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# **An additional fee on plastic bag: Norwegian consumers' choice on Tax or Fund based on Willingness to Pay study**

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## **Abstract**

*Plastic bag and its litter has become a painful issue for governments around the world (Hopewell et al. 2009). Several policies are applied to reduce the consumption of the residents, in which, few has shown remarkable improvement. In 2015, the European parliament and the council of the European Union amended the Directive 94/62/EC to make sure that all its member countries reduce the household consumption of plastic bag. Norway, as a part of European Economic Area (EEA) is obligated to follow the Directive. From then, two plans to achieve the goal have proposed to Norwegian government. While the method is similar by focusing on putting an additional fee on every plastic bag consumed, the purposes of how the money collected is used differs in directions – Norwegian Environment Agency supports Tax and Trade Association supports Environmental Fund. Thus, the purpose of this master thesis is to bring forward knowledge about the effect on consumer behaviour of a price increase on plastic bag, and whether it matters if the price increase comes in the form of a tax to the government or donations to an environmental fund. To investigate this issue, the author have conduct a review of academic research as well as international cases. Furthermore, I have conducted and analysed a quantitative survey with Norwegian consumers willingness to pay on plastic bag, including a split sample experiment on increased plastic bag prices.*

## **Sammendrag**

*Plastpose og forsøpling har blitt et smertefullt problem for regjeringer over hele verden (Hopewell et al. 2009). Flere miljøtiltak brukes for å redusere forbruket til beboerne, hvor få har vist en bemerkelsesverdig forbedring. I 2015 har Europa-parlamentet og Rådet for Den europeiske union vedtatt endring av Direktivet 94/62/EF for å sikre at alle medlemsstatene reduserer husholdningenes forbruk av plastposer. Norge, som en del av Det europeiske økonomiske samarbeidsområdet (EØS), er forpliktet til å følge direktivet. Fra da, har to miljøtiltak for å nå målet blitt foreslått til den norske regjeringen. Selv om metoden er lik ved å fokusere på å legge til en ekstra avgift på hver plastpose som forbrukes, er formålene med hvordan pengene samles brukt, er i forskjellig retninger – 'Miljødirektoratet støtter regjering- og Handelsnæringen støtter miljøfond. Formålet med denne masteroppgaven er således å gi kunnskap om effekten av forbrukeradfærd på prisøkning på plastposer, og om det er viktig om prisøkningen kommer i form av skatt til staten eller donasjoner til en miljømessig fond. For å undersøke dette problemet har forfatteren gjennomgått en gjennomgang av faglig forskning og internasjonale saker. Videre har jeg gjennomført og analysert en kvantitativ undersøkelse hos norske forbrukere betalingsvillighet på plastpose, inkludert et deltekstperiment på prisøkning på plastposer.*

# 1 Introduction

## 1.1 Background

### 1.1.1 International action against plastic bag consumption

Plastic bag, though commonly used for packaging of goods, is highly durable and non-biodegradable. Due to their strength, lightweight, and convenience, plastic bag is commonly used by shoppers (Hopewell et al. 2009). However, surpass all the positive traits of plastic bag, plastic bag litter serves as one of the most negative environmental externality detrimental to animal health and natural beauty of the environment (Madigele et al., 2017). Hence, for several decades, countries and cities around the world have been taking actions to achieve the same goal - reduce plastic bag consumption. Nevertheless, the method of choices and the basis of its are still debatable.

The pioneer Denmark came up with the levied charge on the producer, as known as “upstream tax” in 1994 which proved to work at first but losing its effectiveness time by time due to the fact that the tax did not reach directly to the end user (Convery, McDonnell, and Ferreira, 2007). Learning from this experience, Ireland chose to implement a “downstream tax” on the consumer per plastic bag from 2002. The Irish “bag tax” was the first policy based on maximum Willingness To Pay (WTP). The government issued a willingness to pay surveys, and then set the levy at a price according to the result of the questionnaire. According to Convery, McDonnell and Ferreira (2007), this approach was proved to be the most successful method so far by reducing the plastic bag used in retail sector by 94% and had been applying widely in Scandinavian countries since then (Nahman and Godfrey, 2009).

After that, the European Union has decided to join the fight against the massive plastic consumption and pollution by coming up with a strategy for plastics (Boffey, 2018). In 2015, the European parliament and the council of the European Union amended the Directive 94/62/EC to make sure that all its member countries reduce the household consumption of plastic bag. The Directive is divide into three phases. The first one is by the end of 2018, all dealers must stop giving out free plastic bag. The next phase is within the end of 2019, the annual average bags consumption per citizen limited to 90. The last phase is reducing the target from previous phase down to 45 bags per citizen within the end of 2025. The Directive does not state what kind of instruments the countries should use, but it is a requirement to start with a policy by the end of 2018. In this policy, the members have to take measures to

significantly reduce the plastic consumption in line with the overall objective of the Union's waste policy (EU, 2015). Norway, as a member of the European Economic Area (EEA) is obligated to follow the Directive.

### *1.1.2 New Norwegian policy to reduce bags consumptions*

According to the Norwegian Environment Agency (NEA) (Miljødirektoratet, 2016), the plastic bag consumption from 2014 in Norway was around 930 million plastic bags, with an average number of 180 bags per person per year. The report from NEA also highlighted that the annual plastic bag consumption needs to be cut down to 45 per capita by the end of 2025 in order to comply the EU Directive. As one of the initial attempts to reach the goal, an environmental tax was presented by the NEA (Miljødirektoratet, 2016). The new tax shall be imposed on the producers, however there will be a claim that the trade must charge the consumers. This will create incentives for the consumers to reduce their plastic bag consumption, and the source of income will go to the government. Their suggested fee on the bags can be from 1.50 to 2 NOK (Miljødirektoratet, 2016).

This is not the first time that the question of how much should the consumer pay for the use plastic bag had been raised in Norway. The first plastic bag fee was implemented back in 1974 at 0.25 NOK per bag (Høringsnotat, n.d.). However, this fee did not continue in 1975. The second time that the plastic bag fee was brought up, was during the national budget negotiations in Norway 2014. The Ministry of Finance wanted to include a tax at 1.50 NOK on plastic bag, which would give the government a yearly revenue at 1.25 billion NOK. The suggestion was unpopular among the citizen, which caused several debates (Aftenposten, 2015). It resulted by not being included in the budget negotiations (Regjeringen, 2015). Due to the EU Directive, the plastic bag fee discussion must be brought up again.



*Figure 1. The criticized plastic bag fee may return*

## Utskjelt poseavgift kan komme tilbake

Den omstridte plastposeavgiften som regjeringen vraket etter sterke protester i fjor, kan komme tilbake. Men Fremskrittspartiet protesterer.



The newest discussion on the additional fee on plastics bags has changed, compared to 2014 negotiations. The Trade Association (TA) in Norway which includes Confederation of Norwegian Enterprise (NHO), The Enterprise Federation of Norway (Virke), and Dagligvarehandelens Miljøforum (DMF) has come with up a voluntary mutual agreement with the Ministry of Climate and Environment, Vidar Helgesen to start an additional fee on plastic bag with an increase from 0.50 NOK (NHO, 2017). Their suggested fee, in contrast with the fee from NEA, is that the income from bag sales, instead of going to the government, will go to an environmental fund with name “Handelens Miljøfond”, administered by the Trade Association. The purpose of the fund is that the money will be allocated between campaigns for reduced plastic bag uses, increased focus on recycling and reusable, and plastic cleaning (DN, 2017). It is important to note that even with the new environmental fund system, the final decision on the cost of plastic bag falls onto the grocery. The new change makes it compulsory that groceries pay the fund 0.50 NOK for every plastic bag they sell. Thus, they can decide how much they want to charge, if they were to increase the price or remain same. As long as they comply the paying obligation with the fund (Hegnar, 2017).

### *1.1.3 Two ways of dealing with the increased fee on plastic bag*

The new policies suggested from two different organizations with the same motive have created two scenarios on where the money goes. As introduced above, the NEA wants a tax on plastic bag where the money will support the government. On the other side, Trade Association (TA) wants a fee where money will go to their own environmental fund. There have not been clarified on how the government will distribute the money from the fee on bags, but the Trade Association fund money will be financially supporting different projects that fight for plastic littering, pollution, and ocean plastic clean-up.

The plastic bag in Norway has always been charged from the grocery stores since the 00s. The cost of it has been around 0.99 NOK to 1.30 NOK, depending on the store. The table 1 shows comparison between the current price of plastic bag and the expected cost in different policies. As in the table, the suggest fee from NEA will have a higher cost on bags than TA. On the TA scenario, the author is expecting that the grocery stores will increase the price on plastic bag with 0.50 NOK onto their current price, rather than losing their current revenue due to the environmental fund policy.

The monetary system in Norway has changed since 2011 (Forskrift om tilbaketrekking av 50-øremynt som gyldig betalingsmiddel, 2011, § 1-2). They have officially decided to stop using “50-øre”-amount as a payment. The “50-øre” used to have a value of half of a Norwegian Krone (NOK). Thus, the new change makes any “øre”-value that is “49” or lower, will be rounded down to “0” NOK. As for values from “50” and above will be rounded up to “1” NOK. Therefore, with highest cost of plastic bag with the Trade Association policy will be 2 NOK on Meny, Coop Prix, Bunnpris, and Obs, and the other will still be charging 1 NOK. The exception here is that the other stores will change their current price to get to 2 NOK. Apropos NEA, they will be charging 3 NOK for the bags.

**Table 1: The cost per plastic bag in various grocery stores**

*Source: Summarized by the author*

<b>Grocery store</b>	<b>Current price</b>	<b>Expected cost with TA</b>	<b>Expected cost with NEA</b>
Kiwi	0.99 NOK	1.49 NOK	2.99 NOK
Meny	1.00 NOK	1.50 NOK	3.00 NOK
Coop Prix	1.00 NOK	1.50 NOK	3.00 NOK
Rema 1000	0.99 NOK	1.49 NOK	2.99 NOK
Bunnpris	1.30 NOK	1.80 NOK	3.30 NOK
Joker	1.00 NOK	1.50 NOK	3.00 NOK
Obs	1.00 NOK	1.50 NOK	3.00 NOK

*Notes: TA – Trade Association; NEA – Norwegian Environment Agency*

### **1.2 Problem statement and purpose of this research**

The EU has decided that all member countries need to reduce the plastic bag consumption.

The plastic bag consumption in Norway has been high, numbers from NEA

(Miljødirektoratet, 2016) states that average consumption per citizen is at 180 in 2014. Thus, if Norway were to abide the Directive to the second phase or the third phase, then there is a need for strong economic instrument in order to get usage reduction by respectively 50% and 75%.

Currently, two prospective options to solve the problem have been suggested by NEA and Trade Association. While the method is similar by focusing on putting an additional fee on every plastic bag consumed, the purposes of how the money collected is used differs in direction. On one hand, NEA proposes that the money will go to Tax. On the other hand, Trade Association promoted their Environmental Fund. Taking a closer look in Norway's situation, even though the capita of plastic bag is relatively high (180 capita per year), litter is not an issue due to the significant amount of reuse and recycling (Becker & Murphy, 2008). Combined with the fact that salaries in Norway are high and comparing it with the low cost of plastic bag, the fee policy may not have a large effect. This is the reason why with Norway, to inspire residents to reduce their usage, another aspect of the problem needs to be considered. He (2012) highlighted that how the additional cost charged is used can affect to the WTP of the shopper. Moreover, NRK has made a random interview in 2018 and found

out that the consumer has recently showed a certain concern regarding this matter (NRK, 2018).

Thus, the purpose of this master thesis is to bring forward knowledge about the effect on consumer behaviour of a price increase on plastic bag, and whether it matters to willingness to pay of the Norwegian citizens if the increase price comes in the form of a tax to the government or donations to an environmental fund. Hence, author shall attempt to examine the following hypotheses:

Table 2: Hypothesis

	Description
Hypothesis 1	The additional fee on plastic bag policy increase consumers WTP for plastic bag
Hypothesis 2	Consumers have a lower WTP for plastic bag if the money goes to an environmental fund than as tax to the government
Hypothesis 3	Consumers have a higher WTP for plastic bag if the money goes to tax to the government than as fee to the environmental fund

## **2 Literature review**

### ***2.1 Scientific research involvement in establishment of reducing plastic bag consumption policy – International cases and Norway situation***

Plastic bag litter has become a common problem across continents and countries, waterways and oceans (He, 2012). In Europe, plastic bag is used in huge numbers and are often given away free by supermarkets and other grocery shops. This leads to excess use. The lightness and mobility of plastic bag also makes them more likely to end up as litter and once littered they are visually instructive and persistent (Mudgal et al., 2008). To decrease the usage of plastic bag and through that saving our ecological system, there is a need of comprehensive solution and united target among the countries (Ritch et al., 2009). However, previous experience has shown that, unless the correct instruments are chosen and enforced effectively and persistently, plastic bag consumption control will not be successful (He, 2012; Mudgal et al., 2008). Hence, a significant amount of research has been conducted over the past several decades to identify the best approaches for setting up new environmental policy around plastic bag consumption under the view of science. Mudgal and his partners (2008), in their report for European Committee, summarized the main four methods that have been theoretically and empirically implemented as below:

- Tax on the plastic bag producer or “upstream tax” based on Consumer Choice  
Theory: The best case study for this method was Denmark from 1994. The plastic producer firms adsorbed the cost under the form of “tax” at first and eventually passed it down to the consumer if they chose to do so. At some stores the tax was not felt directly, at other stores the consumer paid for the bag (Mudgal et al., 2008). Cited by Ritch et al. (2009), the policy helped to reduce 66 % of plastic bag consumption.
- Additional payment on the end user plastic bag or “downstream tax”: Share the same theory as the first approach, however, the “downstream tax” touched directly to the consumer. Ireland was the first one started applying the solution combined with a WTP survey and gained remarkable result with 94% of decrease in plastic bag consumption (Convery, McDonnell, and Ferreira, 2007). Convery et al. (2007) also believed that the knowledge gaining by WTP survey is the main key for Irish success.

- Double layers of the payment for use of plastic bag – payment for the production fee of plastic bag and for the use of plastic bag: This method is reflected in China’s latest regulation in plastic bag consumption effective from June 2008. In which, the consumption of a plastic bag would include two costs: the first is the cost of acquisition, including production and transportation costs; and the second is the negative external effect on the environment due to disposal of the bag. Specially, the owner of the shop could decide how much they want to charge for the social cost on each bag. This resulted in different purchase price in open market, grocery stores and supermarkets. Since the regulation was enforced, findings showed that there was only 49% decrease in plastic bag usage. So far, as He (2012) stated, due to the lack of a research on WTP of the consumer, the regulation of China did not bring about as good effect as expected.
- Setting the target of plastic bag consumed per citizen: EU directive is one of the example inspired by this approach. In which, the European Committee (EC) proposed an “optimal target” of plastic bag consumed per citizen as well as agreement on applied additional charge on the bag. The member countries can decide on how much one bag shall cost. Mudgal et al. (2008) in their report to EC also highlighted the importance of having WTP survey as the references for decision-making process.

As for Norway, plastic bag is not really a waste problem (Sandmo, 2009). 82% of plastic bag in Norway is reused as rubbish bags, with another 15% being recycled and only 3% is thrown away (Becker & Murphy, 2008). Moreover, paying for a price of around 1 NOK per plastic bag in the grocery stores are common concept. Relatively high education, income and environmental awareness standard in compared to their European counterparts, it is easier for Norway to proceed the increase charge on per plastic bag (Manyukhina et al., 2017). However, because of the same reason, the citizens want to make sure that their payment is used for the correct purpose, in this case, serving for environment protection purposes (Manyukhina et al., 2017). Hence, the information of where the additional charge money would go, to tax or fund mentioned in chapter 1 is debated to dramatically affect to WTP of the consumers (Muralidharan & Sheehan, 2016).

In a nutshell, scientific research has proved to be a good tool for suggesting and establishing useful policies (Mudgal et al., 2008). In which, WTP theory has been involved in the process more and more through time. Combined with the background and the research question raised in Chapter 1, the author aims to take a closer review on how policies regarding plastic bag reduction is established based on WTP as well as how the information whether the money goes for tax or fund could affect to this.

## ***2.2 The implication of Willingness to Pay in reducing plastic bag consumption policy***

The WTP is to see what the maximum is a consumer is willing to pay and below it. WTP is used for valuing the outputs of a policy and opportunity cost as the method valuing the resources required to implement the policy (Boardman et al., 2014). Many firms make their pricing on the products without understanding the consumers' willingness-to-pay. By the lack of correcting pricing strategy, firms may risk losing out valuable sources for increasing profitable of the products (Breidert et al., 2015). In order to price a product optimally, it is valuable to know what a potential customer is willing to pay for the product. This must be weighed towards the cost of making the product, in order to see if the product can become profitable. In this paper, WTP is referred as Willingness to pay for plastic bag.

China is an example on not being able to optimize the policy due to lacking WTP understanding (He, 2012; Jacobsen et al., 2003; Gerrity, 2015). On the contrary, Ireland's case proved that WTP constructed the fundamental basis for the policy's success. Convery et al. (2007) confirmed that a WTP survey was conducted in by Drury for the Department of the Environment, Heritage and Local Government to learn about citizen mindset on the environment. The survey was to test the Irish resident maximum willingness to pay for a plastic bag with the alternatives from "Would not pay" to 6 pennies or more. Results from the study shows that the majority (60%) of Irish people were willing to pay for the bags. From the ones who were willing, they were divided into three price categories. They were 27%, 25% and 8% respectively to 1-2 pennies (€ 0.0127-0.0254), 3-5 pennies (€ 0.0381-0.0635) and 6 pennies and more (€ 0.0762+). With the average maximum WTP around € 0.024, the tax on plastic bag were set at more than six times higher than the average (€ 0.15) (Convery et al., 2007). By setting a tax that were much higher than the maximum WTP from the citizen, the bags consumptions were reduced by approximately 94% according the S McDonnell in Convery et al. (2007) paper.

In conclusion, WTP is used as a measurement of the maximum limit before the residents decide to change their consuming behaviour – to use or not to use plastic bag at the grocery stores (Shampanier et al., 2007).

### ***2.3 Tax regulation effect on Willingness to pay for plastic bag***

Cited by Nilsen (2010), tax regulation in plastic bag belongs to market-based instrument. Market-based instruments operate by providing incentives for firms or consumers to alter their behaviour on a voluntary basis. The instruments achieve this by reconfiguring the payoff structure that economic agents face. It creates ongoing incentives for firms to design new and improved abatement technologies ensuring that pollution control becomes ever cheaper. In addition to reducing the information burden on the regulators, with the possibility of providing revenue sources for governments (Stavins, 2002).

One of the most famous and the first tool introduced is the Pigou tax. The idea behind it is to tax directly on the pollution source (Pigou, 1960), and in our case, it is plastic bag. Therefore, economic instruments may provide greater flexibility in dealing with smaller and diffuse emissions sources which collectively contribute large amounts of pollution, but which until now have been largely ignored in favor of controlling the pollution from more obvious sources (Austin, 1999). To be most effective the charge is levied directly on the quantity of pollution ('emissions tax or charge'), though if this is difficult to measure or monitor, it may be necessary to levy a charge on a proxy for the emissions, typically on the resource that causes the pollution ('product tax or charge') (Austin, 1999).

Developed by the initial idea of Pigou (1960), tax regulation regarding plastic bag is now presented under two forms: the tax on plastic bag producer (or the "upstream tax") and the tax on plastic bag consumer (or the "downstream tax") (Nilsen, 2010).

In this paper's context, if the option of NEA is approved, the additional charge of plastic bag shall be formed under tax and will be managed by Norwegian government for public projects, including environmental support. As one of the top-ranking countries in transparency index



report, Norwegian people show a significant trust in the government management with tax money and public goals (Transparency International, 2018).

#### ***2.4 Environmental Fund effect on Willingness to pay for plastic bag***

The voluntary agreement between Trade Association and Ministry of Climate and Environment on starting an additional fee that support to an environmental fund is a new concept. There have not been any studies before regarding setting a fee on a product where the money goes to a fund. However, environmental fund's purpose firstly to avoid any new tax on plastic bag. Second, using the funds' money to support projects in the field of prevention and cleanup of plastics. Campaigns to increase the awareness on plastic consequences to the people, and to encourage them to start using reusable bags etc. Thus, Trade Association Environmental Fund can be viewed as an action for environment preservation.

There has been previous study on willingness to pay for environmental preservation and goods. Han et al., (2011) did a contingent valuation study on WTP estimate for environment conservation in Kanas Nature Reserve. The result was 73% of the 412 respondents were willing to pay. Showing that the WTP to preservation of the public good is high. Another study from Bakaki and Bernauer (2016) experimenting the WTP for forest conservation in Brazil. The findings were that Brazil was unlikely willing to pay for forest conservation. One could argue that the country is an emerging country thus the people are benefitting from deforestation with respect to agriculture (Bakaki and Bernauer, 2016).

Thus, with little or non-existence research on fee money going to environmental fund, it is uncertainty to say anything regarding how the policy will affect Norwegian willingness to pay for plastic bag.

#### ***2.5 Knowledge regarding the additional charge per plastic bag goes to Tax or Fund affect Willingness to pay for plastic bag***

Past research has delved into how tax on plastic bag act as walking billboards (Prendergast, Ng, and Leung, 2001) and how governments use that money to promote environmental activities could motivates people to pay more (Stern, 1999). More specifically, Muralidharan

and Sheehan (2016) made a test on 1560 American households to test whether they are more tolerance with the increase price of plastic bag if they know the money are managed by the government and served for the community purposes. The result turned out to be magnificent. Over 90% of the respondents have the tendency to double their WTP on per plastic bag. Similarly, He (2012) conducted the same interview in China. 86% of the interviewee promoted tax and support the money goes to the government tax sector. The reason was accounted for the trust in the government's allocation of the money and the belief that community fairness is secured in that case.

In the same concept but for fund, Cheng, Woon, and Lynes (2011) have suggested that whether the money goes to the fund does not change the WTP of the shoppers. Study of He (2012) also showed that the residents are less comfortable if they know their payment shall be in a fund managed by Trade Association. The phenomenon is claimed for the risk of conflict of interest since the Trade Association shall work for the companies' interest as well. However, no research thus far, to the best of our knowledge, has looked at how knowledge regarding whether the additional fee of plastic bag goes to Tax or Fund can influence Norwegian shoppers' WTP on plastic bag.

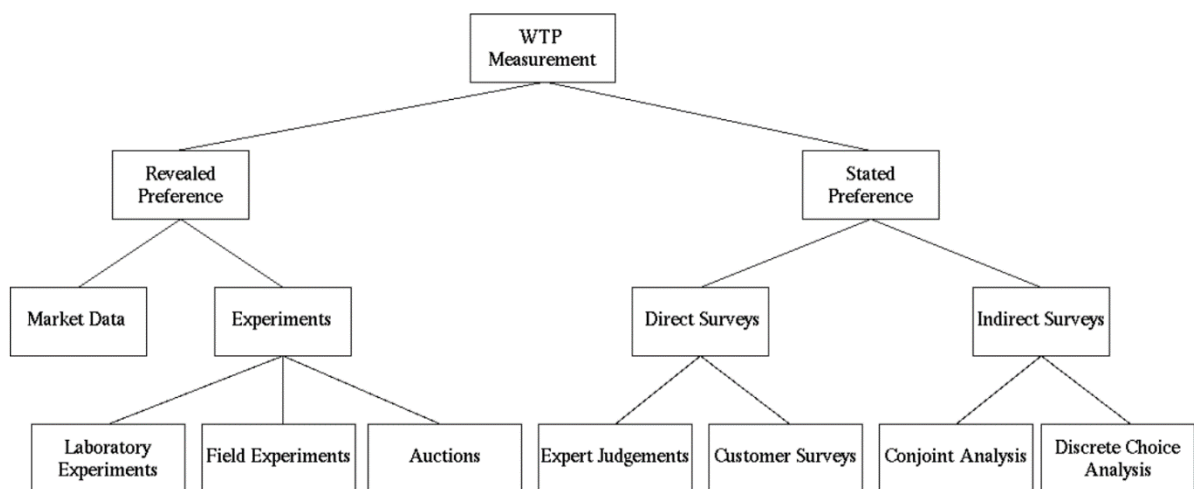
### 3 Methodology

#### 3.1 Direct survey

Several authors proposed different hierarchical classification frameworks to evaluate WTP (Breibert et al., 2015). Marbeau (1987) distinguishes the estimation methods on the highest level, whether they are monadic tests or competitive tests. In the former, price information is elicited without considering a competitive context. In the latter, a competitive context is present. Balderjahn (2003) distinguishes estimation methods on the highest level, whether they elicit price information at the individual level or at the aggregate level. Nagle and Holden (2002) classify techniques for measuring price sensitivity at the highest level into uncontrolled and experimentally controlled measurement of the variables. Breibert et al. (2015) have developed a classification framework for methods for measuring WTP (Figure 2) as a guideline for further research in this field.

*Figure 2. Classification framework for methods for measuring WTP*

*Source: Breibert et al. (2015)*



In the highest level, while results of WTP obtained from price responses are often referred to as revealed preference data. In contrast, preference data derived from surveys are frequently referred to as stated preferences (cf. Louviere et al., 2000, p. 20 ff.). However, if there is no actuality examples then revealed methods will fall out short in the analysis (Competition Commission, 2010). Moreover, due to the lack of variation in the prices of plastic bag in Norway, it is difficult to use revealed price analysis to say something about what will happen

if the prices are increased. Hence, stated preferences is more preferable since it allows examination of hypothetical scenarios.

The choice now then falls onto lower level in the framework between direct or indirect survey. Breidert et al. (2015) suggested that if one attempts to forecast consumer behavior in response to different prices, the evident way is to directly ask the customers. Moreover, putting in the paper's context, the target respondents of the survey would be Norwegian consumers. Hence, the author decided to adapt direct survey as the main tool to examine the developed hypotheses.

Of course, direct survey also consists some flaws (Breidert et al., 2015, p. 8-9):

- Customers do not necessarily have an incentive to reveal their true WTP. They might overstate prices because of prestige effects or understate prices because of consumer collaboration effects. Nessim and Dodge (1995, p. 72) suppose that “buyers in direct responding may also attempt to quote artificially lower prices, since many of them perceive their role as conscientious buyers as that of helping to keep prices down”. Nagle and Holden (2002, p. 344) observe the opposite behaviour. To not appear stingy to the researcher respondents could also overstate their WTP.
- Even if customers reveal their true valuations of a good, this valuation does not necessarily translate into real purchasing/not purchasing behavior (Nessim and Dodge, 1995, p. 72).
- The perceived valuation of a product is not necessarily stable. Buyers often misjudge the price of a product, especially if it is not a high frequency purchase or an indispensable good (Marbeau, 1987).

Surpassing the weaknesses, Bateman et al. (2002) and Stoetzel (1954) still argues that direct survey is one of the most common and favorable method to collect valuable information. Thus, the author chose to adapt direct survey as the main method to detect the problem in this paper.

### ***3.2 Payment card method***

After deciding the direct survey as a core method to estimate the WTP. The next step for the author is to find which elicitation method to use. One point to consider is the choice of different methods vary in the respondents' perception, how they gather and assemble the information, and the risk of them giving a biased WTP estimate (Mitchell and Carson, 1989).

The elicitation method in direct survey has four generally used to present WTP in the survey: open-ended format, bidding game, payment card, and dichotomous choice (London Economics, 2011). They all have their own unique way of asking the respondents' WTP. In this thesis, payment card method shall be applied to best mitigated the bias effect of the questionnaire (Bateman et al., 2002). Thus, in the survey design, after explaining and giving the respondent information about the hypothetical scenario (tax or fund), the method lists out a range of different monetary amount, ranging from low to high. The survey will then ask the respondent to state their maximum WTP for the product (London Economics, 2011).

### ***3.3 Survey design***

The survey shall be formed as online survey and sent to different group for sample collection. The decision on creating internet survey is due to its convenient, cost effectiveness and time efficient. Internet surveys is a growing platform for data collection in CV studies. It is being more and more standard that individuals and researches uses an internet survey to collect information. Study from Lindhjem and Navrud (2011) did an experiment to see whether face-to-face interviews and internet surveys had any effect on the WTP estimations. The study found no evidence in that the choice of survey format could affect willingness to pay estimates.

The survey was design on Monkeysurvey, an online survey software that helps their customers to create and run their surveys. The survey invitation link was posted on community Facebook group and internet forum (reddit and diskusjon). The data collection was proceeded in two weeks from the 22<sup>nd</sup> of March to 5<sup>th</sup> of April 2018. The survey invitation links were reposted again after being out for a week in order to get more attention and play as a friendly reminder.

### *3.2.1 Sample*

The writer attempted to get direct responses from Norwegian consumers who are above 18 and do grocery shopping for themselves or for their household. To ensure the diversity in age, gender, education level, income, the link of the questionnaire was posted on the community group and online forum in which members differ from each other in these categories. The members then can choose if they would take part in answering the survey or not. Moreover, the author tried to find the online group locating in various locations, such as Oslo community group; Bærum club; Ski second hand market etc...

### *3.2.2 Randomization mechanism*

The survey is set up to have two scenarios with different policies, where one is about tax policy and fund policy on the other. This survey uses split ballot technique to divide the respondents into each scenario. Thus, in the middle of the survey they will get to a page with ten numbers in randomized order. The numbers they pick will lead them to the following scenario. The author use randomization on excel to decide which of the five number leads to scenario tax and the other five to scenario fund. In addition to that, all respondent will meet different order of numbers on the survey. The intention is to have an evenly split between respondents to each of the two scenarios.

### *3.2.3 Survey structure*

The online survey begins with a short introduction regarding the background and purposes of the research following with three questions to understand the shopping custom of the participants. The questionnaire ends up with inquiry regarding age, education level, income and gender.

The survey aims to examine four variables: Additional fee on plastic bag increases the consumers' WTP (for Hypothesis 1), WTP before knowing where the money will go, Tax/Fund support, WTP after knowing if the money goes to Tax or Fund, (for Hypotheses 2 and 3). This goal is reflected in the building structure of the questionnaire. Unless otherwise indicated, all items were measured by a Likert-type scale anchored at 1, indicating "strongly disagree" and 5, indicating "strongly agree".

### *Additional fee on plastic bag increases the consumers' WTP*

The first opening question is asking how frequently they visit grocery stores in a regular week. This is to know whether the respondent do grocery shopping or not. If they were to pick zero on the question, then we will not include them in the survey at all. Since the aim of the survey is to know how the respondent behaviour will react if there was to be an increase price for plastic bag. In this case, if they did not any regular shopping then they would probably have no opinion regarding the change in cost of bags. Thus, they would be excluded from the sample. The questions will go through their behaviour on plastic bag and household recycling as well as their attitude toward the additional fee policy on plastic bag and maximum WTP for one plastic bag at that point.

### *Tax/Fund support & WTP after knowing the additional fee going to Tax/Fund*

After answering the questions, they will get to the randomized number page that decide whether they will get to tax or fund scenario (as explained above).

The two hypothetical scenarios in the survey has the same structure. It will start with a short introduction of price increase on plastic bag due to new policy. The explanation of each policy can be found on the survey in appendix. The respondent will first be asked about their reaction to an additional fee on plastic bag. Then if the additional fee does change their behavior to start using reusable bags on grocery shopping or not. The next question then is about how much they agree on the money from plastic bag sales go to the government (go to Trade Association's environmental fund if fund scenario). After determining their knowledge and reaction to the policies. The survey asks for their maximum willingness to pay before starting to use reusable bags by using payment card method.

Last page of the survey consists of mainly socio-demographic questions like gender, age, education, household income, household members, and the county they current reside in. The questions here were set to be in group categories due to Norway has strict rules on personal information.

## **4 Results**

### ***4.1 Sample characteristics***

After two weeks of collecting process, 200 questionnaires have been submitted in which 182 answers were completed and valid for the further statistical analysis. Among the returned survey, the respondents' age ranged from 18 to 84 years old. Gender distribution simultaneously was 59% male and 41% female, in which 76 % of the sample population has achieved bachelor degree or above. The sample varieties in income level. 15.6% has annual salary under 300,000 NOK, 18.3% of the people ranged from 300.000 – 500.000 NOK. Meanwhile, the group whose income is between 500.000 – 700.000 NOK, 700.000 – 1.000.000 NOK and higher are 22.3%, 20.8% and 23%. The participants are not aware of the hypotheses but understand regarding the research purposes.



#### 4.1.1 Variables of the analysis

The survey used for this study consists 17 questions.

**Table 3: The Description of the variables**

*Source: Summary by the author*

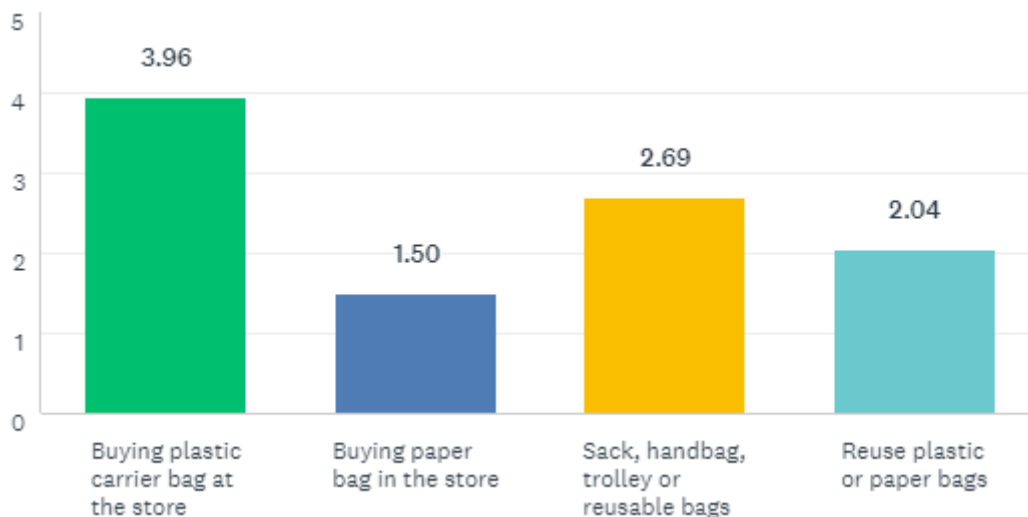
<b>Variable name</b>	<b>Description</b>
wtpb	Stated WTP before knowing the scenarios tax or fund
wtpaf	Stated WTP after introduced fund scenario (2)
wtpat	Stated WTP after introduced tax scenario (1)
gender	The respondents gender, Male = 0, Female = 1
age	The respondents age
hhmember	Household member
hhincome	Household income
county	Which county respondent reside in, Oslo = 1, Other = 0
visitstore	How many times did respondent visit grocery store last week
bplastic	How often did respondent buy plastic bag to carry their goods home
reuseablebag	How often did respondent use a reusable bag to carry their goods home
reuseplastic	How often did respondent reuse their plastic bag to carry their goods home
boughtlastweek	How many plastic bag did respondent buy last week
redconsumption	Respondents who to some degree accept to reduce their bag consumption
priceincrease	Respondents who to some degree accept to reduce their bag consumption
pricesame	Respondents who to some degree accept to reduce their bag consumption
bagsfree	Respondents who to some degree accept to reduce their bag consumption
banbags	Respondents who to some degree accept to reduce their bag consumption
hhrec	Respondent who do household recycling, Yes = 1, No = 0
case1feesupport	Scenario 1: Degree of positively agreeing on additional fee on bags
case2feesupport	Same as above, just for scenario 2
case1changebehav	Scenario 1: Degree of believing that fee will make them start reusable bag
case2changebehav	Same as above.
fundsupport	Scenario 1: Degree of supporting money goes to environmental fund
taxsupport	Scenario 2: Degree of supporting money goes to government

#### 4.1.2 Descriptive Statistics

The sample set shows a relative high environmental awareness standard. This can be reflected in the recycling behaviour as well as supportiveness on plastic bag policy. The figure 3 illustrate how often the respondents carry their goods home from grocery store by buying plastic bag, paper bag, reusable bag, or reusing plastic/paper bag on a scale of 5. 1 means never/almost never and 5 is interpreted as always/almost always. Finding reveals that many still prefer on buying a plastic bag for their shopping due to its convenient. Paper bags has naturally the lowest since not many stores has the option that you can pay more for the bag. However, the number of people using reusable bags, trolley etc. is only at 2.69. Which means that people do use reusable, but most of the time will go for plastic. The last option of reusing their old plastic or paper bags has a mean of 2.04. This can be explained through plastic littering is actually not a problem in Norway, since at least 80% of plastic bags are being reused in either garbage or carrying goods home.

**Figure 3: Weighted scale on respondent choice of good to carry food home from grocery stores**

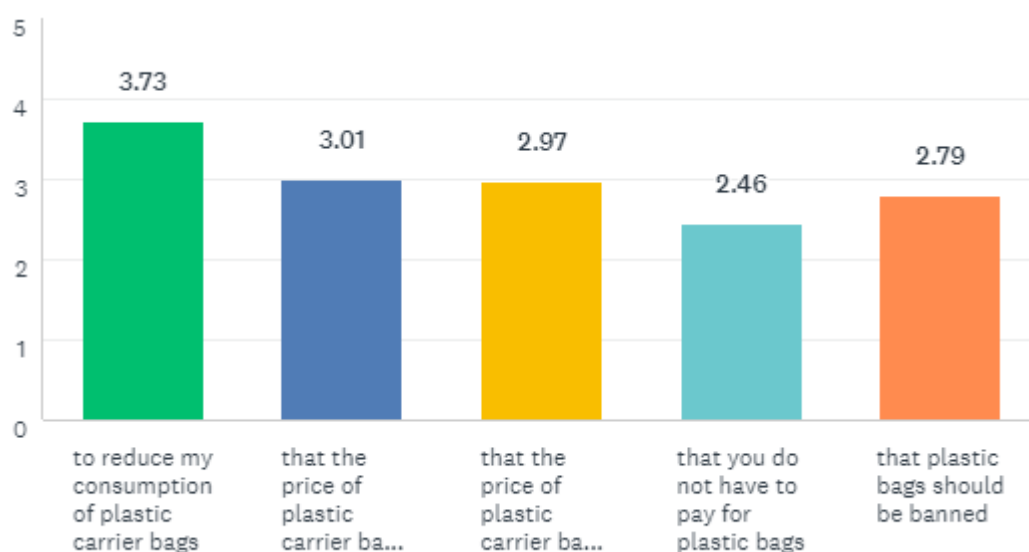
*Source: Summary made by the author*



The next figure shows respondents' opinion regarding plastic bag. As above, majority buys plastic bag at the grocery store, and here majority want to reduce their bags consumption. However, the response here is mixed when it comes to their opinion. There are actually people who want plastic bag to be given out for free.

**Figure 4: Respondent opinion on plastic bag**

*Source: Summary made by the author*



The first part of the questionnaire is designed to evaluate the change in WTP before and after information about the increasing fee policy (testing H1). Then, thanks to the randomization question mentioned in the part 3.3 Survey Design, the data collection is divided into two data sets. The first data set with N=93 aims to examine WTP when the respondents were informed that the additional cost of plastic bag shall go to Tax managed by the government (testing H2). The second data set N=89 is with the same questions but for Environmental Fund (testing H3).

**Table 4: Amount of sample to each scenario after randomization**

	Sample	Percentage
Scenario 1 (Tax)	93	51.1%
Scenario 2 (Fund)	89	48.9%
Total	182	100%

In the total out of 182 samples, 163 out of 182 were willing to pay 1 NOK or more for plastic bag. The mean on WTP for respectively tax and fund were at 3,05 NOK and 3,26 NOK. The number were a slightly increase from first WTP question before knowing about the new

additional fee and where the money goes to. The mean before gotten introduced were at 2,66 NOK. Those who were not willing to pay for plastic bag gave additional comments such as “I do not use plastic bag” or “I do grocery shopping online”. The table 5 provides descriptive statistics of the variables.

*Table 5: Summarize of variables*

<b>Variable name</b>	<b>Observation</b>	<b>Mean</b>	<b>Std. dev.</b>	<b>Min</b>	<b>Max</b>
wtpb	182	2.66	2.49	0	20
wtpat	93	3.05	2.28	0	12
wtpaf	89	3.26	2.93	0	20
gender	178	0.40	0.49	0	1
age	178	3.30	1.19	1	8
education	177	3.95	1.07	1	6
hhmember	174	1.57	0.68	1	3
hhincome	156	3.18	1.37	1	5
county	177	0.52	0.50	0	1
visitstore	182	2.79	0.90	0	7
bplastic	182	3.96	1.29	1	5
buypaper	182	1.50	0.91	1	5
reuseablebag	182	2.69	1.47	1	5
reuseplastic	182	2.04	1.31	1	5
boughtlastweek	182	3.73	3.53	0	24
redconsumption	182	3.73	1.24	1	5
priceincrease	182	3.01	1.44	1	5
pricesame	182	2.97	1.35	1	5
bagsfree	182	2.46	1.43	1	5
banbags	182	2.79	1.48	1	5
hhrec	182	4.15	1.15	1	5
case1feesupp	93	3.16	1.50	1	5
case1changebehav	93	3.94	1.01	1	5
case1taxsupport	93	2.97	1.51	1	5
case2feesupp	89	3.80	1.31	1	5
case2changebehav	89	3.54	1.31	1	5
case2fundsupport	89	3.79	1.28	1	5

After removing all the observations that were invalid for further analysis (missing WTP estimates). There still exists missing answers on the sociodemographic questions. The missing variables are differ for each variable. Some respondents did not give any answers on the last page. However, household income is the one who comes out worst of all sociodemographic questions, with 156 responses out of 182 samples.

#### 4.1.3 Willingness to pay

The result of the data analysis of willingness to pay for Norwegian grocery shoppers. The table below presents how many of the respondent in their respectively scenario was willing to pay more than 1 NOK, nothing, or had any other opinion. The majority for both cases had high percentage of willingness to pay for plastic bag. Some answered with 0 on WTP estimate after knowing about additional fee.

**Table 6: Distribution of WTP**

	Willingness to pay for plastic bag	Percentage
Scenario 1: Tax	Yes - 85	91.4%
	No – 8	2.1%
	Other/ I do not buy plastic bag - 6	6.5%
Scenario 2: Fund	Yes – 81	91.0%
	No – 7	3.4%
	Other/ I do not buy plastic bag - 5	5.6%

#### 4.1.4 Control variables

We control contextual and individual factors that could be expected to Influence WTP. These elements are illustrated in the table 7. However, in order to guarantee the reliability and validity of the study, an ordinary least square (OLS) regression is conducted in order to examine if there is any correlation between these factors and WTP. The data describes no significant relationship between the control variables and WTP. Hence, they can be removed from formula testing hypotheses.’

**Table 7. Effects of independent variables on WTP**

<b>Control variables</b>	<b>Scenario 1 – WTP Fund</b>	<b>Scenario 2 - WTP Tax</b>
Gender ( <i>gender</i> )	-0.04 (0.88)	-0.46 (0.39)
Age ( <i>age</i> )	-0.28 (0.33)	-0.73 (0.76)
Education ( <i>education</i> )	-0.02 (0.87)	0.07 (0.78)
Household income ( <i>hhincome</i> )	0.24 (0.23)	0.06 (0.75)
Shopping frequently ( <i>shopfreq</i> )	-0.13 (0.47)	-0.21 (0.11)
Reduce bags consumption ( <i>redconsumption</i> )	0.20 (0.21)	0.37 (0.11)
Increase price of bags ( <i>priceinrease</i> )	-0.13 (0.52)	-0.07 (0.76)
Household recycling ( <i>hhrec</i> )	0.12 (0.47)	-0.23 (0.30)

Notes: Bags on this table is seen as plastic bag. The table shows coefficient and p-value in parenthesis. The results come from using OLS regression.

## **4.2 Hypothesis testing**

### **4.2.1 Testing H1: The additional fee on plastic bag policy increase consumers' WTP**

Linear regression is conducted to examine the relationship between supporting for additional fee and citizens' WTP on plastic bag. The Stata result obtained R-square value at 0.205 which indicates that fee support variable can explain 20.5% of WTP variable.'

**Table 8: R-square for WTP after tax and fee support**

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,453 <sup>a</sup>	,205	,422	1,4234

a. Predictors: (Constant), feesupport

The first regression to check the hypothesis is described on the table below. A linear regression between willingness to pay in scenario tax and opinion on the need of additional fee is created. In which, the relationship is positive with coefficient number at 0.43 with a p-value at 0.02. This explains that with an additional fee policy on plastic bag, the consumers are willing to pay more. This is statistically significant due to low p-value < 0.05.

**Table 9: Coefficients for WTP after tax and fee support**

<b>Coefficients<sup>a</sup></b>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,885	,496		1,786	,078
	feesupport	,429	,191	,229	2,243	,027

a. Dependent Variable: wtpat

This study has two scenario with the destination of the money. The first regression show that consumer is supporting to have a fee on bags. This shows that the environmental awareness regarding consequences of plastic bag exists in the citizen. However, there is a need to test if the result yield the same for the scenario fund.

The result for the fund scenario did not give out significant outcome. The coefficient between two variables WTP and additional fee were indeed positive; however, the p-value lies at 0.40.

**Table 10: R-square for WTP after fund and fee support**

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,328 <sup>a</sup>	,108	,103	1,452

a. Predictors: (Constant), feesupport

**Table 11: Coefficients for WTP after fund and fee support**  
**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,118	,926		2,288	,025
	feesupport	,168	,199	,090	,844	,401

a. Dependent Variable: wtpaf

Take a closer look at the data set, we discovered an interesting result. The variable feesupport (Support additional fee) has a positive effect on the WTP for both scenario with coefficient on both of the data set. However, only Tax scenario show a significant effect (Sig.= 0.03). Thus, this hypothesis is only valid for the hypothetical scenario tax.

#### 4.2.2 Testing H2: Consumers have a lower WTP for plastic bag if the money goes to the Environmental Fund

The result from money support the Environmental Fund in scenario 1 give a negative coefficient at -0.21. Connecting to H1, there was a positive relationship between WTP and additional fee. However, after knowing that the money will be going to an association that works for the interest of business and industry, consumers less willing to pay more for plastic bag.

**Table 12: R-square for WTP after fund and fund support**  
**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,237 <sup>a</sup>	,056	,005	1,446

a. Predictors: (Constant), fundsupport



**Table 13: Coefficients for WTP after fund and fund support**  
**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
				Beta		
1	(Constant)	3,748	,729		5,143	,000
	fundsupport	-,208	,172	-,128	-1,208	,030

a. Dependent Variable: wtpaf

The regression obtained significant value at 0.03. Thus, the data supports H2 - knowing the money goes to Environmental Fund leads to lower WTP.

*4.2.3 Testing H3: Consumer have a higher WTP for plastic bag if the money goes to Tax managed by the government*

This hypothesis is to mirror the H2 to see how additional fee will work if the fee was a product tax on plastic bag. The result from show that putting a product tax on plastic bag will effect WTP positively. The coefficient with 0.41 means that consumer are willing to pay more after knowing that the money will go to the government. The p-value here is 0.06, which is above the rule of thumbs when evaluation significantly by 0.05. However, the 0.06 does not necessarily mean that the relationship between WTP and money to government is not significant. It is just that the significant level can be viewed as “marginally significant”. Therefore, H3 is also valid.

**Table 14: R-square for WTP after tax and fee support**  
**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,362 <sup>a</sup>	,131	,131	3,523

a. Predictors: (Constant), taxsupport

**Table 15: Coefficients for WTP after tax and tax support**  
**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Coefficients		
				Beta		
1	(Constant)	,984	,520		1,892	,062
	taxsupport	,414	,219	,195	1,894	,061

a. Dependent Variable: wtpat

## 5 General Discussion

### 5.1 Discussion

The study reveals an interesting finding, which open a potential suggestion for Norway current situation. From the data analysis of H1, it is shown that, generally, Norwegian shoppers are supportive with the increasing fee policy by agreed to a higher maximum WTP. This could be explained by several reasons.

Firstly, plastic bag in Norway is not free. According to behaviour response and incentive studies, when the plastic bag price shifted from free to a cost (for example: 1 NOK), the effect of it to general consumers' choice to buy or not to buy is at the highest, not from 1 to 2 NOK (Shampanier et al., 2007). With Norway's case, since the shoppers already get used to paying for plastic bag, the increase fee does not necessarily reduce their WTP. Moreover, the average cost of plastic bag on grocery stores lies around 1.50 ~ 3.00 NOK, with aiming yearly consumption of 45 bags then they have spent 67.5 ~ 135 NOK on plastic bag per capita yearly. Numbers from Statistics Norway (SSB, 2018) states the average monthly salary for 2017 in Norway is 44 310 NOK. Thus, the annual cost of plastic bag could not be viewed as remarkable consumption due to high salary.

On the other hand, He (2012) highlighted the importance of the relationship between environmental awareness and WTP. Norway is one the top-ranking countries in citizens' environmental awareness (Nilsen, 2010). Besides, most of the respondents were from the Oslo, where the municipality has been very aggressive with green politics.

H2 and H3 proved suggests that the Norwegian customers are more favored Tax over Environmental Fund. Cited by Han et al. (2011), the residents believe that resources are allocated more fairly by the government than private association. This reflected in Norway's situation. As predicted, the study witnesses while the respondents in Tax scenario showed a positive correlation, a contrast phenomenon was recorded in Environmental Fund scenario. Furthermore, the circumstances that Trade Association managed the money from plastic bag through the fund has never happened before. Hence, it is difficult for Norwegian consumers to set a clear expectation of how things would go. According the Breidert et al. (2015), WTP

shall decrease if the payer does not have sufficient information for decision-making process. The interview from NRK in 2018 also revealed that the fund is new approach with low information on who and how exactly is going to be administering the fund. It raises question mark regarding if the money will really be used for the promised purposes.

### ***5.2 Additional findings***

The author also discovers an interesting additional finding that potentially useful for Norway's decision on new price of plastic bag. Average willingness to pay for plastic bag at the current situation is 2.66 NOK. However, the mean is increased to 3.05 NOK (Tax) and 3.26 NOK (Fund) respectively. In another word, to be able to reduce grocery shoppers' purchasing plastic bag behavior, the fee need to be at least 3.26 NOK or higher to get any positive effect. Significant differences in the level of willingness to pay were found in the destination of the money, where the citizen seems to have more faith into the government than the new approach from Trade Association. Thus, to be able to change grocery shoppers behavior on doing the inconvenient of bringing their own bag for shopping. Then, the fee need to be at least 3.26 NOK or higher. This additional finding could play a references role for decision-making process on how much the additional fee of plastic bag should be in order to achieve the goal of EU Directive

The respondents whom chose high WTP on the scenarios wrote a comment that they are willing to pay the cost of the bag regardless the price due to its convenience. This could possibly be because that they believe that the price of plastic bag cannot conceivably be so high that it actually influence their income or budget. Thus, they are willing to pay for the cost regardless how high it could approximately be to rule out the inconvenient of bringing their own bag to grocery stores.

### ***5.3 Limitation and Further research direction***

The sample set might not fully demonstrate the WTP on the scope of the whole country. Moreover, by analyzing the location distribution, most of the respondents comes from the South of Norway whom has relative higher income and education standard than the rest of the country (Nilsen, 2010). As proved in the prior study, income and education (Liebe et al., 2011) might hinder the accuracy in evaluation of WTP and representability of the data.

Besides of income and education, WTP is a variable that easily be affected by various element, both in the respondent internally (age, gender, education, environmental awareness, shopping behavior...) and their environment externally (location, culture, custom...). Liebe et al. (2011) also agreed that many studies that attempt to explain individuals' WTP for plastic bag under the consumption of a new policy applied could not only take into account the effect of one single element. Hence, there is a need for further study to consider the influence of the geographic element on WTP as well as find out the interaction relationship among these variables.

The author is aware of the weakness of using direct survey in studying WTP. The respondents do not necessarily have an incentive to reveal their true WTP. They might overstate prices because of prestige effects or understate prices because of consumer collaboration effects. Nessim and Dodge (1995, p. 72) suppose that "buyers in direct responding may also attempt to quote artificially lower prices, since many of them perceive their role as conscientious buyers as that of helping to keep prices down". Nagle and Holden (2002, p. 344) observe the opposite behaviour. To not appear stingy to the researcher respondents could also overstate their WTP. Even if respondents reveal their true valuations of a good, this valuation does not necessarily translate into real purchasing/not purchasing behavior (Nessim and Dodge, 1995, p. 72).

With the new EU Directive that this thesis is researching on. The plastic bag consumption requirement applies on the overall consumption in the country. Thus, by complying with the Directive, no stores in Norway are be allowed to give out free plastic bag by the end of 2018. Therefore, any new regulation to reduce the demand for bags will be affecting both the retail and grocery stores. This study is therefore limited to only grocery stores, mainly the big grocery chains in Norway (Meny, Kiwi, and Rema 1000 etc.). Small, independent, family stores like kiosk, toward to online grocery (Kolonial and Handleriet), retail and clothing stores has not been taking in account when doing analysis in the thesis. Furthermore, the reason behind the preferable choice of Norwegian toward Tax is still not fully explained. The findings of this paper also plays an open suggestion for further both theoretical and empirical research.

## **6 Conclusion**

The EU Directive in 2015 leads Norway to establish and apply a new additional fee policy on plastic bag as well as to decide whether should this income go to Tax or Environmental Fund. The study attempts to explore the reaction of Norwegian consumers' WTP to the new policy and the direction of the money. The results suggest that 1) Norwegian citizens express a higher WTP with the new policy under the scenario of Tax while insignificant correlation is found in the scenario of Environmental Fund; 2) The consumers are willing to pay more in Tax scenario than Environmental Fund scenario. Significant differences in the level of willingness to pay were found in the destination of the money, where the citizen seems to have more faith into the government than the new approach from Trade Association.

The result of this study concludes that the average willingness to pay for plastic bag at the current situation is 2.66 NOK. However, for respectively scenarios then the mean is increased to 3.05 NOK (Tax) and 3.26 NOK (Fund). Which mean, the increasing price for plastic bag should reach at least 3,26 NOK above to experience the change in consumers' plastic bag shopping behavior.

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# Appendixes

Velkommen til denne spørreundersøkelsen om plastbæreposer i dagligvarebutikker.

Bakgrunnen for spørreundersøkelsen er at det er forventet å komme en prisøkning på plastbæreposer i løpet av året.

Spørreundersøkelsen vil ta mellom 5 og 10 minutter. Alle besvarelser er anonymiserte og skal kun brukes i min masteroppgave.

Har du noen spørsmål, kan du sende de til min e-post: [william.hang@nmbu.no](mailto:william.hang@nmbu.no)

Tusen takk for at du deltar i denne spørreundersøkelsen.

1. Hvor ofte handlet du i dagligvarebutikker i løpet av en vanlig uke?

- 0 ganger  7 - 8 ganger
- 1 - 2 ganger  9 - 10 ganger
- 3 - 4 ganger  11 ganger eller mer
- 5 - 6 ganger
- Annet (vennligst spesifiser)

2. Hvor ofte bruker du følgende til å ta med varer fra dagligvarebutikker?

	Aldri/Nesten aldri	Sjelden	Av og til	Ganske ofte	Alltid/Nesten alltid	Ikke relevant
Kjøper plastbærepose i butikken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kjøper papirpose i butikken	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sekk, veske, trillevogn eller flerbruksposer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gjenbruker plast- eller papirposer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Annet (vennligst spesifiser)

3. Tenk tilbake til forrige uke, ca hvor mange plastbæreposer kjøpte du da?

Velg antall

Annet (vennligst spesifiser)

4. Hva er den høyeste prisen du vil være villig til å betale for nye plastbæreposer før du går over til sekk, veske, nett, trillevogn eller flerbruksposer på de fleste av dine handleurer?

- |  |  |
|--|--|
| <input type="radio"/> 0 kroner                     | <input type="radio"/> 7 kroner                       |
| <input type="radio"/> 1 krone                      | <input type="radio"/> 8 kroner                       |
| <input type="radio"/> 2 kroner                     | <input type="radio"/> 9 kroner                       |
| <input type="radio"/> 3 kroner                     | <input type="radio"/> 10 kroner                      |
| <input type="radio"/> 4 kroner                     | <input type="radio"/> 11 eller mer                   |
| <input type="radio"/> 5 kroner                     | <input type="radio"/> Jeg kjøper ikke plastbæreposer |
| <input type="radio"/> 6 kroner                     |  |
| <input type="radio"/> Annet (vennligst spesifiser) |  |

## Handlevaner

5. Hvor enig eller uenig er du med følgende påstander?

Jeg synes at det er viktig...

	Helt uenig	Ganske uenig	Nøytral	Ganske enig	Helt enig	Ikke relevant
å redusere mitt forbruk av plastbæreposer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
at prisen på plastbæreposer skal økes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
at prisen på plastbæreposer forblir uendret	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
at man ikke skal betale for plastbæreposer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
at plastbæreposer skal bli forbudt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Annet (vennligst spesifiser)

6. Hvilken av disse aktivitetene beskriver deg best?

Jeg...

	Aldri/Nesten aldri	Sjelden	Av og til	Ganske ofte	Alltid/Nesten alltid	Ikke relevant
kildesorterer matavfall, plastemballasje, papir, papp og kartong	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
leverer farlig avfall, batterier, elektrisk og elektronikk avfall til gjenvinningstasjoner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
panter mine flasker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
selger/gir bort ting jeg ikke har behov lenger	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
kjøper brukte ting på nett	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
donerer til veldedighet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Annet (vennligst spesifiser)

\* 7. På de neste sidene vil det komme nye spørsmål om betalingsvillighet. For at vi skal vite hvilke spørsmål du får, må du velge det første tallet på listen nedenfor. Rekkefølgen på disse tallene er forskjellig fra person til person. For noen vil det første tallet være 4, mens for andre kan tallet 7 være det første. For at vi skal vite hvilke spørsmål du får, er det viktig at du velger det første tallet på lista.

1

2

3

4

5

6

7

8

9

10

8. Vi vil nå at du skal se for deg at det innføres en miljøavgift som øker prisene på plastbæreposer og at overskuddet fra salget går til staten. Regjeringen vil da få mer penger i sin årlige statsbudsjett.

Gitt denne avgiften, hvor enig eller uenig er du i følgende påstander?

	Helt uenig	Ganske uenig	Nøytral	Ganske enig	Helt enig	Ikke relevant
Jeg er positiv til en miljøavgift på plastbæreposer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Miljøavgiften vil få meg til å bruke sekk, veske, nett, trillevogn eller flerbruksposer oftere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg er positiv til at avgiften går til staten	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Annet (vennligst spesifiser)

\* 9. Ved innføring av en miljøavgift på plastbæreposer, hva er den høyeste prisen du vil være villig til å betale for nye plastbæreposer før du går over til sekk, veske, nett, trillevogn eller flerbruksposer på de fleste av dine handleterurer?

- 0 kroner
- 1 krone
- 2 kroner
- 3 kroner
- 4 kroner
- 5 kroner
- 6 kroner
- 7 kroner
- 8 kroner
- 9 kroner
- 10 kroner
- 11 kroner eller mer
- Jeg kjøper ikke plastbæreposer
- Annet (vennligst spesifiser)

10. Vi vil nå at du skal se for deg at det innføres en miljøavgift som øker prisene på plastbæreposer og at overskuddet fra salget går til Handelens Miljøfond. Miljøfondet vil bidra til forebygging og opprydding av land- og havbasert plastforsøpling, og forsknings- og utviklingsprosjekter.

Gitt denne avgiften, hvor enig eller uenig er du i følgende påstander?

	Helt uenig	Ganske uenig	Nøytral	Ganske enig	Helt enig	Ikke relevant
Jeg er positiv til en miljøavgift på plastbæreposer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Miljøavgiften vil få meg til å bruke sekk, veske, nett, trillevogn eller flerbruksposer oftere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg er positiv til at avgiften går til Handelens Miljøfond	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Annet (vennligst spesifiser)

11. Ved innføring av en miljøavgift på plastbæreposer, hva er den høyeste prisen du vil være villig til å betale for nye plastbæreposer før du går over til sekk, veske, nett, trillevogn eller flerbruksposer på de fleste av dine handleturer?

- 0 kroner
- 1 krone
- 2 kroner
- 3 kroner
- 4 kroner
- 5 kroner
- 6 kroner
- Annet (vennligst spesifiser)
- 7 kroner
- 8 kroner
- 9 kroner
- 10 kroner
- 11 kroner eller mer
- Jeg kjøper ikke plastbæreposer



## Demografiske spørsmål

12. Du er en

- Mann
- Kvinne
- Annet
- Ønsker ikke å svare

13. I hvilken aldersgruppe er du?

- Under 18
- 18-24
- 25-34
- 35-44
- 45-54
- Annet (vennligst spesifiser)
- 55-64
- 65-74
- 75-84
- 85+
- Ønsker ikke å svare

14. Hvor mange personer er det som bor i din husstand\*?

\*Inkludert barn

- 1 - 2
- 3 - 4
- 5 eller mer
- Ønsker ikke å svare
- Annet (vennligst spesifiser)

15. Hva er din høyeste fullførte utdanning?

- Grunnskolenivå
- Videregående skolenivå
- Fagskolenivå
- Universitets- og høghskolenivå - Bachelor
- Annet (vennligst spesifiser)
- Universitets- og høghskolenivå - Master
- Høyere enn mastergrad
- Ønsker ikke å svare

16. Hva er samlet årsinntekt i din husstand før skatt?

- 0 - 300 000 kroner
- 300 001 - 500 000 kroner
- 500 001 - 700 000 kroner
- Annet (vennligst spesifiser)
- 700 001 - 1 000 000 kroner
- Over 1 000 000
- Ønsker ikke å svare

17. I hvilket fylke bor du?

Velg fylke

Annet (vennligst spesifiser)

Tusen takk for at du har deltatt på denne spørreundersøkelsen. Ditt bidrag vil hjelpe meg videre med min oppgave.

Har du noen spørsmål eller kommentarer til denne spørreundersøkelsen, kan du kontakte meg på denne e-post:

[william.hang@nmbu.no](mailto:william.hang@nmbu.no)

Med vennlig hilsen,

William Hang

Masterstudent ved Norges miljø- og biovitenskapelig universitet



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