Review

The impact of tax policy stimulus on automobile choice- Evidence from Chinese automobile industry

Chen Xi* and Wang Yun

China University of Political Science and Law, China.

Using detailed national brand-level automobile sales data from January 2004 to the end of 2009, we quantify the impact of a series of tax policy stimuli initiated by the Chinese Government on automobile sales in China. These tax stimuli aimed either to prevent high displacement car consumption or to encourage low displacement car purchases. We conclude that the first two tax adjustments surpass high-emission auto sales, and the third adjustment promotes the overall auto sales.

Key words: Tax policy; automobile industry; country of origin; automobile emission.

INTRODUCTION

The total sales of China automobile market in 2009 was 13.64 million with 46.15 percent year-on-year growth, surpassing the United States for the first time and becoming the world's largest auto market. In 2010, automobile production reached 182.65 million with 32.44 percent year-on-year growth and automobile sales reached 180.62 million with 32.37 percent growth, winning the world's first.

With the increasing auto production and inventory in China each year, the huge consumption of oil resulting from the popularity of automobile is increasingly prominent. Harmful gases are discharged into the air, causing air pollution and greenhouse effect. Thus developing low-carbon economy has become an urgent problem that every country has to face. Under the background of conservation-minded and eco-friendly society, it is very necessary to develop energy-efficient, low - emission and material consumption automobile

industry, and improve automobile products' structure and market purchasing orientation through special policies and methods.

Against this background, the government adjusted excise tax twice on April 1st, 2006 and September 1st, 2008 respectively, and one purchase tax adjustment on January 2009. The first two excise tax adjustments aim to "suppress big" and "encourage small" which means curbing the consumption of high-emission cars and promoting the consumption of low ones. And the third purchase tax adjustment only intends to "encourage small", which means to promote consumption of low-emission cars through cutting the purchase tax. After three times of tax adjustment, relevant departments, foreign media and consumers comment differently on whether the purpose of "damps raises greatly is small" can be achieved or not. Some experts believe that the tax adjustment only can protect environment in short term,

*Corresponding author. E-mail: chelseatsinghua@gmail.com.

but not really change the automobile consumption structure, while others believe that the tax adjustment deeply influences consumers' purchase intention.

Previous comments are all subjective, lacking scientific evidence and reliable empirical data. In addition, there are no academic research that can answer the effects of China automobile tax adjustment through empirical research methods. To fill the research gaps, this paper intends to raise the following questions: (1) Do two excise tax adjustments affect China automobile sales? (2) Do purchase tax adjustments affect our automobile market? (3) If they both do, when does the maximum effect happen? What moderator variables contribute to it? Specially, we also examine the regulation of automobile emission and country of origin, and answer whether high-emission cars are inhibited and low-emission ones are promoted, and show that indigenous cars or joint ventures cars are more inhibited.

This paper is the first to empirically investigate the effectiveness of tax adjustment in China. It also has some innovations: firstly, how external macroeconomic policy and enterprise micro strategy affect consumer purchase behavior is explored; secondly, in order to know the effect of changes in policy or strategy, scale effect and structural effect are separated; thirdly, it shows up the particularity of China automobile market, as well as the peculiarity of the two taxes; the forth, the policy effectiveness assessment is comparatively deficient at the dependent variable of marketing performance. The fifth, we stand on the sight of the consumer behavior but not the qualitative and theoretical researches.

LITERATURE REVIEW

Abroad

Previous studies abroad on policy adjustment have set the foundation for policy impact on auto. Earlier researches study the effect of different fuel tax level on consumer welfare, applying questionnaire data of U.S. consumer census (Fullerton and West, 1999).

In Japan, Fullerton et al. (2004) take automobile consumption of Japanese residents and simulate the impact of policy changes on the family automobile consumption and the mileage. The policy simulation includes changing the cost per kilometer, such as tax based on emission, carbon tax, fuel tax, etc., and changing vehicle cost, such as tax based on engine size, displacement and years of use.

In Mumbai, there are three policies towards decreasing pollution: upgrading the diesel engine to the greener CNG, rising fuel price and collecting auto license tax. Takeuchi et al. (2007) adapt first-hand questionnaire survey and assesse that which has stronger inhibitory effect on vehicle emissions among the above three policies by selection model and nested selection model.

This study finally confirms that the most effective method is upgrading diesel engine by evaluating price elasticity and income elasticity, and it would not lead to bus fare rising but consumers converted to family cars, then proceed to exhaust emission.

In United States, provided that gasoline price rose one cent, gasoline consumption would lead to a decrease of 0.2%, through investigating the impact of increasing gasoline tax on U.S. auto market (Bento et al., 2009).

Gallego et al. (2011) study the impact of auto control policy on air pollution (carbon dioxide purity) in two Latin American urban Mexico and Santiago. They regard time as regulated variable and distributed it into three periods: peak, off-peak and weekend, proceeding to investigate the difference of policy responses in different period. Furthermore, they study policy impact on new car sales and used-cars trading volume through Diff-in-Diff methodology.

Domestic

With the development of auto industry and the worse situation of air pollution, policy adjustment in China is becoming a hot issue that many scholars analyze it in different angles and synthesize the literature on auto tax. Wang (2007) analyzes the impact of excise tax reform of China in 2006. Guo (2010) explores the impact of auto purchase tax initiated and implement on several state-owned firms in two time point respectively applying correlation analysis. It shows that most auto companies' stock soared in varying degrees. Particularly, Audi as a typical high-emission model, its sales is refrained by two auto purchase tax adjustment through descriptive analysis and correlation analysis (Zhu, 2010). Xiao and Ju (2011) study the impact of two auto excise tax released on April1, 2006 and September 1, 2008 on pro-environment (fuel consumption, etc) and social welfare. It finds that the policy decreased the total auto sales, thereby enabling to reduce fuel consumption, but the consumption structure of the various models is not affected. Afterwards, they also study the impact of the fuel tax reform policy announced in 2009, and find the same results. The only difference is that consumers' welfare loss is greater than the consumption tax loss due to fuel tax increasing. Chen et al. (2010) concern about the consumption tax reform in 2006, and find that the price effect and advertisement effect result from the time lag between releasing policy and implementing it.

Systemizing the previous literature, the tax lever applied in adjusting foreign auto industry consumption structure is generally fuel tax, license tax, carbon tax, etc., rarely on excise tax and purchase tax, which is China's unique characteristics. Part of existing domestic study has focused on China auto industry tax policy which lays a good foundation for our study. Overall, the results are limited and most qualitative research based

Table 1. Adjustment of Consumption Tax Rates in China on April 1st, 2006.

Displacement	Before	After	Adjustment range
(Liter)	(a)	(b)	(b)- (a)
<=1	3%	3%	0
(1,1.5]	5%	3%	-2%
(1.5,2]	5%	5%	0
(2,2.5]	8%	9%	1%
(2.5,3]	8%	12%	4%
(3, 4]	8%	15%	7%
>4	8%	20%	12%

on descriptive analysis and correlation analysis, etc. Articles that apply selection model and other scientific and systematic methodology are deficient.

Nation equity and brand equity

Nation equity is a concept of the equity or goodwill associated with a country. It refers to the generalized COO effects, including performance-based COO effects and normative COO effects (Maheswaran and Chen, 2008). Nation equity can impact the company or product performance-related perceptions, and can be positive or negative as a function of culture, politics, religion, economic development and other external macro factors (Maheswaran and Chen, 2008). However, researches referring to consumers' cognition and preference on COO and brands in auto industry have smaller numbers. Li (2008) studies how do the nation image influences consumer product purchase intention such as auto using questionnaire data. Tian (2010) concerns many local auto companies and explores how do they win competitive advantages and break through as the powerless latter, meanwhile, providing projects for building strength brand. He and Zhou (2011) analyze the influences on consumer cognition and behavior which are accrued from Japan nation image, auto function attributes and brands marketing experience. Additionally, they come up with some countermeasures and suggestions based on brand marketing experience of Japan auto; that is how China auto industry creates a strong brand and eliminates the negative impression of "Made in China". Regarding consumers in Taiwan as object for research, Huang et al. (2008) study how brand equity cognition differs from consumers in different demographic variables.

Although limited literature devoted to nation equity and brand equity studies of auto industry, referring to nation equity and nation image in general (Wang and Deng, 2010; Wang et al., 2009), country of origin (COO) effects (Wang and Yang, 2004), brand equity and brand image

(Fang et al. 2011), domestic researches have rich achievements and high academic value, laying a good foundation for our study on the heterogeneity of consumers' reaction of different COO and different brands auto tax adjustments.

Three automobile industry tax policy adjustments

To conserve energy, reduce emission, increase the awareness of environmental protection, encourage purchasing low-fuel and low-emission cars and optimize automobile production consumption structures, China government adjusted tax policy several times on local automobile market. Recalling the large-scale tax adjustment history of Chinese auto industry, there are three times adjustments.

The first adjustment

On March 21th, 2006, China Ministry of Finance and the State Administration of Taxation issued adjustment towards the items, rates and related policy of current excise tax. The adjustment was implanted in April 1st 2006. It significantly improved the ratio of cars which displacements are above 2.5 liter. That is a great shock on high-emission cars, and tax-inclusive prices of some imported luxury cars in Shanghai increased by 150,000 overnight. However, the ratio of low-emission cars with under 1.5 liter displacements was decreased, which released the intense signal of "damps raises greatly is small". The detail tax rate adjustment of the first policy is shown in Table 1.

The second adjustment

After two years of market reaction, further adjustment towards auto excise tax was carried out in September 1st 2008 by China Ministry of Finance and the State Administration of Taxation. This tax adjustment continued to raise the excise tax of high-emission and luxury cars, and lower the tax of low-emission ones. After the adjustment, manufacturers reacted differently and consumers also make sensitive responses. The detail tax rate adjustment of the second policy is shown in Table 2.

These two-timesadjustments mainly focused on excise tax, aiming to manufacturers. The excise tax equals to manufacturers' price multiplied by the excise tax rate. Manufacturers passed on the tax to the ultimate consumer on their own, all controlled by the manufacturers themselves.

The third adjustment

Differed from the two previous excise tax adjustments,

Table 2. Adjustment of consumption tax rates in China on September 1st, 2008.

Displacement	Before	After	Adjustment range
(Liter)	(a)	(b)	(b)- (a)
<=1	3%	1%	-2%
(1,1.5]	3%	3%	0
(1.5,2]	5%	5%	0
(2,2.5]	9%	9%	0
(2.5,3]	12%	12%	0
(3, 4]	15%	25%	10%
>4	20%	40%	20%

Table 3. Adjustment of consumption tax rates in China on January 20th, 2010.

Displacement	Before	After	Adjustment range
(Liter)	(a)	(b)	(b)- (a)
<=1.6	10%	5%	-5%
>1.6	10%	10%	0

the third targets are car consumers. The car purchase tax is paid to the Internal Revenue Service. The general cost is the total auto price divided by 117% of the value-added tax, then multiplied by purchase tax rate.

The purchase tax adjustment initiated on January 20th, 2009 reduced 5% purchase tax of cars with 1.6 liters and less displacement while the ratio of cars with over 1.6 liter displacement remained the same as before. The specific rate programs of the third adjustment are shown in Table 3.

Within four years, China has three major adjustments of the tax ratio for the auto industry, respectively; twice excise tax adjustments against manufactures and once purchase tax adjustment against consumers. Well, whether do they have effect? How effective? Do they really help "damps raises greatly is small"? What fluctuation towards tax ratio adjustment do sales of different displacement, different brands and different models have?

EMPIRICAL STUDY

Empirical method

We use empirical methods and quantitative analysis to build the marketing econometric model, regarding three tax adjustments as dummy variables, exploring the impact of the different policies' stimulation on auto sales.

Data

In this study, research data are monthly sales data of China auto

industry from January 2004 to December 2009 covering 72 months and three tax policy adjustment periods. The sales data include 15290 observations of 675 brands from 59 auto manufactures in China. Variables in data include attributes such as sales, prices, displacement and dummy variables includes joint car and local brands. In addition, the study also uses other auxiliary data such as GDP and monthly retail price, which can exclude the impact of economic fluctuation and other external policy factors through controlling variables.

Model setup

Logical model

Suppose that customer i can choose a car from j brands, and we define it as vector X_{jt}. X_{jt} includes a series of attributes and environmental factors such as three auto tax policy. P_{jt} is retail brand price. Consumers can also choose not to buy or buy zero brands; we named it outside good. The utility that consumer i derives from purchasing product j in quarter t is given by:

$$U_{ijt}=\beta_{0i}+\beta X_{it}-\alpha P_{it}+\varepsilon_{ijt} \quad j=1,...,J \tag{1}$$

β_{0i} is customer i's intrinsic preference for brand j, β is response coefficient of consumers towards observed product attributes and environment variable. α is response coefficient on price. ε_{ijt} is customer i's idiosyncratic preference for brand j in quarter t, which gives rise to the following consumer i's logical choice probability for brand j in quarter t:

$$P_{ijt}=\frac{\exp(\alpha_{ij}+\beta X_{jt}-\alpha P_{it}+\varepsilon_{ijt})}{1+\sum_{j=1}^{1}\exp(\alpha_{ij}+\beta X_{jt}-\alpha P_{it}+\varepsilon_{ijt})} \tag{2}$$

Control function

After getting the probability for brand j, market share of brand j in quarter t is S_{jt}, which is the ratio of sales to the total auto market sales.

$$S_{jt}=\frac{\exp(\alpha_{ij}+\beta X_{jt}-\alpha P_{it}+\varepsilon_{jt})}{1+\sum_{j=1}^{1}\exp(\alpha_{ij}+\beta X_{jt}-\alpha P_{it}+\varepsilon_{jt})} \tag{3}$$

The probability of outside good is:

$$S_{0t}=\frac{1}{1+\sum_{j=1}^{1}\exp(\alpha_{ij}+\beta X_{jt}-\alpha P_{it}+\varepsilon_{jt})} \tag{4}$$

Table 4. Analysis results of main effects and interaction effects.

Dependent variable ln(share)-ln(outside)	Model (1) main effect	Model (2) displacement is interaction	Model (3) COO is interaction
Stm1	-.23***	-.448***	-.445***
Stm2	-.18***	-.499***	-.854***
Stm3	.39***	.584**	.058**
Logarithmic price	-1.60***	-.907***	-.895***
manual or automatic	-.146	-.098	-.141
Two-box or three-box	-.654	-.721	-.713
Displacement		-.111	
Stm1*Displacement		-.122**	
Stm2*Displacement		-.060	
Stm3*Displacement		-.260*	
Country of origin			1.281
Stm1*COO			-.010
Stm1*COO			.690***
Stm1*COO			.439**

*The columns of the table list the results of different regression models which are all applying auto brand fixed effects. The dependent variable is the logarithmic of a car market share minus the logarithmic of external product market share. Stm1, Stm2 and Stm3 are excise tax policy promulgated in April 2006, adjustment policy promulgated in September 2006 and purchase tax adjustment policy promulgated in January 2009 respectively. If they implemented, the value is 1, 0 otherwise. *p<.1, **p<.05, ***p<.01

For the convenience of the parameter estimates, we convert (4) divided by (3) to linear form as follows:

$$Ln(S_{jt}/S_{0t}) = Ln(S_{jt}) - Ln(S_{0t}) = \alpha_j + \beta X_{jt} - \alpha P_{jt} + \varepsilon_{jt} \quad (5)$$

Taking derivatives of right of Equation (5), we obtain multiple variables for research as:

$$Ln(S_{jt}) - Ln(S_{0t}) = \beta_0 + \beta_1 \times STM_1 + \beta_2 \times STM_2 + \beta_3 \times STM_3 + \beta_4 \times P_{jt} + \beta_5 \times INTERACT_{jt} + \beta \times COVARIATES_{jt} + \varepsilon_{jt} \quad (6)$$

Argument

Equation (6) is a terminal model. Vector X is one of arguments in right equation, and its first part are attributes of auto brand products (represented by COVARIATES), including manual or automatic, two-box auto or three-box auto, displacement and country dummy(1 for foreign, 0 for China). In addition, it also uses other macro environment variables such as GDP level and oil prices. It also includes environment variables, which are three dummy variables of auto tax policy, where, STM1, STM2, and STM3 are excise tax policies released in April 2006, adjustment policy released in September 2006 and purchase tax adjustment policy released in January 2009. If they are implemented, the value is 1, and 0 otherwise. Arguments also use price P_{jt} to control price effects and residual ε_{ijt}.

Interaction

To consider the different impacts of excise tax and purchase tax on different displacement cars and consumers' purchase reaction on different country of origin, we take displacement × policy and COO × policy of the two interaction terms into variables.

MODEL ESTIMATION AND RESULTS ANALYSIS

We use STATA 10 to analyze data. In order to control the brand effect and maintain results reliability, the main effect and interaction in data analysis inspection use fixed effect regression. Table 4 has three regressions in testing. Model (1) is the main effect. Model (2) mainly inspects interaction of displacement. Model (3) studies the interaction of the regulatory impact of COO.

Main effects

At first, we analyze the main effects and control attributes of price, manual, automatic, two or three-box. The results show that the coefficients of policy 1($\beta = -0.23$, P<0.01) and policy 2 ($\beta = -0.18$, P<0.01) are significantly negative, indicating that two excise tax implementations surpass auto sales ($\beta = -0.23$, P<0.01). Policy 3's coefficient is significantly positive ($\beta = 0.39$), showing that cutting purchase tax in 2009 promoted the overall sales. From this analysis we found that all of two excise taxes issued in 2006 and in 2008 one purchase tax issued in 2009 work on automobile market; the first two inhibited auto sales, and the third stimulated auto sales.

Interaction effect

Accounting for interaction effects, the value of Stm1* displacement is negative and significant (β = -0.12, P<0.05), indicating that the higher auto displacement, the more suppression policy1 taking on auto sales; the interaction between Stm2 and displacement is not significant; the interaction effect between Stm3 and displacement is negative and significant on 0.1 level, showing that the smaller displacement models, the stronger promotion taken by policy 3. In other words, tax incentive policies that halved the purchase tax have deeper effect on low-emission cars. This finding is consistent with the original intention of the relevant policies implementation, indicating the effectiveness of policies; excise tax effectively inhibited the consumption of high-emission and environmental damage cars; halved purchase tax adjust consumer excise structure well and promoted the low-emission cars consumption in large scale. Another interesting regulated variable is country of origin. We know Stm 2 and country of origin have a significant positive interaction terms from the results of the third column. Country dummy variable that is 1 represents the joint venture (foreign); 0 is China's own brand, which shows that, after the implementation of policy 2 which limited the excise tax towards purchasing high-emission cars, the most difficult obstacle is domestic brands but not joint venture brands. The value by multiplying Stm 3 and COO is positive and significant, indicating that the purchase tax indeed promotes the consumption of low-emission cars; however, it mainly promotes joint venture auto manufactures. Local manufactures benefit from waiver policy and increase limited sales. In other words, research on COO tells us that it seems that the adjustment policies are effective to change the structure of auto consumption, guiding consumers to buy low or medium-emission economy cars in order to switch to low-carbon, environment-friendly consumption structure. However, when we analyze the internal consumption structure in detail, we find consumption on local high-emission is declining; after the arrival of purchase tax stimulus, Chinese consumers turn to be favor in low-emission cars; however, subject to a substantial increase in sales of more foreign joint venture auto brands. It shows the effect of COO is based on consumers psychology perspective. Recently, Chinese consumers still prefer foreign brand cars.

Research Conclusion

Based on large-scale panel data of China's automobile market, applying the brand selection model logic, using the "Natural experiment" research method in economics, the author studied the impact of three industry policy

adjustments on China's automobile industry consumption structure. The validation of main effect and the analysis of displacement moderator variable interaction effect prove that, three tax adjustments play a role on "suppress high and encourage low". But the moderate effect of country of origin suggests that, compared with foreign famous brands, the competitiveness of China brands is not enough. In other words, it is an important task and challenge for domestic local brands to develop national brands and enhance brand equity by restraining the effect of country of origin mostly in the future.

Managerial implication

Theoretical significance

Establishing an integrated assessment modeling framework

This research attempts to establish a conceptual framework to measure policy marketing effectiveness systematically and comprehensively through exploring the effects of policy objectives (displacement, market size, structure) and the outside effects of objectives (brand, COO, district, etc). The effects of policy objectives are broke down into the scale effect and the structural effect for in-depth analysis and research the heterogeneity of the outside objectives' reaction under the same policy. The assessment framework and methods can expand the effect of other macroscopic policy or micro strategy.

Enriching related marketing theory

This study focuses on the effect of government policy on customer purchase behavior and will be realized by identifying the scale effect (whether policy increase or decrease total consumption) and conversion effect (consumers' purchase intend transform from high emission vehicles into small ones). Ample tax items and changeful tax rate adjustments will provide multinational situations, and greatly enrich the existing theory around this field with the help of the rich conclusions of this study.

The time interval between publication time and implementation time of the excise tax and purchase tax policy can reveal the strategic behavior that forefront consumption in order to enjoy the benefits before the tax rate changes under the influence of "look ahead" and postpone consumption so as to enjoy the change rate of affordable rules. This will enrich the existing marketing research achievement on consumers' "strategic behavior " and " rational consumer".

This study considers the country of origin, brand and geographical effect which are the so called heterogeneity

of different levels response policy. It contributes to comprehending the automotive products' nation equity, brand equity, and enrich existing researches.

Enriching tax price leverage theory

By employing the price leverage, tax has diverse moderating effects. This study quantifies the moderating effects, differences and conditions of excise tax and purchase tax in China's auto industry. These findings will enrich and optimize correlation theory in the tax field.

Practical significance

Significance for relevant policy departments

Policy effectiveness evaluation

It is of great significance for relevant departments using scientific methods to roundly assess policy effectiveness that which is better between grasping excise tax as indirect price lever and purchase tax as direct price leverage. This study can also provide important guiding on how to make policy adjustment more rationally and scientifically, such as tax items level (displacement) design, the direction and amplitude of the adjustment in each level, the time interval design of policy issued.

Significance for auto manufacturers and dealers

This study has a practical significance for all sectors in the auto industry. It is clear that policies will directly guide auto manufacturers' production layout and structure configuration decision, and affect dealers' sales layout. Based on our study, all sectors in auto industry can make more effective response strategies and optimal decision. Variables such as COO, brand, region, etc. can help auto firms to grasp their own advantages and disadvantages, so as to improve nation equity and brand equity.

Conflict of Interests

The authors have not declared any conflict of interests.

REFERENCES

Bento A, Goulder L. Jacobsen M, von Haefen R (2009), Distributional and Efficiency Impacts of Increased US Gasoline Taxes. Am. Econ. Rev. 99(3):667–699 http://www.aeaweb.org/articles.php?doi=10.1257/aer.99.3.667

Chen X, Pradeep C, Navdeep S (2010). Impacts of Automobile Tax Adjustment on Auto Choice: Evidence From Chinese Automobile Industry. 2010 Informs Marketing Science Conference, Cologne, Germany.

Fang E, Palmatier R, Grewal R (2011). Effects of customer and innovation asset configuration strategies on firm performance. J. Market. Res. 48(3):587–602.

Fullerton D, Gan L, Hattori M (2004). "A Model to Evaluate Vehicle Emission Incentives Policies in Japan." working paper. http://works.bepress.com/don_fullerton/10.

Fullerton D, West SE (1999). "Can Taxes on Cars and on Gasoline Mimic an Unavailable Tax on Emissions?," Journal of Environmental Economics and Management, Elsevier, 43(1):135-157.

Gallego F, Montero JP, Salas C (2011). "The Effect of Transport Policies on Car Use: Theory and Evidence from Latin American Cities." Working Paper.

Guo Zhichun (2010). Impact of Automobile Purchase Tax Adjustment on Stock Price of Relevant Listed Companies. J. Zhengzhou University Master's Thesis. http://www.cnki.net/KCMS/detail/detail.aspx?QueryID=0&CurRec=19&recid=&filename=2011010412.nh&dbname=CMFD0911&dbcode=CMFD&pr=&urlid=&yx=&v=MDgwNDRIN081SHRYTnJaRWJQSVI4ZVgxTHV4WVM3RGgxVDNxVHJXTTFGckNVUkw2ZlkrUnZGQ2prVWl3S1YxMjY=

Maheswaran D, Chen CY (2008).Nation Equity: Country-of-Origin Effects and Globalization. pp.1-53. Nation Equity: Country-of-Origin Effects and Globalization

Takeuchi R, Lepak DP, Wang H, Takeuchi K (2007). An empirical examination of the mechanisms mediating between high-performance work systems and the performance of Japanese organizations. J. Appl. Psychol. 92:1069 –1083. doi:10.1037/0021-9010.92.4.1069

Wang D, Deng X (2010).China's 2020 Education Reform Strategy. Asia Society.

Wang X, Yang Z (2008). "Does country-of-origin matter in the relationship between brand personality and purchase intention in emerging economies? Evidence from China's auto industry", International Marketing Review, 25(4):458-474.

Wang XH, Linyang Z, Liu NR (2009). The Impacts of Brand Personality and Congruity on Purchase Intention: Evidence From the Chinese Mainland's Automobile Market. J. Glob. Mark. 22(3):199-215.

Wang Xiangyang (2007). Effect Analysis of consumption tax policy adjustment on China's Auto Market. J. Southwestern University of Finance and Economics Master's Thesis.http://eproxy.lib.tsinghua.edu.cn/rewriter/CNKI/http/vvv9bmjh9mds/kcms/detail/detail.aspx?dbcode=CMFD&dbName=CMFD2011&FileName=2009061926.nh&v=MDE4NDJau8hXXbsXs74f2M6pkRs8hH4PfT67H2eYTHtMduOrETQWsJREvp9j5G8UKOQ=&uid=WEEvRE cwSlJHSldTTGJhYlJLU0pVQVdaYmkyZmNVeTU5RGVuWkhOcXFuYmlaRlVldkJPYnVUc0pzdkNqelFIcg==

Xiao J, Ju H (2011). Market equilibrium and the environmental effect of tax adjustments in China's automobile industry. Rev. Econ. Stat. 96(2):306–317.

Zhu Guangyu (2010). Adjustment of Consumption Tax on Import Audi Market Impact and Countermeasures Study. J. Jilin University Master's Thesis. http://eproxy.lib.tsinghua.edu.cn/rewriter/CNKI/http/vvv9bmjh9mds/kcms/detail/detail.aspx?dbcode=CMFD&dbName=CMFD2010&FileName=2010115300.nh&v=MDk4OTQUKORWvMhXXboesrkb0syvkRs8hH4PfT67H2eYTHtMduOrETQWsJREvp9j5G8=&uid=WEEvREcwSlJHSldTTGJhYlJLU0pVQVdaYmkyZmNVeTU5RGVuWkhOcXFuYmlaRlVldkJPYnVUc0pzdkNqelFIcg==