

Dose raising a cigarette tax really bring an increase in future tax revenue?

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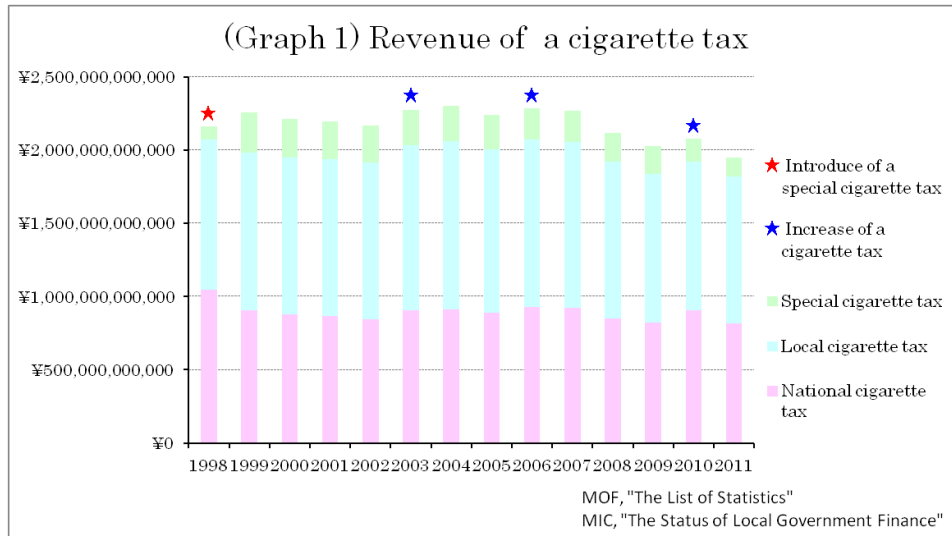
1. The purpose of the study

Recently, raising a cigarette tax has often come up for discussion in the Diet. Some people say the purpose is to control cigarette consumption for people's health but the main purpose is to increase in tax revenue. Actually, some experts say tax yield would increase when a tobacco tax is raised. However, we always have to think of future tax revenue when raising a tax. In the case of a cigarette tax, we must discuss it, considering future demand such as smoking prevalence or cigarette consumption. Dose raising a cigarette tax really bring an increase in future tax revenue? The purpose of the study is to make clear a mutual relation between a tobacco tax and demand for cigarettes and to know how they have an influence on tax yield.

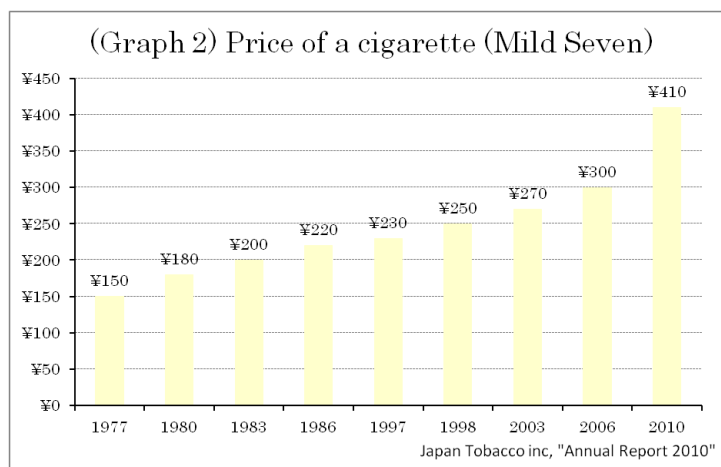
2. Literature review

A cigarette tax was first introduced in 1876 and a state monopoly started in 1898 to compensate for the expenditure on the Sino-Japanese War (1894-95). The tax started as the policy to secure tax revenue. They say tobacco tax revenue amounted to about 10 percent of total tax revenue at that time.

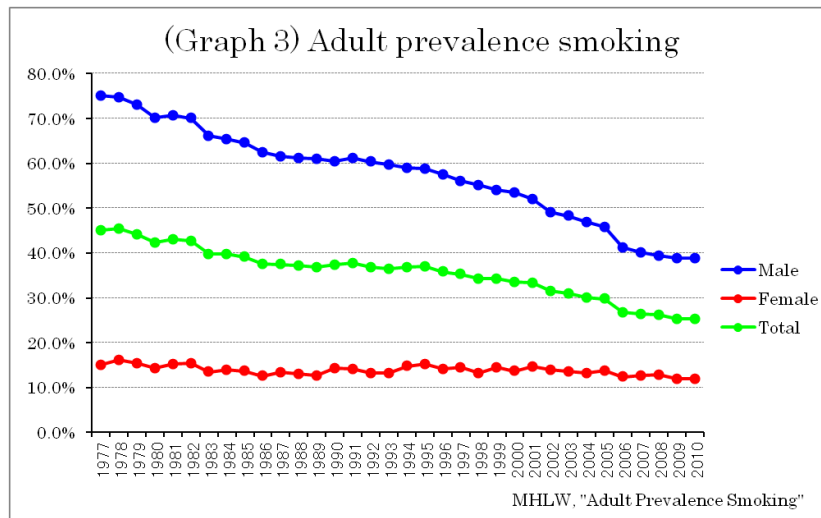
This system was taken over to postwar Japan Tobacco and Salt Public Corporation, which is known as present Japan Tobacco, Inc. Although, in 1954, a cigarette tax was divided into a national cigarette tax and a local cigarette tax to strengthen local government finance, it continued to be an important resource of tax revenue. However, cigarette tax revenue has decreased gradually for recent years. On the other hand, the tax yield actually increased when a tobacco tax was raised or a special cigarette tax was introduced (Graph 1).



The price of a cigarette has also increased as its tax rate has risen. For example, Mild Seven, the most popular brand in Japan, went up from ¥150 in 1977 to ¥410 in 2010 (Graph 2).



As for prevalence smoking, male smokers have decreased year by year while female smokers have fluctuated. On the whole, adult prevalence smoking has fallen gradually (Graph 3). According to a World Health Organization's report, however, cigarette consumption per person of Japan is much higher than foreign countries and it ranks 12th of 192 countries in 2009 (WHO).



From the information above, it is not clear how the price of a cigarette and its tax rate have an influence on prevalence smoking, cigarette consumption and tax revenue. The reason why only a cigarette tax was raised several times at a short interval is also unclear. In addition, the data above is all past one. It is vital to get future demand for a tobacco when raising its tax.

3. The questions of the study

1. What relation is there among the price of a cigarette, its tax rate, prevalence smoking, cigarette consumption and tax revenue?
2. Why was only a cigarette tax raised several times at a short interval?
3. How much demand for a cigarette is there in the future?

3. The methods of the study

The method of the question 1

In the first question, we conducted international comparison and analyzed the data. Different countries have different price and tax rate of a tobacco. So international comparison is the best way to know how the price of a cigarette and its tax rate has an effect on prevalence smoking, cigarette consumption and tax revenue. We collected the data of 15 countries*. They were all a developed country because we had to think of the cost of living in comparing the price of a tobacco.

The method of the question 2

The method of the question 3

In the second and third question, we took a survey by questionnaires. They are useful to know future demand for a cigarette. The main target was the young because they were future consumer, that is, future tax payer. We asked 56 people from in their twenties to in their thirties for 14 questions in total. By the way, in the questionnaires, we asked people for the questions not only on smoking but also on drinking. The reason is that like a cigarette, alcohol is taxed due to a luxury and that alcohol tax can be a good object of a comparison with a cigarette tax. The questions we pick up in this report are as follows (Some questions are left out on account of limited space).

Q2. Do you drink or smoke?

Q3. Do you want to stop drinking?

Q4. Up to how much can you pay for a beer?

Q5. Do you want to stop smoking?

Q6. Up to how much can you pay for cigarettes?

Q7. Do you want to try to drink in the future? (To non-drinker)

Q8. Do you want to try to smoke in the future? (To non-smoker)

Q10. Do you think alcohol is something necessary for society?

Q11. Do you think a cigarette is something necessary for society?

Q12. Which do you think has a bad influence on society, alcohol or a cigarette?

4. The results of the study

The result of the question 1*

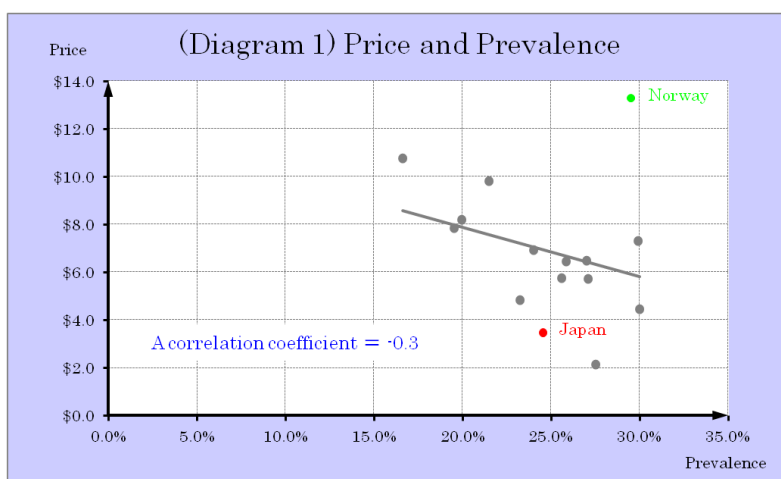
The price pack of 20 cigarettes and its tax rates of Japan are rather lower than foreign countries. However, there is one point to be paid attention to. Generally, a cigarette tax consists of a cigarette tax itself and other taxes. Other taxes include value added tax (which is, in Japan, consumption tax), import duty and so on. In fact, in Japan, a cigarette tax itself is much higher than foreign nations while other taxes are the lowest of the 15 countries.

Adult prevalence smoking in Japan is below average. However, cigarette consumption annual per person of Japanese people is the second highest. Japanese people are a heavy smoker. The population of Japan is the second highest and the total tax revenue with public debt ranks fifth.

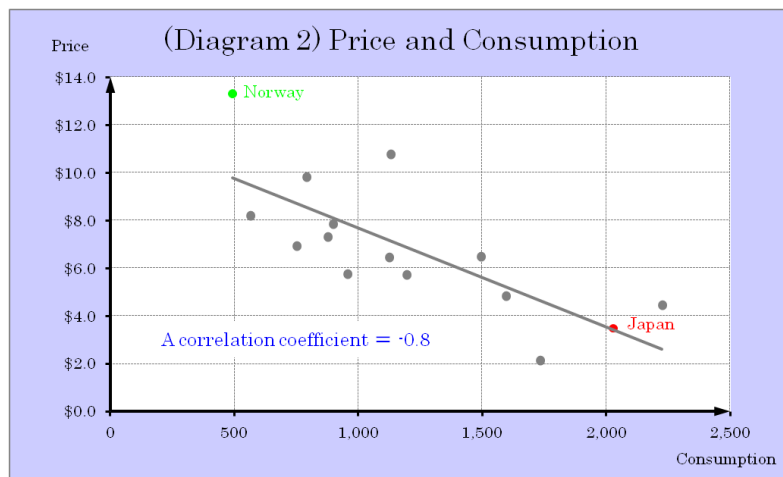
Making use of the data above gives more information. Needless to say, there

is no change in price of 1 cigarette. On the other hand, the total cigarette consumption of Japan is the second highest. This is because the number of people itself is large and Japanese are a heavy smoker. As for the total revenue of a cigarette tax, the rank of Japan is the second. One reason is the population but the main reason is a high cigarette tax. As a result, the ratio of revenue of cigarette tax to total tax revenue of Japan is the highest.

A scatter diagram^{*1} and an approximation line^{*2} show that there is an inverse proportion between the price of a cigarette and its prevalence (Diagram 1). However, a correlation coefficient^{*3} is -0.3, which means the proportion is not so strong. By the way, there is an interesting country in the diagram. It is Norway. The price in Norway is the highest; nevertheless, the prevalence is the third highest.

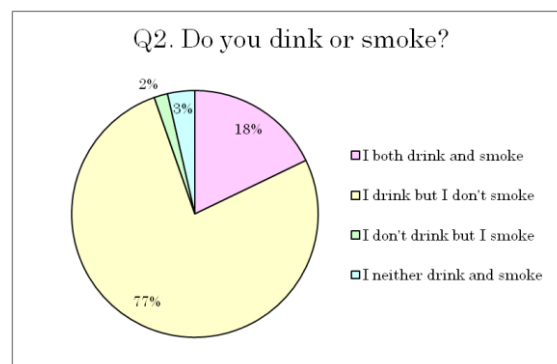


There is also an inverse proportion between the price of a tobacco and its consumption (Diagram 2) and a correlation coefficient is -0.8. This means the proportion is quite strong. As the correlation coefficient indicates, the price in Norway is the highest and the consumption is the lowest.

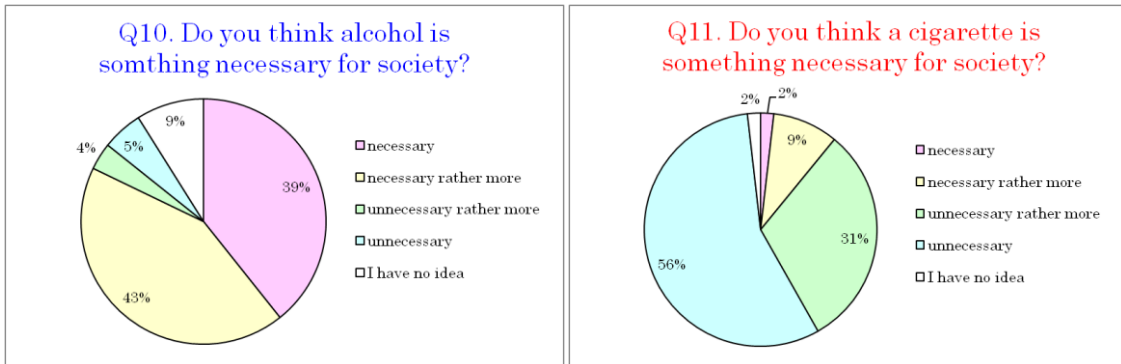


The result of the question 2

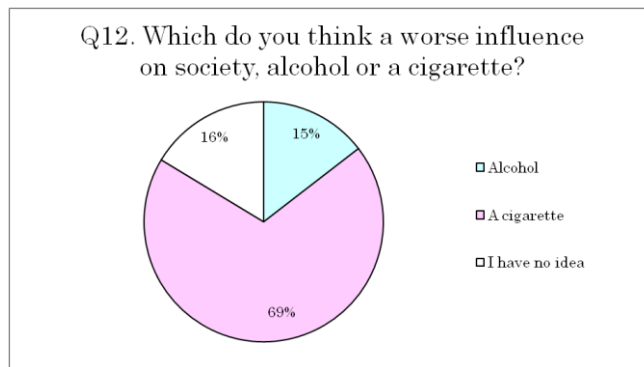
To begin with, the Q2 shows how many drinkers and smokers there are in the questionnaire. The result says most of the young drink while there are only a few smokers. Adding the red part and the yellow, 96% people drink. On the other hand, summing up the red part and the green, there are 20% people who smoke.



Next, the Q10 and the Q11 show how people view alcohol and a cigarette. In the Q10, many people think of alcohol as something necessary for society. Adding "Necessary" in red color to "Necessary rather more" in yellow, 82% people take alcohol positively. On the other hand, the result of the Q11 says most of people think of a cigarette as something unnecessary. Summing up "Unnecessary" in blue color and "Unnecessary rather more" in green, 87% people see a cigarette negatively.

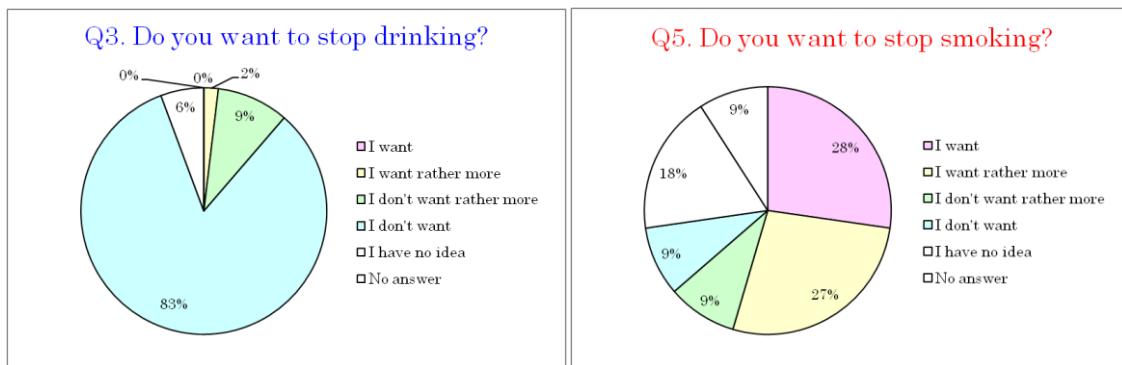


Finally, the result of the Q12 emphasizes the previous answers. Nearly 70% people think a cigarette does more harm to society than alcohol.



The result of the question 3

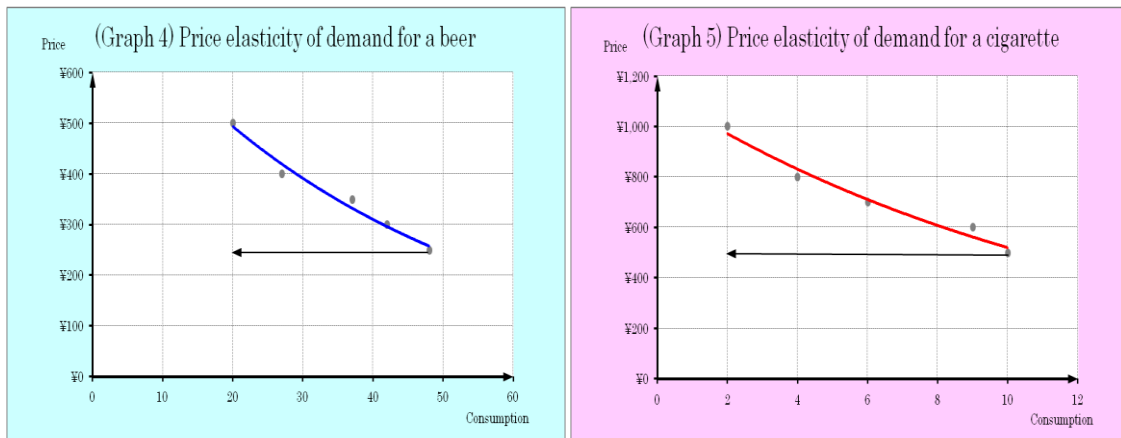
First of all, the Q3 and the Q5 show how many drinkers want to stop drinking and how many smokers want to stop smoking. The results say few drinkers want to give up drinking while many smokers want to give up smoking. Even adding the red part to the yellow, only 2% drinkers want to stop drinking. On the other hand, summing up the red part and the yellow, 55% smokers want to stop smoking.



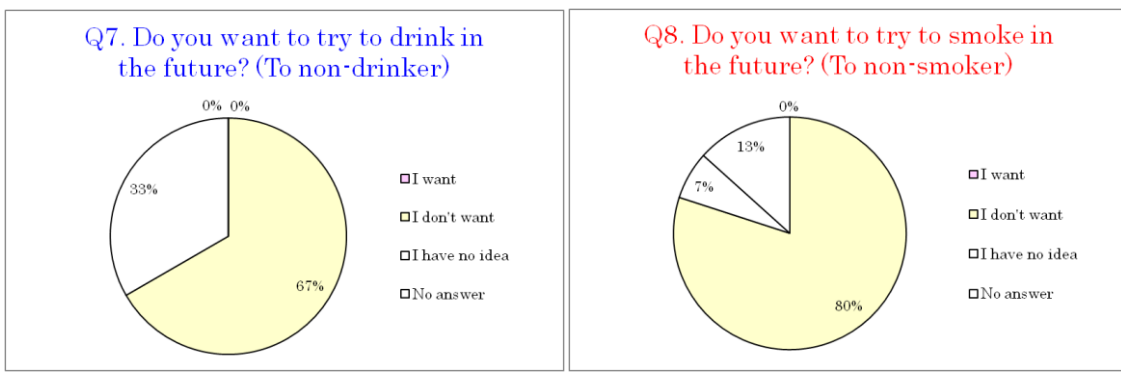
Then, the Q4 and the Q6 ask them for the questions of up to how much drinkers pay for a beer and up to how much smokers pay for cigarettes. In a beer, there were many free answers and surprisingly, four people said that they would pay over ¥10,000 for a beer. The answers is arranged to analyze them. For example, when the price of a beer is ¥250, all the people who pay over ¥250 drink too. As a result, when the price is ¥250, 48 people drink in total. When all the answers are arranged, the result shows that the rate of decrease in the cigarette consumption is higher than that in the beer consumption.

Q4. Up to how much can you pay for a beer?			Q6. Up to how much can you pay for cigarettes?		
Price	Number	Total	Price	Number	Total
¥250 (25%UP)	6	48 (00%DOWN)	¥500 (25%UP)	1	10 (00%DOWN)
¥300 (50%UP)	5	42 (12%DOWN)	¥600 (50%UP)	3	9 (10%DOWN)
¥350 (75%UP)	10	37 (23%DOWN)	¥700 (75%UP)	2	6 (40%DOWN)
¥400 (100%UP)	7	27 (44%DOWN)	¥800 (100%UP)	2	4 (60%DOWN)
¥500 (125%UP)	8	20 (58%DOWN)	¥1,000 (125%UP)	2	2 (80%DOWN)
¥600 (A free answer)	2	-	No answer	1	-
¥1,000 (A free answer)	5	-	-	-	-
¥1,500 (A free answer)	1	-	-	-	-
¥10,000 (A free answer)	4	-	-	-	-
No answer	5	-	-	-	-

Price elasticity of demand^{*4} for a beer and cigarettes makes the result easy to understand. The slope of each demand curve is different (Graph 4 and 5). This leads to the difference in the width of each line which indicates the decrease in consumption. In short, when the price of each goods rises, cigarette consumption falls more sharply than beer consumption.



Finally, the Q7 and the Q8 show future demand for alcohol and a cigarette. 67% of non-drinkers say they don't want to try drink in the future while 80% of non-smokers say they don't want to smoke in the future.



5. Discussion

There are three discussion points.

First, changes of tobacco price have an influence not on prevalence smoking but on cigarette consumption. Especially, the case of Norway tells many things. As the scatter diagrams show, the cigarette price of Norway was the highest; nevertheless, the prevalence was the third highest. However, the consumption per person was the lowest. This suggests that in the country, when the price of a cigarette went up dramatically, the people continued to smoke by reducing its consumption. If so, the decrease in the tax revenue is inevitable because there are few new smokers and only smokers reduce their consumption. Actually, the ratio of tax revenue of a cigarette tax to total tax

revenue of Norway is 0.5% and it ranks the lowest. Raising a tobacco tax would decrease its tax yield. On the contrary, it is doubtful whether the tax increase as a policy for people's health would do work well or not. This is because eventually, smokers in Norway could not stop smoking completely.

Second, in Japan, there are many inducements to increase a cigarette tax. Low price and low tax rate of a tobacco can be an easy excuse to raise the tax. The fact that a cigarette tax is divided into a national cigarette tax and a local cigarette tax can also lead to the tax increase. This is because when the tax is raised, the profit extends to all of the prefectures, cities, towns and villages. Therefore, basically, the local governments do not oppose the increase of a tobacco tax. In addition, as the questionnaires show, people take a cigarette negatively. This also can be the excuse because the raising a tobacco tax can gain the understanding of a people with ease. In Japan, however, a cigarette tax is an important resource of tax revenue. If the government is driven by the inducements and raise a cigarette tax easily, we could lose this valuable resource of tax revenue.

Third, there is only a little demand for cigarette in the future. Most of present smokers want to stop smoking. They may be unable to stop smoking completely. However, they are sure to reduce cigarette consumption sharply when a tobacco tax is raised. Moreover, it is unlikely that there will be few new smokers. On the other hand, recently, the control of smoking has been strict. The increase of non-smoking area or an ordinance against smoking on the street is a good example. A tobacco maker also has an obligation to print a warning on the pack of cigarettes such as "Too much smoking can do harm to your health". A TV commercial of a cigarette is banned too. It is a contradiction to attempt to increase tax revenue through raising a tobacco tax, strengthening the control of smoking.

6. Conclusion

Originally, a cigarette tax started as the policy to secure tax revenue. The government has to remember this original purpose. Indeed, raising a tobacco tax may bring temporary increase in tax yield. Based on a long term vision, however, the tax revenue is sure to decrease. The problem is there are many inducements to increase the tax. One possibility may be "public choice

theory". The theory attempts to solve various problems in a society on the presupposition that people are a creature who try to maximize self-interest.

The alternative we suggest is not to raise a cigarette tax but to increase alcohol tax. This is because there are enough drinkers and the price elasticity of demand for alcohol is weaker than a cigarette.

Finally, there are two weak points in this study. First, the number of people in the questionnaires was small. Especially, there were only a few smokers. As the data, it was not enough. Second, it was difficult to compare the data on smoking with the data on drinking. There are many kind of alcohol such as beer, wine or liquor in the world. So the system of price and tax rate of alcohol is more complicated than that of cigarettes. However, it is important to compare them when thinking of the tax on a luxury. We would like to get more information and improve the study.

*Refer to an attached paper, "International comparison on smoking 2010"

Glossary

- *1 A scatter diagram: a diagram that shows the relationship between two variables by creating a pattern of dots
- *2 An approximation line: a line of estimate that is similar to sth else, but is not exactly the same
- *3 A correlation coefficient: a number between +1 and -1 calculated so as to represent the linear interdependence of two variables of data
- *4 Price elasticity of demand: a measure of the effect of a price change on demand for a product

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