.9482332
PA	2020	1	0.0004002	0.9598597	0.0003727	0.9566305
PA	2020	0	0.0397402	0.9598597	0.0429968	0.9566305
RI	2018	1	0.0002622	0.9477461	0.0002622	0.9477461
RI	2018	0	0.0519917	0.9477461	0.0519917	0.9477461
RI	2019	1	0.0003227	0.9509078	0.0003227	0.9509078
RI	2019	0	0.0487695	0.9509078	0.0487695	0.9509078
RI	2020	1	0.0003729	0.9566077	0.0003729	0.9566077
RI	2020	0	0.0430194	0.9566077	0.0430194	0.9566077
SC	2018	0	0.037234	0.9625782	0.037234	0.9625782
SC	2018	1	0.0001877	0.9625782	0.0001877	0.9625782
SC	2019	0	0.0343002	0.9654729	0.0343002	0.9654729
SC	2019	1	0.0002269	0.9654729	0.0002269	0.9654729
SC	2020	1	0.0002461	0.971366	0.0002461	0.971366
SC	2020	0	0.0283879	0.971366	0.0283879	0.971366
SD	2018	0	0.0274485	0.9724131	0.0274485	0.9724131
SD	2018	1	0.0001384	0.9724131	0.0001384	0.9724131
SD	2019	1	0.0001673	0.9745437	0.0001673	0.9745437
SD	2019	0	0.025289	0.9745437	0.025289	0.9745437
SD	2020	1	0.0001885	0.9780681	0.0001885	0.9780681
SD	2020	0	0.0217435	0.9780681	0.0217435	0.9780681
TN	2018	1	0.0002145	0.957248	0.0002145	0.957248
TN	2018	0	0.0425375	0.957248	0.0425375	0.957248
TN	2019	0	0.0383798	0.9613662	0.0383798	0.9613662
TN	2019	1	0.0002539	0.9613662	0.0002539	0.9613662
TN	2020	0	0.0317936	0.9679307	0.0317936	0.9679307
TN	2020	1	0.0002756	0.9679307	0.0002756	0.9679307
TX	2018	0	0.0465185	0.953247	0.0465185	0.953247
TX	2018	1	0.0002346	0.953247	0.0002346	0.953247
TX	2019	0	0.0288987	0.9706857	0.0435785	0.9561332
TX	2019	1	0.0004156	0.9706857	0.0002883	0.9561332
TX	2020	1	0.0004564	0.9753276	0.0003173	0.9630753
TX	2020	0	0.0242161	0.9753276	0.0366073	0.9630753
UT	2018	0	0.0685561	0.9310982	0.0685561	0.9310982
UT	2018	1	0.0003457	0.9310982	0.0003457	0.9310982
UT	2019	0	0.064144	0.9354317	0.064144	0.9354317

UT	2019	1	0.0004244	0.9354317	0.0004244	0.9354317
UT	2020	0	0.0535915	0.945944	0.0535915	0.945944
UT	2020	1	0.0004646	0.945944	0.0004646	0.945944
VA	2018	1	0.000331	0.9340318	0.000331	0.9340318
VA	2018	0	0.0656372	0.9340318	0.0656372	0.9340318
VA	2019	0	0.0603597	0.939241	0.0603597	0.939241
VA	2019	1	0.0003993	0.939241	0.0003993	0.939241
VA	2020	1	0.0004403	0.948763	0.0004403	0.948763
VA	2020	0	0.0507967	0.948763	0.0507967	0.948763
VT	2018	1	0.0004965	0.9010432	0.0004965	0.9010432
VT	2018	0	0.0984603	0.9010432	0.0984603	0.9010432
VT	2019	0	0.0908906	0.9085081	0.0908906	0.9085081
VT	2019	1	0.0006013	0.9085081	0.0006013	0.9085081
VT	2020	0	0.0605459	0.9386803	0.0738617	0.925498
VT	2020	1	0.0007739	0.9386803	0.0006403	0.925498
WA	2018	0	0.0867713	0.9127911	0.0867713	0.9127911
WA	2018	1	0.0004375	0.9127911	0.0004375	0.9127911
WA	2019	0	0.079338	0.9201371	0.079338	0.9201371
WA	2019	1	0.0005249	0.9201371	0.0005249	0.9201371
WA	2020	0	0.0662964	0.9331289	0.0662964	0.9331289
WA	2020	1	0.0005747	0.9331289	0.0005747	0.9331289
WI	2018	1	0.0002154	0.9570599	0.0002154	0.9570599
WI	2018	0	0.0427247	0.9570599	0.0427247	0.9570599
WI	2019	0	0.0393856	0.9603539	0.0393856	0.9603539
WI	2019	1	0.0002606	0.9603539	0.0002606	0.9603539
WI	2020	0	0.0329038	0.966811	0.0329038	0.966811
WI	2020	1	0.0002852	0.966811	0.0002852	0.966811
WV	2018	0	0.0244263	0.9754505	0.0244263	0.9754505
WV	2018	1	0.0001232	0.9754505	0.0001232	0.9754505
WV	2019	1	0.0001477	0.9775346	0.0001477	0.9775346
WV	2019	0	0.0223178	0.9775346	0.0223178	0.9775346
WV	2020	0	0.0184261	0.9814141	0.0184261	0.9814141
WV	2020	1	0.0001597	0.9814141	0.0001597	0.9814141
WY	2018	1	0.0001804	0.9640326	0.0001804	0.9640326
WY	2018	0	0.0357869	0.9640326	0.0357869	0.9640326
WY	2019	1	0.0002157	0.967186	0.0002157	0.967186
WY	2019	0	0.0325984	0.967186	0.0325984	0.967186
WY	2020	1	0.0002361	0.9725238	0.0002361	0.9725238
WY	2020	0	0.0272401	0.9725238	0.0272401	0.9725238

Table 6: State Names With Variable Associations

Variable	State
s1	Alaska
s2	Alabama
s3	Arkansas
s4	Arizona
s5	California
s6	Colorado
s7	Connecticut
s8	Delaware
s9	Florida
s10	Georgia
s11	Hawaii
s12	Iowa
s13	Idaho
s14	Illinois
s15	Indiana
s16	Kansas
s17	Kentucky
s18	Louisiana
s19	Massachusetts
s20	Maryland
s21	Maine
s22	Michigan
s23	Minnesota
s24	Missouri
s25	Mississippi
s26	Montana
s27	North Carolina
s28	North Dakota
s29	Nebraska
s30	New Hampshire
s31	New Jersey
s32	New Mexico
s33	Nevada
s34	New York
s35	Ohio
s36	Oklahoma
s37	Oregon
s38	Pennsylvania
s39	Rhode Island
s40	South Carolina
s41	South Dakota
s42	Tennessee
s43	Texas
s44	Utah
s45	Virginia
s46	Vermont
s47	Washington
s48	Wisconsin
s49	West Virginia

Table 7: Breusch Pagan and Cook Weisberg Test

H0: Constant Variance	$chi2(1) = 0.22$
Variance: fitted values of logshare sub logout	$Prob > chi2 = 0.6368$

Table 8: Make and Models Used in Data

Make	Model
Audi	etron
BMW	i3
Chevrolet	Bolt ev
Hyundai	Ioniq ev
Hyundai	Kona ev
Jaguar	I Pace
Kia	Niro ev
MINI	Cooper SE Hardtop
Nissan	Leaf
Prosche	Taycan
Tesla	Model3
Tesla	Model X
Telsa	Modely

Table 9: Logit Specific

	(1)
	logshare_sub_logout
BEV	-5.535*
	(-2.01)
BEVXstate_sub2	0.000311***
	(6.05)
BEVXfed_sub2	-0.000240***
	(-3.44)
state_sub2	-0.000170
	(-1.73)
fed_sub2	0.000302
	(1.02)
med_state_income	0.00000546
	(0.45)
avg_msrp	0.000144
	(0.65)
y2019	0.210
	(0.78)
s_1	-0.244
	(-0.86)
s_2	-0.0421
	(-0.14)
s_3	-0.174
	(-0.57)
s_4	0.849**
	(3.24)
s_5	1.360***
	(3.45)
s_6	0.988
	(1.85)
s_7	0.634
	(1.84)
s_8	0.635*
	(2.04)
s_9	0.903**
	(3.27)
s_10	0.518

	(1.89)
s_11	1.129**
	(3.26)
s_12	-0.0735
	(-0.28)
s_13	0.00336
	(0.01)
s_14	0.526
	(1.88)
s_15	0.0980
	(0.38)
s_16	-0.00755
	(-0.03)
s_17	-0.194
	(-0.69)
s_18	-0.0720
	(-0.19)
s_19	0.765
	(1.85)
s_20	0.718
	(1.57)
s_21	0.426
	(1.50)
s_22	0.174
	(0.67)
s_23	0.413
	(1.35)
s_24	0.283
	(1.08)
s_25	-0.553
	(-1.55)
s_26	0.184
	(0.68)
s_27	0.455
	(1.68)
s_28	-0.307
	(-1.17)

s_29	0.0876
	(0.32)
s_30	0.667
	(1.81)
s_31	0.956**
	(2.75)
s_32	0.189
	(0.61)
s_33	0.809**
	(3.11)
s_34	0.584*
	(2.08)
s_35	0.469
	(1.79)
s_36	0.815**
	(2.89)
s_37	0.866*
	(2.20)
s_38	0.446
	(1.67)
s_39	0.392
	(1.44)
s_40	0.0698
	(0.26)
s_41	-0.257
	(-0.99)
s_42	0.216
	(0.77)
s_43	0.289
	(0.95)
s_44	0.603
	(1.79)
s_45	0.556
	(1.71)
s_46	1.037***
	(3.78)
s_47	0.844*

	(2.54)
s_48	0.184
	(0.70)
s_49	-0.326
	(-1.09)
_cons	-11.04
	(-1.09)
N	300
adj. R^2	0.968

t statistics in parentheses

F(57,242) = 159.79

Prob > F = 0.0000

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$