Increase of VAT on newspaper subscriptions
Effects on the Finnish newspaper market

Economics

Master's thesis

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OBJECTIVES OF THE STUDY
This study focuses on a tax policy change towards subscribed newspapers in the Finnish newspaper market. The Finnish government decided to increase the value added tax rate of subscribed newspapers from 0 % to 9 %, bringing the legislative changes into force in the beginning of 2012. In earlier research the price elasticity of newspaper demand has been observed to be highly inelastic. The objective of this study is to determine the effects of the 9 % VAT increase on the prices and circulations of subscribed newspapers and to determine whether the price elasticity of newspapers has increased due to the changing newspaper market.

DATA AND METHODOLOGY
The research is conducted with a difference-in-differences method with controlled individual fixed effects. The Finnish newspaper circulation development is analyzed with newspaper price and circulation panel data from periods 2006-2013 and controlled with corresponding data in the Norwegian market.

FINDINGS OF THE STUDY
According to the results of the study, the 9 % VAT increase moved fully into newspaper subscription prices. As a result, newspaper circulations showed a 3,4 percent decrease compared to the control group and the newspapers' price elasticity of demand, 0,37, can be seen as highly inelastic. The findings correspond to an estimation in the government proposal as well as findings in previous studies.

Keywords value added tax, newspaper, circulation, price elasticity

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1 INTRODUCTION

During the past decade, print media has been in a gradual but inevitable downhill. Media corporations have been forced to start looking for a new approach to the news business. The biggest factor in the changing business environment has naturally been the rise of digital media, which has at times even questioned the very existence of print media. The downfall of print media has been accelerated by various innovations to support the rise of digital media, e.g. tablets.

In addition to the fundamental transformation of the business environment, recent years have offered various other obstacles to overstep. The biggest of them, the global economic crisis, has added gas to the flames and forced many players out of business. For example in 2012, the then second largest weekly news magazine in the United States, Newsweek, decided to terminate its print edition and move entirely to an online edition (Brown & Shetty, 2012). Later on, however, Newsweek decided to resurrect its print edition.

Much to the dismay of the Finnish print media market, Finnish Parliament decided to increase value added tax (VAT) rate for subscribed newspapers and magazines. In the beginning of 2012 VAT rate for subscribed newspapers and magazines was increased from tax exempt to the lowest reduced rate of VAT of 9 percentages. All VAT rates were further increased by one percentage in 2013, which meant a corresponding increase also for subscribed newspapers and magazines, from 9 to 10 percentages. The Finnish government has also contemplated on totally abolishing the reduced rate of subscribed newspapers and magazines, which would mean an increase to the general VAT level, which is currently 24 percentages.

1.1 Reasoning for the thesis

Considering the current economic situation, the political decision of abolishing the value added tax exemption of subscribed newspapers and magazines has been difficult to accept for the print media industry. The Finnish Newspapers' Association has claimed that the 9 per cent increase in the VAT rate in 2012 will not achieve the intended tax returns and, as a result of the increase, approximately 2 500 jobs will be lost in the newspaper and printing industry (Niiranen, Gabrielsson, & Hoikka, 2011). According to a report by the Finnish Ministry of

Transport and Communications, the reduction in employment decreases government income tax revenue and increases unemployment costs, while the reduction in circulations could decrease newspapers' advertising income, which in turn would affect government VAT and corporate income tax revenues (Lehtiasiain neuvottelukunta, 2013).

Despite of the newspaper publishers' claims, numerous studies during the past half a century have indicated that subscription price changes have a very limited effect on newspaper demand. Weber and Poyar (2012) from a global strategy and marketing consultancy firm Simon-Kucher & Partners have even encouraged publishers to execute dramatic subscription price increases despite the decreasing circulation trend. According to their studies, the price elasticity for US newspapers varies between -0,3 and -1,1. They have estimated that print newspapers have been able to improve circulation revenue through price increases in 2007-2010 due to the weak price elasticity of demand. Their suggestion for the publishers is to raise prices and increase short-term income to finance investments in new technology and business models.

This thesis aims at determining what kind of an effect the increase of the VAT rate has had on the industry and whether the price elasticity of newspaper demand has changed in Finland during and after the two major economic crisis suffered after the beginning of the 1990's.

1.2   Previous studies on the subject

A question about the effect of price changes on newspaper circulations has been analysed rather widely. Over 50 years ago, Landau and Davenport (1959) issued a strong statement that the sales price of a newspaper is expressed neither by the interaction between supply and demand nor by a relationship to production cost factors. According to their results, the price determination is purely arbitrary. This conclusion has been repeated with more lenient expressions by many other studies during the past 50 years.

With data from all daily newspapers published in the USA in 1970 and 1975, Grotta (1977) observed that a relatively large percentage increase in newspaper price resulted in a much smaller percentage decrease in circulation. In his study, Grotta performed both descriptive and regression analysis, splitting the data also into various types of newspapers in order to find difference in elasticity among separate groups. He explained circulation change with two independent variables: percentage change in population and percentage change in price.

Lewis (1995) conducted a similar study in the USA with data from 1971-1992 by adding more variables for the regression analysis. The results from Lewis's study also support the view that the newspapers' demand is, in fact, price-inelastic. Grotta anticipated a turning point in the demand curve, resulting in a greater elasticity of demand on higher prices. However, this kind of a turning point has not yet been observed in any previous studies.

Most of the studies on this subject have been conducted in the US newspaper market. One of the most recent studies in Sweden by Asplund, Erikson and Strand (2005) found that Swedish newspapers with short-term liquidity issues raised their subscription prices more than other newspapers during the 1990's recession, which would also suggest that the publishers assume that newspapers' prices are inelastic.

Despite the wide range of studies demonstrating the inelasticity of the demand curve, the representatives of the newspaper publishers do still strongly claim that the increase of VAT in Finland will lead to decreases in subscription and advertisement revenue. According to the Finnish Newspapers' Association (FNA), the negative demand effect will mean that the VAT increase will fail to meet its target returns and will lead to mass redundancies. Thus, FNA claims that the aggregate return of the VAT increase to the Finnish public economy would be negative. According to an analysis on three medium-sized regional newspapers, commissioned by FNA and conducted by Veijo Pönni from the Business and Innovation Development unit of the University of Turku in 2011, the VAT increase of 9 percent would have a negative effect of 15 percent on the newspapers' circulation revenues (Niiranen, Gabrielsson, & Hoikka, 2011). The argument used by FNA is that the price sensitivity of the subscribers have changed since the last recession in the beginning of the 90s.

1.3   Research objective and methodology

The objective of this study is to examine the effects of the VAT increase for subscribed newspapers on the Finnish newspaper market. The research objective is divided into two research questions:

  I.   Is there a significant correlation between the VAT increase and newspaper demand?

  II.   Has the newspaper subscriptions' price elasticity of demand changed during the last two decades?

The research questions are addressed firstly by analysing the theoretical aspects of tax incidence and price elasticity. Secondly, the special characteristics and trends of the Finnish newspaper market are examined through previous research and existing statistical data. Thirdly, the research questions are addressed by conducting statistical analysis on the effects of the VAT increase on the Finnish newspaper market demand.

The possible correlation between the VAT increase and newspaper circulations is examined in this study by comparing development of trends in Finland and Norway over a period of eight years. The development is analysed by studying VAT increase's impact on prices, which could correspondingly have an impact on circulations. The statistical analysis is conducted on an individual newspaper level data with a difference-in-differences (DID) method. DID method is used to control for the general market development, i.e. in addition to measuring the change in the subscription prices and circulations, it needs to be considered how price and demand would have developed without the change in the VAT rate. The control group for the research method is chosen to represent a market that has similar properties to the Finnish market except for the change in the monitored variable.

By answering to the second research question, the study aims to determine whether the previous assumption of circulation inelasticity still holds, taking account the changed business environment, intensified competition and the increased number of indirect substitute commodities.

1.4   Research hypothesis and results

The initial hypotheses of this study are the following: a) the VAT increase moves entirely into the Finnish newspaper prices, b) the price change caused by the VAT increase has had a limited effect on Finnish newspaper circulations. The second hypothesis includes the assumption that newspapers' price elasticity of demand had remained inelastic.

The first hypothesis is based on theory of consumers' change resistance. As contemplated by Asplund et al. (2002), newspaper subscribers are more accustomed to the specific newspaper and are less likely to change to another newspaper, which allows the publishers to increase prices. The effect of the VAT increase on subscription prices will be discussed according to previous studies and the price development is analysed through monthly statistics to briefly determine the extent of the VAT incidence on subscription prices.

The second hypothesis is based on results of the earlier studies stating that the newspaper market demand is highly inelastic. The hypothesis also takes into account a potential change in the newspaper market structure and an effect on price elasticity of newspaper demand. However, I assume that newspaper readers' resist changes in their media preferences and still do not consider print and online media as perfect substitutes, which makes the demand inelastic.

The research has two main findings. First, according to monthly price data, the VAT increase has transferred fully into subscription prices. Subscription prices being fairly stable at other periods, increased 9,6 % in January 2012, which is interpreted to contain the VAT increase of 9 % plus a small inflationary price increase. Second, despite the direct effect on subscription prices, the VAT increase has had a relatively small impact on the demand of Finnish newspapers. The demand has been slowly decreasing for the reviewed period of time, but the VAT increase has not notably accelerated the downfall compared to the development of the control group. The price elasticity is found to be considerably below one, which supports previous studies on newspaper price inelasticity.

1.5   Thesis structure

In the second chapter, I will go through the most significant properties of the value added tax system in the Finnish and the European Union legislation to explain what kinds of costs VAT has on the market and, which business parties will be subject to the final costs of the tax. In the third chapter, I will examine the theoretical effects of a change in VAT rates to the market and to the state economy. I will also discuss what kind of significance preferences and price elasticity have on the size of the impact. In the fourth chapter, I will break down some of the special characteristics of the newspaper market. I will present some major business models used in the market and analyse what kind of differences there are between Finland and Norway. The fifth chapter presents the most important development trends in the Nordic print media markets and discuss the potential causes for the trends.

In the sixth chapter, I will describe the research method and data for a statistical analysis on the effect of the Finnish VAT increase. The impact of the tax increase on the Finnish print media market is examined by first briefly considering the effect on subscription prices, and second by analysing the effect on circulations. The analysis is made by comparing the

Finnish newspapers' circulation development to Norwegian newspaper market. In the seventh chapter, I will present the results of both descriptive analysis (Chapter 5) and regression analysis (Chapter 6) and specify the statistically measurable effects on subscription prices and circulations. Finally, in the eighth chapter, I will conclude the analysis of the print media market development. In the conclusions, I will also discuss the potential cause-and-effect relationship of different factors affecting the market development and of what kind of importance they are to the entire business environment.

2 PROPERTIES OF VAT

VAT is a commodity tax that is paid only on the value added to goods and services. This is carried out such that the tax an individual business pays for purchases can be deducted from the tax charged to customers. In the end, the cost of the tax is charged from the final consumer, which is the total of the value added accrued at all the previous steps in the production and distribution process. (European Commission, 2014)

Since the system is built in a way that the tax is passed on to the end consumer, the production and distribution businesses should not suffer the cost of the VAT. If the VAT is passed on entirely to the customers, the businesses should bear the cost only through a potentially reduced demand. One of the defects of the VAT system is that it requires excess accounting resources from the businesses due to its value added nature. Additionally in Finland as well as in most EU countries, the VAT system carries a rather large amount of exemptions, which make the system more complicated and administratively burdensome.

2.1 VAT legislation in Finland and EU

EU regulation sets the limits for tax legislation in European Union member countries. EU Council Directive 2006/112/EC (VAT Directive) sets the boundaries, to which the national VAT legislation of each member country must comply.

The taxable rates used in EU countries are controlled in the VAT Directive. The standard taxable rate in EU countries may not be, until 31 December 2015, under 15 percent. However, one or two reduced rates may be applied by the EU countries. Reduced rates may not be less than 5 percent and may only be applied to limited categories listed in the VAT Directive. There are still a number of temporary derogations that allow exceptional rates for some product or service categories, which were in force before 1991. There are also total VAT exemptions for areas of special public interest (e.g. schools). A major difference between a zero rate and an exemption is that the zero rate allows for refunding of VAT, which makes the zero rate more beneficial for the producer than the VAT exemption. (Copenhagen Economics, 2008)

VAT is a proportional tax like an income tax. All EU countries have well developed income tax systems that could be expanded to replace VAT systems, which are usually quite detailed

and challenging. The biggest advantage of the VAT system to the public administration compared to income taxation is that it allows influencing on price and demand of specific commodities or industries. If a government wishes to affect the demand of a commodity, limit the price of a commodity or promote goods such as food and culture, it can set or abolish a reduced VAT rate.

Finland maintains two reduced VAT rates in addition to the standard rate. The standard rate is presently set at 24 percent, while the reduced rate of 10 percent is mainly applied to publications and cultural activities and the reduced rate of 14 percent rate to foodstuff and restaurants (European Commission, 2014). The average standard VAT rate for EU-27 countries has increased rapidly: the average standard rate in 2013 was 21,3 percent, while in 2008 it was below 19.5 percent (European Commission, 2013).

2.2   Reduced VAT rate of newspapers and periodicals

According to Article 85a, paragraph 8 of Finnish Value Added Tax Act, the tax to be paid is 10 percent of the taxable amount in respect of the sale of newspapers and periodicals in the form of a subscription for at least one month. Finland previously preserved a temporary derogation for subscribed newspapers and periodicals, allowing the tax rate in Finland for the mentioned products to be zero since the country joined EU in 1995. In 2011, this derogation was abolished by increasing the VAT rate to 9 percent, which carries the cost that the exemption is not practicable later on due to the EU legislative order. The rate was later raised to 10 % along with the second reduced VAT rate.

Since the abolishment of the afore-mentioned exemption, Finland is treating newspapers and magazines harder than other Nordic countries from the VAT perspective. Norway and Denmark have a zero rate for newspaper subscriptions and single copies, while Sweden maintains the corresponding VAT at a reduced 6 percent rate (European Commission, 2014). There has been no political or public pressure to tighten the approach in other Nordic countries, on the contrary, publishers are demanding a VAT decrease for magazines and digital editions (Virranta, 2013).

3 TAX EFFECT ON THE MARKET AND THE ECONOMY

A change in VAT affects the market through an effect on a commodity's price, which in turn affects the commodity's demand. In the following chapter, I will describe the theoretical effects of a price change on a specific market. I will analyse the impact of price elasticity of demand on the amount of the change and determine how different market structures influence the impact on a market.

Asplund et al. (2002) note that subscription price possibly affects also advertising revenue. While advertisers prefer newspapers with a higher circulation, an increase in subscription price leading to a lower circulation may also lead to a loss of advertising revenue. On the other hand, an increase of subscription price should not have any direct effect on advertising revenue in case circulation remains constant.

3.1 Demand effect under perfect/imperfect competition

According to classic economics, there are three basic market structures: perfect competition, oligopoly and monopoly. Under perfect competition, a large number of companies would be selling identical products that would be perfect substitutes to each other. If one company increases the price of its products, it would lose all customers since they would switch to another company's products. Under oligopoly, there are a small number of larger companies in the market, which would have significant control over the market. Oligopolistic companies are substantially dependant on each other: actions by one company affects the actions of others. In a monopoly, there is only one company controlling the entire market. The company would maximize its profit by setting a price so that its marginal revenue would equal marginal cost. The quantity sold would be lower and the price would be higher than in a competitive market.

Newspaper markets have traditionally been very concentrated and they have usually formed a market structure of an oligopoly or a monopoly. For example in the United States, practically all local newspapers have emerged in a market where they are the only published newspaper (Picard R. G., 1998). Under perfect competition, customers would substitute to another identical product if the price of the initial product increases. In newspaper markets, however, the products are never perfect substitutes. Differentiation between newspapers exists through

localization, distribution, publication cycle, political view, topics, types of content and individual writers (Lacy & Martin, 2004). Differentiation makes customers more attached to the specific product and, thus, less prone to substitution. The more competitive the market structure is, the bigger the substitution effect of a price increase.

Concentration can be measured, for example, with concentration ratios: if the revenue of the top four (eight) firms is more than 50 % (75 %) of the market's total revenue, the market is considered highly concentrated (Albarran & Mierzejewska, 2004). There are also other, more sophisticated, measures of concentration; however the benefit of the concentration ratio approach is its simplicity and interpretability. Albarran and Mierzejewska (2004) have attempted to measure concentration in European and US markets but have concluded that, due to a variety of concentration measures and lack of accurate data, only descriptive concentration analysis can be performed in these markets.

The concept of concentration can also be interpreted in different ways. The concentration ratio, for example, describes industry-specific concentration. Another type of concentration occurs when firms operate in multiple industries and may thus achieve significant economies of scale, or as Albarran and Dimmick (1996) state, economies of multiformity. Media companies can benefit from this type of concentration through utilizing their expertise, local presence or existing media content in different industries within the media sector.

One theory explaining the newspaper market concentration is called the circulation spiral (Furhoff, 1973). The theory suggests that, in a market where two newspapers compete, larger circulation and advertising are mutually reinforcing in a way that the smaller newspaper is ultimately forced to leave the market. The theory is based on the assumption that advertisers are interested in newspapers that have a large audience and the audience is interested in high quality newspapers. This would lead to a market, which would be controlled by one company through a natural monopoly. Gabszewicz et al. divide the theory into advertising-driven spiral and quality-driven spiral as the cause of the spiral effect. The former assumes that readers prefer high quality advertising, while the latter suggests that the larger newspaper dominates in all aspects of quality due to greater resources.

Historically monopoly markets actually represented more than 98 percent of all newspaper markets (Picard R. G., 1991). In markets with two or more newspapers, the one with the highest circulation receives usually a disproportionate share of advertising income, which may force publishers to pursue circulation increases at the expense of subscription revenue.

In Finland, the market share of the four and eight largest newspapers has been has been increasing for the past twenty years (see Appendix 2), which suggests that the newspaper market is increasingly concentrated. An interesting contradiction to this statement is that the share of the largest newspaper was on a decline since 2002 at least until 2008.

As the demand in a specific industry decreases due to an increase in VAT, the profits and thus the employment level of the industry should fall respectively. A study by Copenhagen Economics (2008) implicates that the impact of a change in VAT rate on employment depends also on the capital intensity of the industry. Theoretically, high capital intensity and low level of competition in the newspaper market would cause the publishers to resist changes in production and employment. Since it would take a longer time to adjust the scale of operations, the employment level would react slowly to an increase in VAT rate. High employee termination costs in Finland may also emphasize the slow impact on employment.

3.2 The influence of price elasticity

Price elasticity of demand determines how a change in the price of a good affects the demand quantity of the same good. If the price of a good increases 1 %, and as a result the demand quantity decreases more than 1 %, the demand of the good is said to be price elastic. On the other hand, if the demand quantity decreases less than 1 % correspondingly, the demand of the good is price inelastic. If the demand of a newspaper would be unit elastic, the 9 percent increase in newspaper subscription prices should yield a 9 percent decrease in demand. Price elasticity is calculated by dividing the relative change in demand quantity by the relative price change:

$$e(R) = \frac{dQ/Q}{dP/P} \qquad (1)$$

Elasticity of demand can also differ within different groups of individuals. Ray (1951) noticed already over 60 years ago that US publishers were charging lower rates for subscriptions in rural areas than in urban areas, despite of higher rural delivery costs. Ray deducts that it is obvious that publishers believe demand elasticity is higher in rural areas and the rural readers would not be willing to pay the same prices than urban readers. Ray only shows that price discrimination exists but does not show any real evidence on the existence of price elasticity. He also notes that, while price discrimination is commonly performed only

on differentiated products, it usually results in competition on other factors than price (e.g. quality of news).

Results of numerous previous studies have concluded that a change in the price of a newspaper results in a relatively smaller change in the demand quantity of the newspaper, i.e. the demand of the newspaper is price inelastic. The fact that newspaper prices have historically seemed highly inelastic may be caused by the common monopoly or oligopoly status of local newspapers. Due to the increasing number of various digital devices and different kinds of online news channels, few subscribed newspapers can currently be considered having a monopoly status in their market. The purpose of this study is to determine whether the change in the market structure has affected the price elasticity of newspapers.

3.3 Price effects

There are mainly three possible effects of a price change on a commodity's demand: income effect, substitution effect and arbitrage effect (Barrell & Weale, 2009). Income effect refers to the change in a commodity's demand caused by a change in an individual's disposable income. Substitution effect refers to a change in a commodity's demand caused by a relative change in the price of separate commodities. The concept of arbitrage effect is used on several different occasions; in this context, it refers to a phenomenon where consumers alter their consumption behaviour due to a forthcoming change in tax legislation. The amount of these effects may differ depending on several factors, most importantly price elasticity of demand.

3.3.1 Income effect

As a good's price increases (decreases), a consumer is able to purchase less (more) of the good when holding the consumer's disposable income constant. As the purchasing power of the consumer decreases due to a price change, the effect is similar to a situation where the consumer's disposable income decreases due to inflation, salary cut, etc. The consumer would then choose the demanded quantity from a lower (higher) budget level.

The significance of a short-term income effect has been widely debated. In a perfect capital market, there would be no short-term income effect since consumers would be able to

balance their consumption over their entire lifetime. Barrell and Weale (2009) discuss the income effect in relation to a temporary VAT reduction in UK and note that, due to imperfect capital markets, borrowing and lending constraints and the uncertainty of rational expectations, the income effect must be accounted for.

Since the VAT increase will most likely not be cancelled or the zero tax rate be reinstated due to EU legislation, the income effect can be treated as a long-term effect. Consumers will modify their expectations with a permanent change in commodity prices and adapt their consumption accordingly.

3.3.2 Substitution effect

A change in the price of a good affects the demand quantity of a comparable good (substitution effect). As the price of a good increases (decreases), the relative price of a substitute good decreases (increases) compared to the original good. With the relative price decrease, the consumer would be able to purchase relatively more of the substitute good, which would cause a shift of demanded quantity towards the substitute.

A VAT increase in a specific market would theoretically lead to an increase in all prices in that market. The price increase would decrease the relative price of any substitute goods that would not experience any price changes. Since the newspaper market is nowadays a differentiated market where there are a variety of imperfect substitutes (subscribed and free newspapers, online media, etc.), the VAT increase applying only to subscribed newspapers, a substitution effect is most likely to happen to some extent. The magnitude of the substitution effect is largely dependent on the competition level, that is, the amount and quality of substitutes in the market. Substitution is limited in a market where there are few or no competitors to provide a variety of choices to a customer. In a complete monopoly market, the only available option for the consumer is to refrain from consumption.

In more competitive markets competitors can encourage substitution for example through price discrimination. Asplund et al. (2002) have found evidence of wider price discrimination in markets where competition is tougher and individual companies' market control is weaker. They have observed price discrimination by assessing the amount of discounts offered by competitors in order to gain new customers and raise the substitution rate. The discovery of

Asplund et al. is that the amount of discounts offered is inversely proportional to the company's market share. This observation could be interpreted as the smaller companies' attempts to avoid drifting into the circulation spiral.

Still a decade ago newspapers' online editions were not considered real substitutes for print editions (De Waal, Schönbach, & Lauf, 2005). As the use of internet and online media increases and the change of use patterns accelerate (Stempel III & Hargrove, 2000), it is expected that the amount and nature of online substitutes for newspapers will also grow.

3.3.3 Arbitrage effect

As a decision of a tax increase is always made before the tax actually enters into force, people may buy products in advance during the period of low VAT: purchases of goods will increase prior to the legislative change and fall afterwards (Barrell & Weale, 2009). The increase and decrease in purchases should cancel each other out and the total effect of the arbitrage effect on demand would be insignificant.

According to the Finnish government's proposal 52/2011, newspaper subscriptions are subject to the higher VAT rate if the tax is incurred before the law enforcement on 1st January 2012. The previous legislation would be applied, however, to advance payments made before 2012, which corresponds to common practice in tax rate changes, i.e. if either payment or delivery of a subscription occurs before 2012, the previous tax rate applies. The length of the subscription is not relevant: the treatment of advance payments applies also to subscription payments for 2013 or later, if the payment has been made before 1st January 2012.

Since the government proposal was published only a few months before the law came into force and the law was passed in the Finnish parliament only a month before, the assumption is that the influence of the arbitrage effect is limited.

3.4 Preferences

The extent of the substitution effect also depends on consumers' preferences. In case of a change in consumer's preferences towards media consumption, there is a potential increase in substitution to other media products. Consumers' preferences towards media consumption have traditionally been fairly rigid. According to a study by Chyi & Lasorsa (2002) 15 years ago, the majority of readers in Austin, USA informed they preferred the print edition, while

only 20 % preferred the online edition. They also found that while no difference in preferences was found for gender and education, the most accurate explanatory factor for the change in preferences would be age and internet use. Cohort replacement noticed by Lain (1986) and Peiser (2000) (described in more detail in Section 5.1 Circulation development) is therefore changing the overall preferences of newspaper consumers.

Income effect, substitution effect and the influence of preferences on these price effects are described in Figure 2. A change in newspaper price generates a movement from X_1 to X_3. This movement includes both the income effect and the substitution effect. The effect on the final demand quantity of both products depends on the individual preferences. For normal goods, as in this example, the quantity demanded for both products decreases as the price increases. The basic assumption in this example is that consumers consider online media as a substitute for print media products.

Figure 1: Income effect, substitution effect and preferences
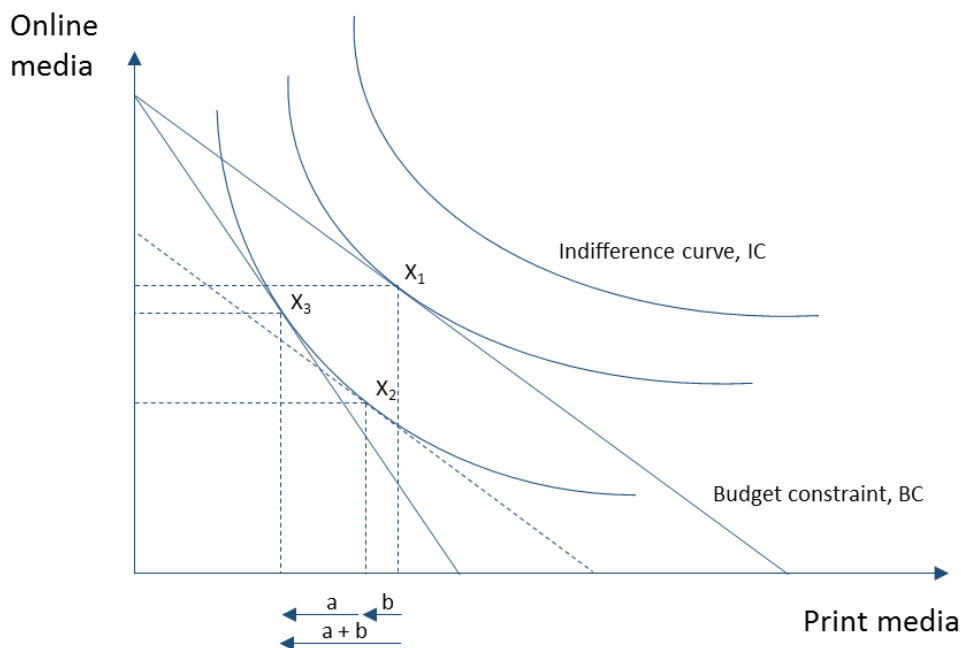
As a newspaper's price increases, consumers' budget constraint line shifts left. Because of the income effect (b), a consumer can only afford to buy fewer newspapers with the same amount of disposable income. According to a consumer's individual preferences, she would then move along the indifference curve until she reaches the new budget constraint line formed by the new prices. This substitution effect (a) is dependent on the consumer's preferences: if a consumer prefers print media to online media, the substitution effect due to

an increase in newspaper price is smaller. The shape of the indifference curves representing consumers' preferences towards the two goods determine the final level of total demand effect (a + b) caused by the VAT change.

3.5   VAT pass-through prices

Simola (2012) noted that VAT pass-through rates on different commodities depend on the price elasticity of demand: almost complete pass-through occurs for less elastic commodities such as gasoline, while less elastic commodities seem to have a lower pass-through rate. In a study on the price effects of a 9 percent VAT increase on restaurant services, Simola (2012) found undershifting VAT to consumer prices. A more detailed finding was that restaurants with higher sales were more likely to move the VAT to prices than lower-sales restaurants.

One issue in determining the VAT pass-through rate according to the short-term price statistics is that if the law is announced long before the actual enforcement, there could be a bias caused be anticipation of the law change. The law for the newspapers' VAT increase was announced however only in December 2011, which did not allow time for earlier price changes.

3.6   Theoretical effects on state economy

According to Finnish government's proposal 52/2011, the decision to increase VAT rate for subscribed newspapers and magazines from zero to 9 percent was made in order to expand Finnish tax base. The decision was based on the assumption that the VAT increase would raise government's annual tax income by 90 million euro, approximately half of which would be taxed from newspapers and the other half from magazines. Due to advance payments in 2011 before the new VAT rate came into force, estimated increase in total tax income in 2012 would be 53 million. The government proposal states that the estimation takes into account the potential reduction in overall newspaper and magazine subscriptions. The VAT increase is estimated to transfer fully into subscription prices and reduce total subscription revenue by 3 percent.

The impact analysis in Government proposal 52/2011 is based on a report conducted by the Ministry of Transport and Communications in April 2010. According to the report,

theoretical impact of the VAT increase in tax income from newspapers would be approximately 44 million (Pursiainen, 2010)

3.6.1 Tax revenue

When a government considers a change in tax policy, it has to analyse the effects on tax revenue. The size of an increase of total tax revenue caused by a commodity tax increase depends on the level of tax incidence and the shape of the commodity's demand curve. The shape of the demand curve determines what kind of an effect the tax has on demand quantity, which in turn directly affects the amount of tax revenue: increase in tax revenue is higher (lower) when the demand curve is steep (gradual) and price elasticity of demand low (high).

Figure 2: VAT effect on government tax revenue
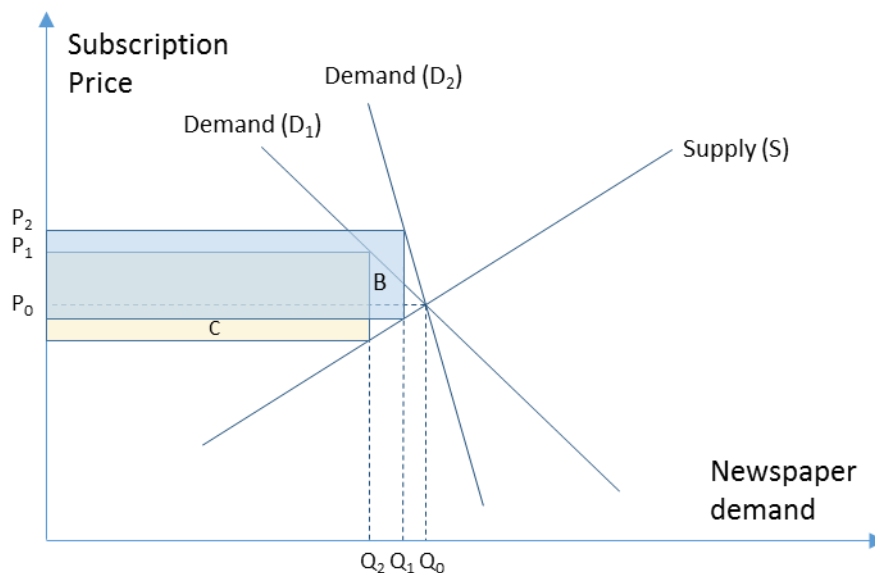
Source: Application of Hausman (1981)

The effect of an increase in VAT on government tax revenue is described in Figure 2. The assumption here is that the increase in VAT is passed on fully into subscription prices and the average price is raised accordingly from P_0 to P_1. If price elasticity is low, demanded quantity decreases from Q_0 to Q_1, while a higher price elasticity causes a further decrease to Q_2. The increase in tax revenue reacts accordingly: a larger reduction in quantity leads to a smaller increase in tax revenue (C), while a smaller reduction leads to a larger increase in tax revenue (B).

When estimating the impact of the VAT increase on government tax income, it should be taken into account that a demand effect on subscriptions caused by a VAT change also affects newspapers' advertising income through decreasing circulations. The declining revenue and profit of newspapers, on the other hand, also has potential effects for example on payable income tax and industry labour force. These effects may weaken the increase of tax revenue caused by the VAT increase and undermine the positive impact on state economy.

3.6.2 Deadweight loss

The total amount of deadweight loss caused by a tax increase depends on the demand elasticity of the specific good. Similarly to the amount of tax revenue, the amount of deadweight loss is the bigger the more elastic the demand is towards the price.

Figure 3: Deadweight loss and price elasticity

As described in Figure 3, the size of deadweight loss depends on the shape of the demand curve and the change of the demand quantity: larger decrease in demand ($Q_0 \rightarrow Q_2$) leads to a larger deadweight loss (DL_2).

Deadweight loss has been used as a measure of inefficiency in the market. George (2012) criticizes this interpretation of the concept by drawing a line between deadweight loss in governmental policy decisions and as a monopoly inefficiency. He argues that raising money

through taxation is comparable to any private decisions of fund reallocation and this kind of deadweight loss should thus not be considered as a market inefficiency.

4   SPECIAL CHARACTERISTICS OF MEDIA MARKETS

The business of newspaper publishing consists of two major parts. In addition to selling subscriptions, publishers are also in a business of selling advertising space. Due to this combination, a change in subscription price has two kinds of effects: subscription revenue and advertising revenue effect. The basic conflict between these two revenue sources is that by increasing the subscription prices, a publisher may be able to increase subscription revenue, but at the expense of decreasing advertising revenue. Since advertising revenue is strongly tied to the circulation volumes, the publishers need to consider their pricing strategies through both of these revenue sources.

In the following chapter, I will describe different business models used in newspaper markets and how they have developed. I will also specify differences between the VAT treatments of these business models. Special characteristics of Finnish and Norwegian newspaper markets will also be analysed.

4.1   Different business models

There is a variety of different business models in the newspaper market. The most common business model distinction is made between subscribed newspapers and free distribution newspapers. While subscribed newspapers collect their revenue flows through both subscription prices and advertising revenues, free distribution newspapers distribute papers free of charge and concentrate entirely on earning their income through advertising revenues.

A third, and increasingly significant, type of media business is the digital media. While a significant part of media business has transferred to the internet, the publishers have created a group of new business models mostly characterizing on differing pricing strategies, some of which can only be used in the new business environment. For example the paywall strategy, where a customer is allowed to read a limited amount of articles for free in a specific period of time, is a new pricing strategy that could not have been implemented for print media.

More detailed differences of the three business models are presented below.

4.1.1 Subscribed newspapers

One specific feature in newspapers' subscription pricing is that, while subscription prices and circulation changes certainly correlate to some degree, circulation changes are also correlated with advertising revenues. Publishers must acknowledge that, while they attempt to maximize subscription income by increasing subscription prices at the cost of declining circulations, they also have to consider the downward effects on the advertising income due to the lower circulation. An illustrative example of the special characteristics of this dual income in newspaper markets by Ray (1951) is that in some cases it is rational for publishers to deliver subscriptions below marginal costs in order to maintain a higher circulation, and thus to attract more advertisers.

In principle, a publisher can charge advertising fees from advertisers based on the annual audited circulations. The bigger the audited circulations, the bigger the potential for advertising fees. One measure of determining the price of advertising space is milline rate. According to Riffe & Shaw (1980; p. 386) milline rate shows the potential cost of reaching one million newspaper readers through a specific advertising space and it is calculated with the audited circulation figure of the newspaper. Another similar measure is CPM (cost per thousand), which measures the advertising cost per thousand impressions.

4.1.2 Free distribution newspapers

By definition, free distribution newspapers are distributed for free, either in city centres and other public places like public transport, or directly to readers' houses. Free daily newspapers were first introduced in Sweden when Metro International started distributing through Stockholm's public transport in 1995 (Bakker, 2002).

Bakker (2002) has analysed the differences between free distribution newspapers and subscribed newspapers. Free distribution newspapers usually have a lighter cost structure than subscribed newspapers: they have a cheaper distribution system and a much smaller editorial staff, rely on external third-party material and outsource printing. Some larger companies and international businesses also utilize a centralized news service for local newspapers to lighten their cost structure. Compared to the readers of paid newspapers, the readers of free dailies are usually relatively younger people who did not read a newspaper earlier, which is sometimes assumed to broaden also paid newspapers' potential readership.

Paid newspapers have however attempted to fight against the substitution to free newspapers for example by publishing "spoiler-publications" to keep the free newspapers out of the market or by distributing newspapers on weekends, when free newspapers are usually unavailable.

Mahoney and Collins (2005) have studied the readership of free newspapers in the US markets confirming the belief that readers of free newspapers are younger than the readers of traditional newspapers (see Appendix 4). Not surprisingly, a differentiating factor between readers of free and paid newspapers is that average household income for free newspaper readers is lower.

Since free distribution newspapers earn their income through advertising, they are liable to account for full VAT for all of their revenue flows. Subscribed newspapers earlier accounted for VAT only for advertising and not for subscription revenue. After the VAT increase of newspaper subscriptions, subscribed newspapers and free newspapers now have a more similar overall tax treatment.

4.1.3 Digital media

Digital media has been building up gradually during the past decades. While the demand and revenue of print media is declining, newspaper publishers are trying to find ways to replace the fading income flows from digital media. The problem with digital newspapers for the publishers is that even though the readership is continuously increasing, digital newspapers advertising income in 2012 was still less than fifth of the corresponding advertising revenue from print publications (see: Appendix 1). In 2011, increase in losses suffered from declining print advertising were ten times bigger than increase in gains from online advertising (Edmonds et al., 2013a). Newspaper publishers have attempted to compensate for the losses by implementing different pricing methods for content, such as integrating online and print subscriptions or implementing a paywall that allows readers to access limited to no access to content without subscription.

One major difference between digital media and traditional print media is the amount and type of competition. While a local newspaper usually has a maximum of one to two competitors (Lacy & Martin, 2004), a digital media has to redefine its competitors. An online publisher might be competing against other local or global news sites, global internet companies (e.g. Google), social media sites or traditional print editions (Yang & Chyi, 2011).

An online edition is also often competing against the print edition of the same newspaper (De Waal, Schönbach, & Lauf, 2005).

VAT treatment of digital media differs from the VAT exemption of subscribed newspapers and periodicals. EU law allows member states to apply reduced VAT rates to a limited list of goods and services, among which electronically supplied services are not included (The Council of the European Union, 2006). Thus, digital media is liable to account for full VAT for its subscription as well as advertising revenue.

4.1.4   VAT treatment on different sources of revenue

Media market has historically received special treatment from the authorities. In the Nordic countries, newspapers have received benefits in the form of press support and reduced VAT rates (Virranta, 2013). As discussed above, VAT treatment of the three business models have major differences in Finland. Until 2011, all newspaper subscriptions were subject to a zero VAT rate, while advertising income has no tax alleviations and is thus fully taxable. The zero VAT rate of subscriptions thus creates a distinct difference between the VAT treatment of subscribed newspapers and free distribution newspapers.

As electronically supplied services can't benefit from reduced VAT rates according to EU legislation, all subscription and advertising income earned by a digital media is fully taxable. The most visible contradiction about this tax treatment is that when a traditional print media decides to move online, its VAT liability changes dramatically. Since the same news content can nowadays be provided through an online news service as easily as through traditional distribution channels, the zero VAT rate of subscribed newspapers can be interpreted to have supported the traditional distribution channels rather than the content itself. This difference has now been gradually diminished through the increased VAT rate of subscribed newspapers.

4.2   Finnish and Norwegian markets

Finland and Norway have been amongst the top countries globally regarding newspaper readership. In 2009, Norway was first and Finland second in newspaper copies sold per 1 000 inhabitants (Jyrkiäinen J. , 2012). The only country able to compete with the Nordics in newspaper readership has been Japan, beating Sweden for third place. In addition to the high

total number of newspaper readers, the readership in the Nordic countries reaches comprehensively all generations.

There are many other similarities between Finnish and Norwegian newspaper markets as well. Both markets are strongly concentrated: in 2007, three major owners (Schibsted, Orkla Media and A-pressen) controlled over 50 % of circulations in the Norwegian market, while only two largest owners (Sanoma Oyj and Alma Media) controlled over 50 % of circulations in the Finnish market (Jyrkiäinen, 2007; Østbye, 2007). Newspaper publishers are also collaborating in some business areas in the Finnish market, for example five independent newspapers in central Finland publish a common Sunday supplement edition (Jyrkiäinen J. , 2007).

Governments of many EU countries have been looking for ways to reduce the concentration of market power in newspaper markets, since concentration is considered detrimental for freedom of expression and free media. Concentration is also considered to increase the political power of large media companies, which might in part weaken the power of democracy. The Nordic countries make no exception to the battle against media ownership concentration: the Norwegian government even established a Media Ownership Act in 1997 to prevent a person from acquiring a significant position in the media market (Regjeringen, 1997). Grönlund and Björkroth (2011) have, however, noted that strict regulation in some other EU countries has not resulted in significantly lower concentration levels.

Other means to support free media include taxation, direct subsidies, distribution grants, etc. Norway continues to maintain a zero rate VAT for newspaper subscriptions (European Commission, 2014). In addition to the indirect VAT support, Norwegian newspapers also receive direct subsidies such as production grants, which are distributed according to circulation and market position. In 2013, the total of these subsidies amounted to approximately 345 million NOK (MediaNorway, 2014).

Perhaps the most noteworthy difference between the two markets is the significance of free newspapers. The number of free newspapers published in Finland was about 140 titles in 2010, while the corresponding number in Norway was only 33 free newspapers (Jyrkiäinen, 2012; MediaNorway, 2014).

5   RECENT TRENDS IN MEDIA MARKETS

In the following chapter, I will describe the common trends of circulation and price development and describe the factors affecting these trends.

5.1   Circulation development

According to a study by Peiser (2000), a significant reason for the decline of newspapers is the fact that younger people read less frequently than older. As the younger generation is displacing older ones (cohort replacement), the demand of newspapers declines. Younger generations' lower commitment to newspaper reading has already been noted in the 1980s (Lain, 1986). In the US, however, newspaper circulations have been observed to decline in all age groups, education levels, ethnic groups and income levels (see Appendix 3; Edmonds et al., 2013b). No significant differences between different groups can be observed, which highlights the fact that the challenges the newspaper market is facing are on a very general level.

Figure 4: The total circulation of Finnish newspapers, 2004-2013
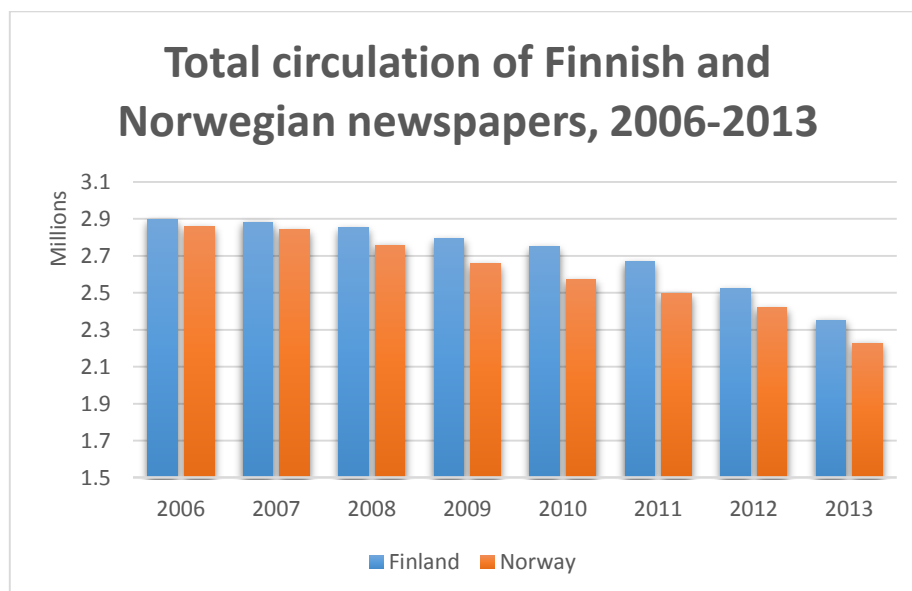
*Source: MediaAuditFinland and MediaNorway (2014)*

Total newspaper circulations in Finland and Norway in the past decade have been quite closely at the same level, the total number ranging between 2 and 3 million (Figure 4). In Finland, newspaper circulations have been declining with an accelerating rate for the past

decade. Total newspaper circulations have dropped 23 % in the past ten years, and over 17 % in the last three years. Newspaper circulations in Norway increased until the beginning of 1990's, after which there has been a gradual downfall (Østbye, 2007). The overall decline rate has been very similar to the circulation decline in the Finnish market, the decline rate being even slightly steeper than in Finland.

5.1.1   Population growth

Norway's total population was 4,95 million in 2011 and 5,02 million in 2012, while the corresponding figures for Finland were 5,38 million and 5,41 million (The World Bank, 2014). Norway's population has been growing steadily at a faster rate than Finland's (see Figure 5). The growth rate of Norway's population increased until 2008, after which the growth rate has been annually approximately 1,25 %. The population growth of Finland has been slightly under 0,5 % annually during the past ten years.

Figure 5: Total population in Finland and Norway, 2004-2013
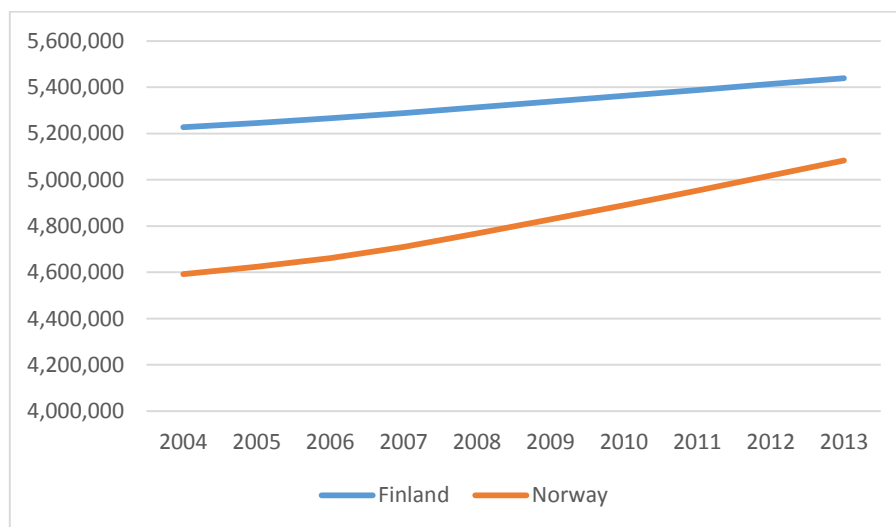
Source: The World Bank (2014)

According to previous studies, circulations commonly increase as area population increases (see Grotta, 1977). Even though the population growth rate in Norway is faster than in Finland, most of the population increase is caused by immigration. In 2015, more than 15 % of Norwegian population were immigrants (Dzamarija et al. 2015). It can be assumed that immigrants are less active readers of local newspapers as the locals themselves, which suggests that the slightly higher population growth in Norway should not have had a significant effect on newspaper readership.

Online advertising has increased rapidly during the last decade. As described in Figure 6, total spend on online advertising is up over 300 percent from 6,6 million euro in 2006 to 27,3 million euro in 2013. A major part of digital advertising in the US is however in the hands of global internet giants such as Google and Facebook (Mitchell, Jurkowitz, & Guskin, 2013). In 2013, 5,4 percent of online advertising in Finland was in controlled by city newspapers (Sanomalehtien liitto, 2013). Traditional media houses have been struggling to obtain a similar competitive position in online advertising as they enjoyed before the breakthrough of internet.

Figure 6: Total online advertising spending in Europe, 2006-2013
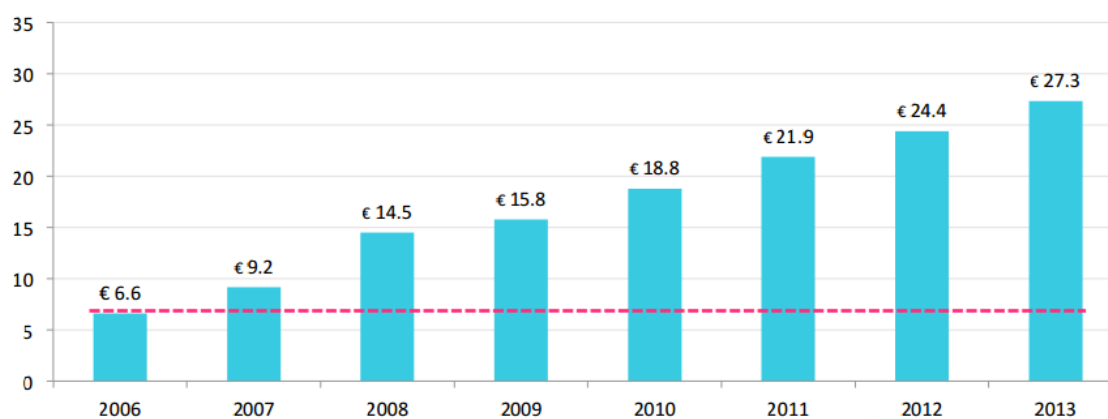
Source: Knapp (2013)

5.2 Subscription price development

The VAT increase in Finland came into force on 1 January 2012. According to price data from Statistics Finland, the monthly change of average Finnish newspaper subscription prices was 9,6 percent in January 2012, while during periods prior to 2012 the monthly change remained between 0-2 percent (see Appendix 5).

As can be seen in Figure 7, the average prices for continuous subscriptions have increased annually by 3-4,5 percent during 2007-2011, while in 2012 the total average price increase for continuous subscriptions was approximately 14,5 percent. The average price increase has stayed well above the annual consumer price index (CPI) inflation rate in Finland almost every year (see Appendix 6).

Figure 7: Finnish newspapers' avg subscription price change, 2007-2013, continuous subscriptions (%)
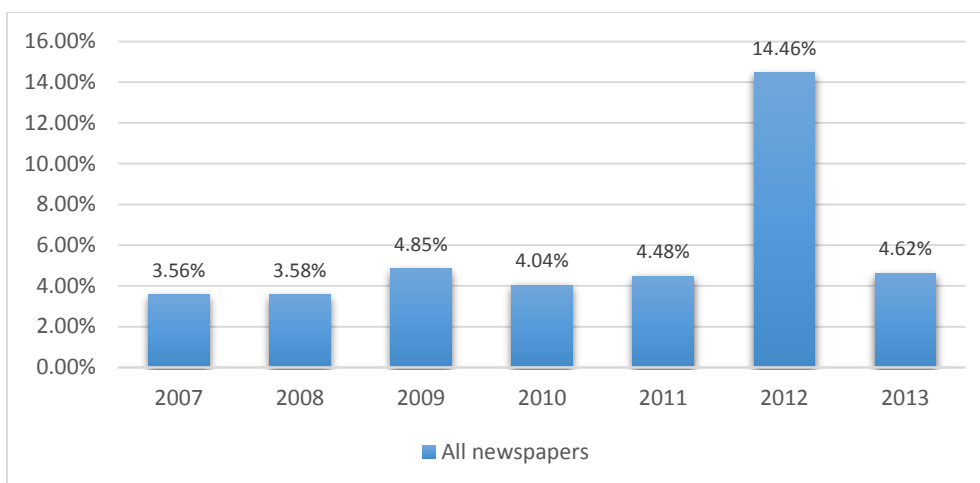
According to an estimate by the Development Manager of Statistic Finland, Ilkka Lehtinen, the VAT increase for newspapers has transferred fully into Finnish newspapers' subscription prices (Lehtinen, 2012). When the 2012 price increase of 14,46 percent is adjusted by the common annual price increase of 3-5 percent, the effect of the VAT increase in the beginning of 2012 can be estimated to be at least the size of the 9 percent increase. The same development applies to publications on different circulation levels: the average annual subscription price increase in 2012 has been 8,5-10 percent higher compared to other periods. Also the January increase of 9,6 percent can be loosely interpreted to confirm that the VAT increase has been fully transferred into the subscription prices.

According to price data collected by Høst (2013), subscription prices of Norwegian newspapers have increased on average approximately 2 percent annually, which is roughly the average consumer price index (CPI) inflation rate in Norway (see Appendix 6). During the Finnish VAT increase period in 2011-2012, no significant price development changes can be observed in the Norwegian market.

5.3   Substitution to digital media

Demand for newspapers has been declining during the past decades but online media has not been able to grow correspondingly and has been struggling to refill the gap (see Appendix 1). While online media has not been considered as a perfect substitute to print media, plenty of online publications and services can be considered as direct, or at least indirect, substitutes

for online media. Potential substitution from print to online may thus be shifting to social media and other emerging web services that are not based on traditional print media.

Still in 2013, Finnish readers relied mostly on print newspapers: 89 % of population read printed newspapers weekly, while for computers, mobile phones and tablet computers the percentage were only 56 %, 24 % and 12 % respectively.

6 STATISTICAL ANALYSIS OF TAX EFFECT ON MARKET DEMAND

As described in Chapter 4, the 9 % VAT increase has raised newspapers' subscription prices accordingly. A price increase will theoretically affect the demand of newspaper subscriptions (i.e. circulations), depending on the price elasticity of demand.

Over the past 50 years, the price effect on newspaper circulations has been studied several times (see subsection 1.2). Since the supply channels in the newspaper market have significantly advanced over the past ten years due to developed technology, the market structure has changed and news competition has become more intense and more varied. As noted in subsection 3.2.1, price elasticity of a commodity depends on the market structure: price elasticity in a monopoly market is usually lower than the one in a competitive market.

In the following chapter, I will present the empirical research regarding the impact of price change on newspaper circulations in Finland.

6.1 Research objective and hypotheses

The research objective is to study the effects of the VAT change on Finnish newspaper demand. The research aims to determine whether the change in average subscription prices caused by the VAT increase has had a statistically significant effect on newspaper circulations. The objective of the research is also to estimate the price elasticity of demand for Finnish newspapers. The results of the research are used to determine whether the elasticity of demand has changed during the past decade due to changes in market structure.

6.2 Research method

The impact of the price change on circulations is studied using the difference-in-differences (DID) estimator with a control group. The estimator indicates the impact of a policy change (VAT increase) on demand (circulations), treating other factors as constant. The DID approach has been applied in many studies in economics regarding changes in governmental policy. One classic example of this approach in economics is a study by Ashenfelter and Card (1985) when they studied the effectiveness of training on employee earning structure for

participants in governmental training programs. The same method was used by Card and Krueger (1994) to study the effect of minimum wage on employment in the US. Card and Krueger (2000) also updated their study later on with larger payroll data from multiple periods to account for the common trends assumption. In this study we apply the method presented by Angrist and Pischke (2009, p. 233).

A basic requirement for a reliable DID estimation is parallel trends assumption, which means that the historical trends of the treatment and control groups should be aligned before the treatment. The advantage of this approach is that it measures both differences over time and differences between the treatment and control groups, while a normal fixed effects model accounts only for the time-invariant characteristics but fails to control for the underlying trend.

Figure 8: Treatment effect in DID setup
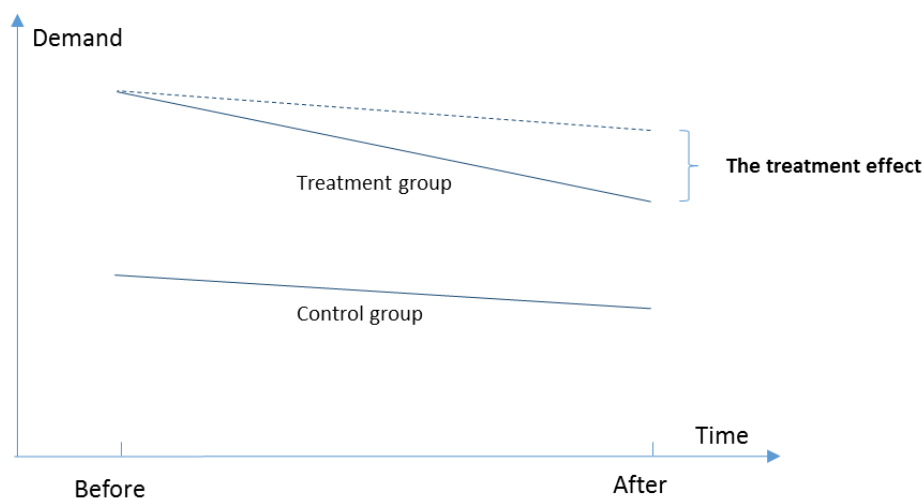
Source: Application of Angrist & Pischke (2009, p.231)

The key assumption for the DID estimation is that if the treatment group had not been influenced by the treatment, both population would have experienced same trends. If the parallel trends assumption applies to a research setup, the treatment effect of an individual event can be measured by estimating the potential trend value and comparing this to the actual outcome. The potential trend value can be estimated with the control group.

Previous research studying the price elasticity of newspaper demand has been mainly conducted applying a multi-variable regression. This study utilizes the DID method due to the possibility to estimate the immediate effects of a policy change in Finland.

The DID estimator is used in this study to compare the pre- and post-treatment averages of circulations between Finland and Norway over the same period. First, the difference between the treatment and control groups and the difference between pre- and post-treatment outcomes is calculated, and the difference between these two differences is the DID estimate. The objective of this method is to compare the development of two groups, which have consistent characteristics excluding the treatment effect, so that the difference in the developments after the treatment could be interpreted as the effect of the changed environment.

The effect of changes caused by other market factors than the policy change is controlled by data from Norwegian newspapers over the same period. The control group is selected to represent a similar type of newspaper market as the one in Finland, with a similar development trend. An ideal setup for the experiment would be, for example, a random selection of Finnish counties. This would give an optimal control group with similar characteristics. Due to a lack of this kind of natural control group, the objective is to select a control group which does not have any significant market factor changes independent of the Finnish market excluding the treatment itself.

6.2.1 DID regression

The regression used in this study is the following:

$$Y_{ict} = \beta_0 + \beta_1 X_c + \beta_2 Z_t + \beta_3 (X_c * Z_t) + F_i + \varepsilon_i \quad , \tag{2}$$

where Y_{ict} is the circulation variable, X_c is a dummy variable for treatment and control groups that equals 1 for Finland and 0 for Norway and Z_t is a dummy time variable for pre- and post-treatment periods that equals 1 for the year 2012 and 0 for 2011. The regression coefficients are depicted by variables β_i ($i = 0,...,3$) and ε_i is the error term. $X_c \cdot Z_t$ is a dummy interaction term that equals 1 for post-treatment observations in Finland. F_i are dummy variables for individual newspapers, which are used to control for the fixed effects of individual newspapers. The coefficient of the interaction term β_3 is the DID estimator that measures the impact of the treatment on newspaper circulations.

The regression coefficients β_i ($i = 0,...,3$) can be explained as follows:

β_0 : the mean of control group on the baseline

$\beta_0 + \beta_1$: the mean of control group in the follow-up

β_2 : the difference between treatment and control groups on the baseline

$\beta_0 + \beta_2$: the mean of the treatment group on the baseline

$\beta_0 + \beta_1 + \beta_2 + \beta_3$: the mean of treatment group in the follow-up

β_3 : the DID effect

The newspapers are also divided into different groups according to their circulation levels. These groups were analysed separately to find out whether there is any distinction in the behaviour of different consumer sub-groups.

6.2.2   Control group

Norwegian market is selected as the control group, since it is considered a market of a similar size and other major media characteristics including overall newspaper readership as well as through different age groups, and a similar circulation development trend. Swedish market was also considered as a control group; however, the size of the Swedish market is significantly larger and the decreasing trend of newspaper demand has been much steeper. Thus, the Swedish market did not apply for the study as well as the Norwegian market.

6.2.3   Parallel trends assumption

A minor disadvantage of the statistical research setting is that newspapers may have sold subscriptions for 2012 in advance, already in 2011. According to the Finnish government's proposal 52/2011, advance payments before 1.1.2012 remain subject to the earlier legislation, which means that these payments have the benefit of accounting for the zero VAT rate (see subsection 3.2.4 about arbitrage effect). The zero rate can be used if the subscription fee is accrued or the paper is delivered before the new law enters into force. This could potentially reduce the effect of the VAT increase on circulations shown in the research results, since the demand effect could thus be divided over a longer period.

To test and verify that the parallel trends assumption holds for pre- and post-treatment periods in Finnish and Norwegian markets, I have utilized so-called "placebo experiments". Executing artificial treatment effect tests allows examining whether any deviating effect has occurred in the treatment group relative to the control group during other periods than the treatment period. Lechner (2011) states that any deviation or a sign of an artificial treatment

effect before the treatment may be interpreted as either an anticipation effect (see subsection 3.3.3) or a selection bias of the study groups.

The placebo experiments for pre- and post-treatment will be performed in an identical order as the analysis for the treatment period. Further details and results for the control tests are provided in subsection 7.3.

6.3   Description of the data

In order to use the DID method, a panel data with statistics from two different countries and pre- and post-treatment periods is required. To be able to control for the parallel trend assumption relevant to the method used, also a longer time series is needed. For this, I have collected circulation data for the years 2006-2013 for Finnish and Norwegian newspaper markets and subscription price data over the same period for the Finnish market to support the evidence for the VAT incidence. Price statistics were not collected for Norway since sufficient data was unavailable for newspapers.

The Finnish circulation data consists of 175 newspapers and the Norwegian data consists of 228 newspapers. The data includes only newspapers that take part in the circulation audits and are published minimum once a week. Only newspapers are included in the study, since the behaviour of magazine demand and pricing differs from newspapers. Finnish circulation data is collected from MediaAuditFinland (former Finnish Audit Bureau of Circulations). The Norwegian circulation data is collected from MediaNorway, which compiles the data annually according to statistics from Norwegian Media Businesses' Association (MBL), Association of Local Newspapers (LLA) and media researcher Sigurd Høst.

Circulations for newspapers that have not been published in a given year have been set to zero. Observations of newspapers, which have started publishing in Finland during the observation period, have been set to zero for the previous years.

7 SUMMARY OF THE RESULTS

In the following chapter, I will present the results of the DID regression described in Chapter 5.

7.1 Description of data levels

The relationship between Finnish and Norwegian data is such that 43,4 percent of observations are from the treatment group, Finland, and 56,6 percent from the control group Norwegian newspapers. Of all observations, 21,7 percent were from Finnish newspapers in 2012, which describe the actual treatment outcome.

Figure 9: Average annual newspaper circulations
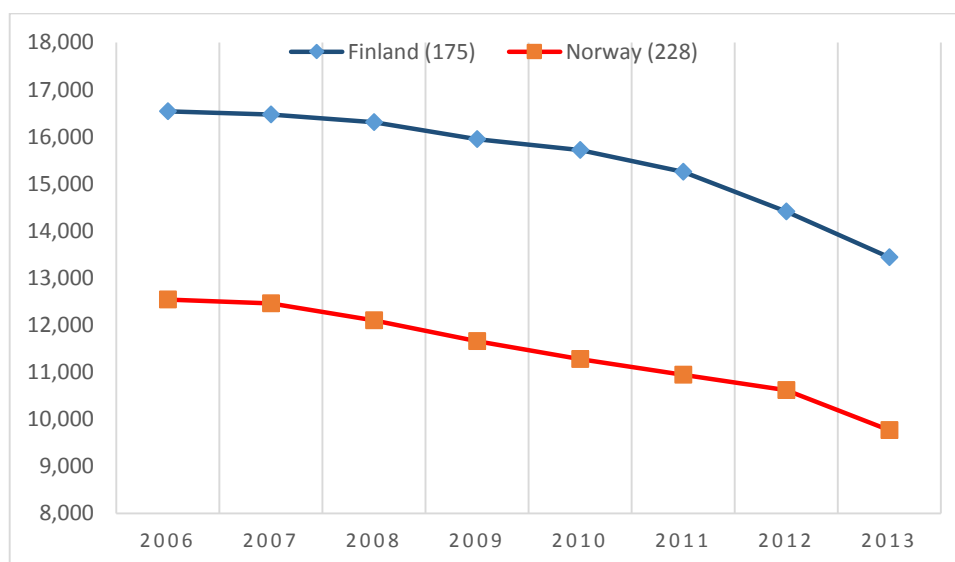
Source: MediaAuditFinland and MediaNorway

Average circulation for Finnish newspapers was 15 256 in 2011 and 14 412 in 2012, and the aggregate decrease in circulations was -5,5 percent. The corresponding figures for Norwegian newspapers were 10 947 and 10 618 with an aggregate decrease of -3,0 percent.

7.2 Description of the regression coefficients

The baseline difference in average circulations between Finnish and Norwegian circulations is 3 201,83 (regression coefficient β_1), which is statistically significant at all confidence intervals. The average change in total circulations in Finland and Norway from 2011 to 2012

is -329,37 (β_2). The DID estimator (β_3) describing the causal effect of the VAT change on Finnish average circulations is -514,67. The coefficient of the interaction term β_3 is statistically significant at the 5 % confidence interval.

7.3 Analysis on the demand effects

As estimated in Chapter 4, the price increase due to the VAT increase was approximately 9 percent, after accounting for the ordinary annual price development. The demand effect caused by the price increase is described in the table below. According to the DID regression results, the price increase resulted in an average decrease in circulation of -514,67 in 2012. The relative circulation decrease in Finnish newspapers caused by the VAT increase is thus 3,4 percent compared to the average 2011 circulation of Finnish newspapers (15 256).

Variable	Demand effect	Placebo tests		
	2011-2012	2010-2011	2009-2010	2008-2009
	(395 observations)	(393 observations)	(397 observations)	(389 observations)
DID estimator	-514.6685 **	-123.6394	-60.02762	-41.1839
	(251.7407)	(160.3057)	(182.792)	(199.4965)
Country (Finland)	3201.834 ***	357.000 ***	2174.991 ***	-3080.712 ***
	(311.9946)	(0.0000)	(141.6222)	(134.9999)
Year	-329.3772 **	-329.0313 ***	-396.009 ***	-435.1036 ***
	(139.1323)	(105.1071)	(141.6222)	(146.8805)

[1] Figures in parentheses describe the standard errors of the coefficients
[2] Asterisks describe whether the coefficient is statistically significant in the 1 % (***), 5 % (**) or 10 % (*) confidence interval

The parallel trend assumption is tested with placebo experiments. The placebo tests are utilized to identify whether there has been any significant deviations from the common trend between the treatment and control group in years before and after the treatment. The tests, replicating the study performed for the treatment effect period, have been performed for three years prior to the treatment (2009-2011) and one year after the treatment (2013).

The tests for artificial treatment effects in years before and after the treatment show no significant deviations in the trends, which would indicate a bias between the groups. There is no sign of a significant treatment effect in 2011, which might indicate an anticipation effect in utilizing the possibility of advance payments to receive benefits from the lower VAT rates. The DID estimate for 2011 is slightly higher than in 2010 and 2009, although all DID estimates except for 2012 are highly insignificant.

Variable	Circulation levels, 2011-2012		
	<5 000 (179 observations)	5 000-15 000 (150 observations)	15 000- (66 observations)
DID estimator	-49.2807 *** (15.2811)	-71.0455 * (41.6528)	-1292.893 (1212.764)
Country (Finland)	2003.593 *** (9.5830)	9995.831 *** (21.0983)	-2508.897 *** (894.2745)
Year	-47.4068 *** (9.5830)	-184.7857 *** (35.9140)	-2137.794 *** (774.0138)

[1] Figures in parentheses describe the standard errors of the coefficients
[2] Asterisks describe whether the coefficient is statistically significant in the 1 % (***), 5 % (**) or 10 % (*) confidence interval

DID estimators for different circulation levels show a significant decrease on lower circulations. This indicates that the effect of the VAT increase has had a more material effect on smaller newspapers. Newspapers with a larger circulation and a stronger market position may have been better able to maintain their readership audience despite of the rising prices.

7.4 Estimated price elasticity

Obtaining the estimates for the change in price (VAT) and the change in demand (circulations), the price elasticity of newspapers in the Finnish market can be estimated. From the following basic equation presented in Chapter 3.2, we can estimate the price elasticity for newspapers:

$$e(R) = \frac{dQ/Q}{dP/P} = \frac{-3,4\%}{-9\%} = 0,37 \qquad , \qquad (3)$$

The estimated price elasticity of 0,37 is highly inelastic and corresponds to earlier studies in this subject.

Finnish government's proposal 52/2011 estimated that the VAT increase would transfer fully into subscription prices, which would reduce subscription revenue by 3 percent. The effects measured in this study correspond very accurately to the effects estimated in the government proposal: the VAT change increased prices approximately 9,5 percent and the relative decrease in revenue was approximately 3,4 percent.

8 CONCLUSIONS

The results of this thesis support the conclusions of many previous studies indicating that the changes in newspaper subscription prices have a limited effect on newspaper circulations. Regarding the universal development trends of the industry, it seems that structural changes in the market are the main cause to the sufferings of newspaper publishers and any reduction of circulations is caused more by a general trend in newspaper demand. Since changes in subscription prices do not significantly affect the behaviour of consumers, publishers have limited opportunities to improve their circulation volume through different price setting methods. On the contrary, it seems that a useful price setting principle for publishers could be to raise prices to optimize profits in the short run and thus gather short-term funding to finance investments for alternative business models.

As Grotta (1977) suggested, it is possible that a significant price increase could function as a catalyst to subscription cancellations (i.e. consumers considering terminating a subscription could use the price increase as an excuse). It seems, however, that the most reliable print media consumers are not significantly affected by the price and they will remain as customers as long as they prefer the product to online media substitutes. This highlights the price inelasticity hypothesis of newspaper demand: even though newspapers are losing ground and relevance to digital media, the subscription price does not seem to be the decisive factor in the development trend.

Print newspapers are generally considered to control a local monopoly position, or at least substantial control over the market. The initial hypothesis that the market position would have changed dramatically due to the increased amount of online substitutes does not seem to hold. Despite the downfall of demand, many consumers do not yet seem to consider online media as a direct substitute, taking into account that the substitution effect is relatively small even though most online publications remain free of charge.

In the near future, the reading habits of the new generation become prevalent, continuous subscriptions of online editions become more common and the technical solutions for e-book readers more sophisticated. Thus, the relationship between print and online editions providing similar content becomes even more interesting and it should be further explored whether the two become real substitutes from the consumers' perspective.

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APPENDICES

Appendix 1.Print and online advertising revenue in the US.

Print vs. Online Ad Revenue			
In Millions of Dollars			
	Print	Online	Total
2003	$44,939	$1,216	$46,155
2004	46,703	1,541	48,244
2005	47,408	2,027	49,435
2006	46,611	2,664	49,275
2007	42,209	3,166	45,375
2008	34,740	3,109	37,848
2009	24,821	2,743	27,564
2010	22,795	3,042	25,838
2011	20,692	3,249	23,941
2012	18,931	3,370	22,314

Source: Newspaper Association of America
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Appendix 2. Newspaper concentration in Finland.

Figure 1 Major newspaper publishers' share of total circulation 1986-2008
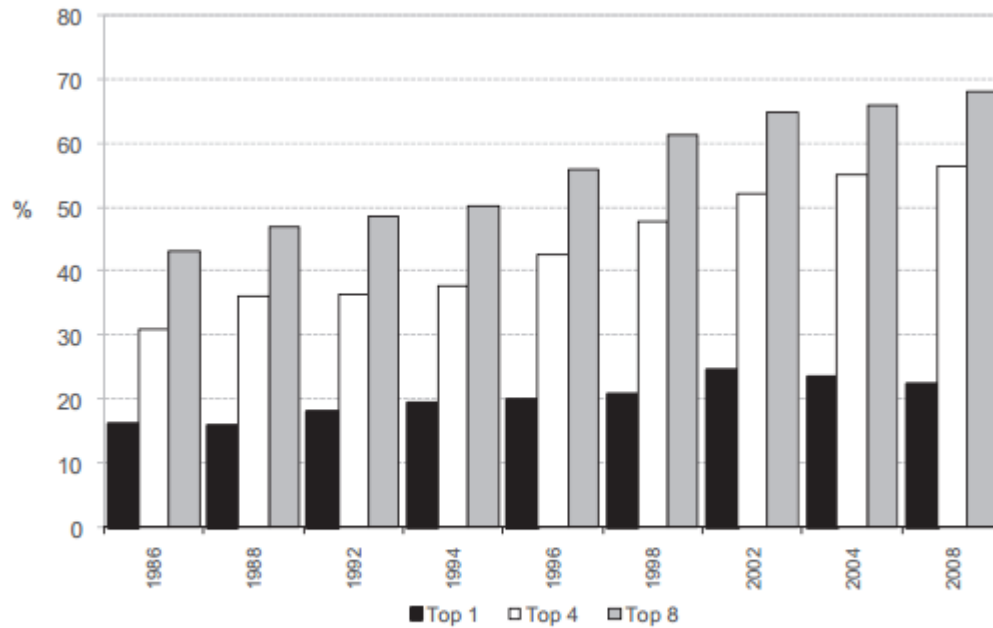
Note: total circulation is based on members of the Finnish Newspaper Association
Sources: The Finnish Audit Bureau of Circulation, Finnish Newspaper Association, Statistics Finland)

Source: Grönlund and Björkroth (2011)

Appendix 3. Demographic newspaper readership data.

Readership Falls for All Age Groups

Percentage Nationally Who Read Any Daily Newspaper Yesterday
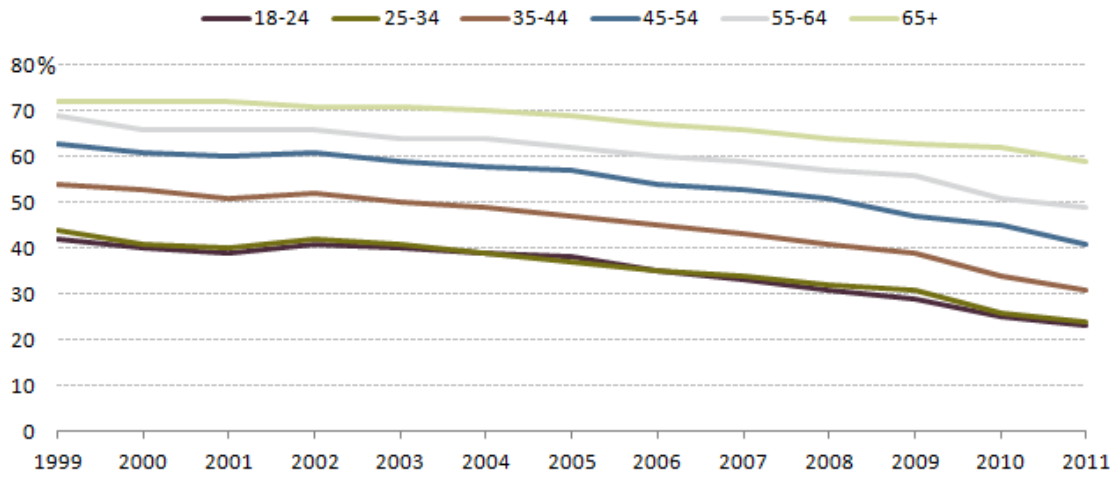
Source: Scarborough Research survey data
Note: 1999 – 2011 Scarborough Report, Release 1

PEW RESEARCH CENTER'S PROJECT FOR EXCELLENCE IN JOURNALISM
2012 STATE OF THE NEWS MEDIA

Newspaper Readership Correlates to Higher Education Levels

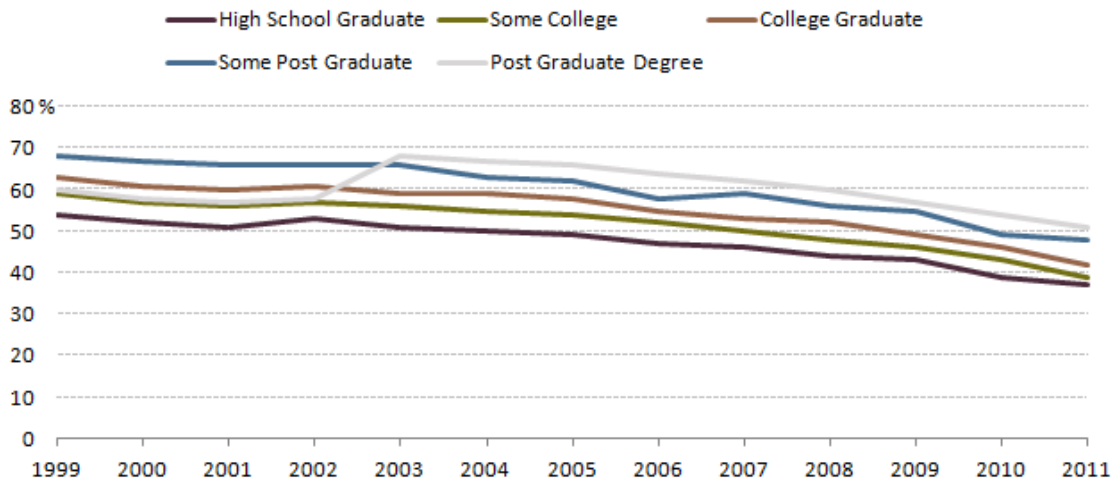*Percentage Nationally Who Read Any Daily Newspaper Yesterday*

Source: Scarborough Research survey data
Note: 1999 – 2011 Scarborough Report, Release 1

PEW RESEARCH CENTER'S PROJECT FOR EXCELLENCE IN JOURNALISM
2012 STATE OF THE NEWS MEDIA

Newspaper Readership Correlates to Higher Income Levels

Percentage Nationally Who Read Any Daily Newspaper Yesterday

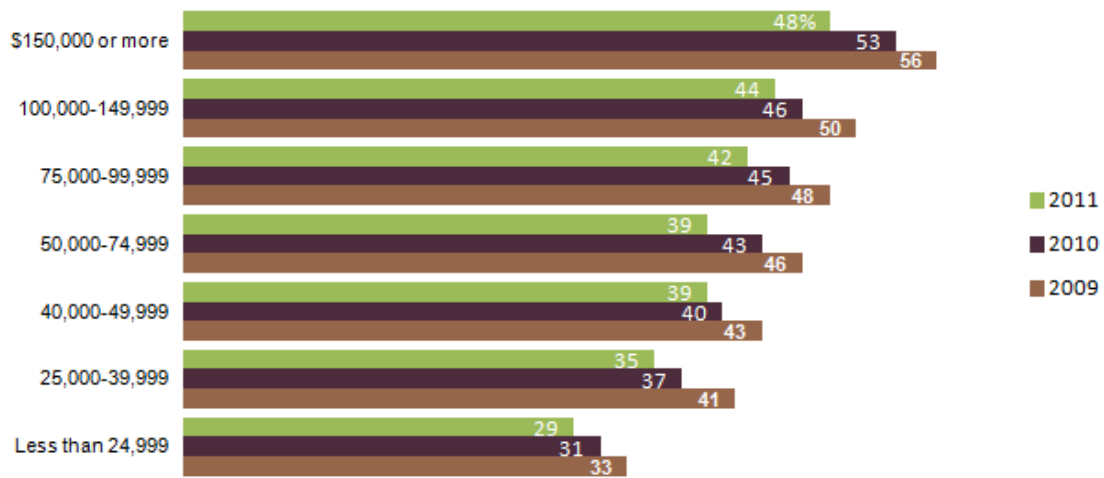| Income	2011	2010	2009
$150,000 or more	48%	53	56
100,000-149,999	44	46	50
75,000-99,999	42	45	48
50,000-74,999	39	43	46
40,000-49,999	39	40	43
25,000-39,999	35	37	41
Less than 24,999	29	31	33

Source: Scarborough Research survey data
Note: 1999 – 2011 Scarborough Report, Release 1

PEW RESEARCH CENTER'S PROJECT FOR EXCELLENCE IN JOURNALISM
2012 STATE OF THE NEWS MEDIA

Whites Are More Likely to Read Newspapers Than Other Ethnic Groups

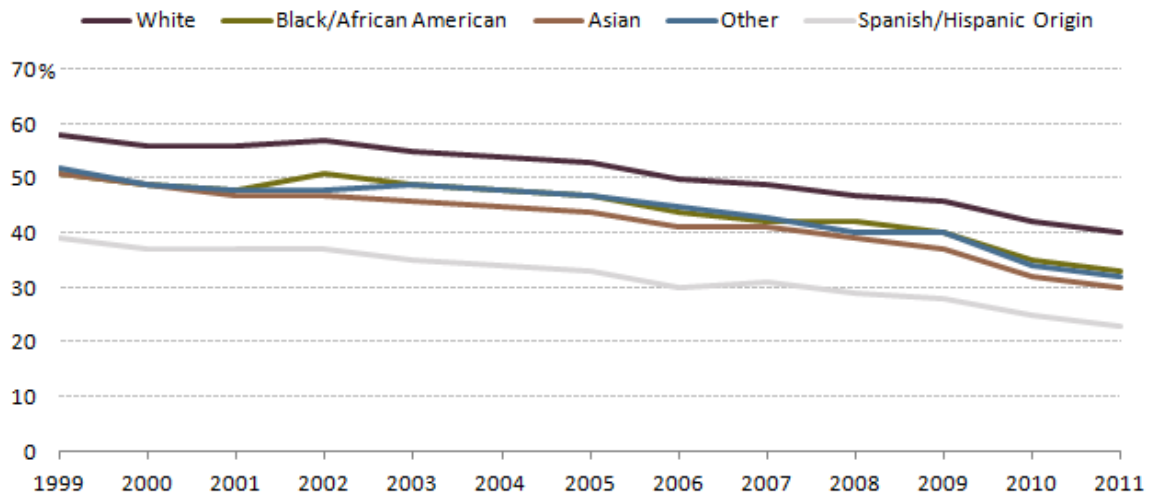*Percentage Nationally Who Read Any Daily Newspaper Yesterday*

Source: Scarborough Research survey data
Note: 1999 – 2011 Scarborough Report, Release 1

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2012 STATE OF THE NEWS MEDIA

Source: Edmonds et al. (2013b)

Appendix 4. Reader profiles for paid and free newspapers.

Table 1 Readers profile in four US markets 2005

	Paid Daily Readers	Free Daily Readers
New York		
Average age	48	40
Household Income	$107,000	$90,000
White	66%	36%
Boston		
Average age	49	37
Household Income	$98,000	$78,000
White	88%	61%
Chicago		
Average age	46	41
Household Income	$75,000	$69,000
White	48%	37%
Dallas		
Average age	48	36
Household Income	$96,000	$63,000
White	68%	32%

Source: Mahoney and Collins (2005)

Appendix 5. Newspaper subscription prices

Newspaper subscription price index, 2010=0											
Monthly change of Finnish newspaper subscription prices (%)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	0.00	0.00	0.00	0.33	0.00	0.00	1.98	0.00	0.00	0.00	0.00	0.00
2011	0.75	0.00	0.00	0.13	0.00	0.00	1.87	0.00	0.00	0.59	0.00	0.00
2012	**9.60**	0.00	0.00	0.00	0.00	0.00	2.96	0.00	0.00	1.00	0.00	0.00

Newspaper subscription avg prices											
Monthly prices of Finnish newspaper subscriptions (€)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2010	98.76	98.76	98.76	99.09	99.09	99.09	101.06	101.06	101.06	101.06	101.06	101.06
2011	101.82	101.82	101.82	101.96	101.96	101.96	103.87	103.87	103.87	104.49	104.49	104.49
2012	114.53	114.53	114.53	114.53	114.53	114.53	117.93	117.93	117.93	119.11	119.11	119.11

Source: Statistics Finland

Appendix 6. Average inflation rates (CPI)

average inflation	inflation	average inflation	inflation
CPI Finland 2014	1.12 %	CPI Finland 2004	0.19 %
CPI Finland 2013	1.48 %	CPI Finland 2003	0.88 %
CPI Finland 2012	2.81 %	CPI Finland 2002	1.57 %
CPI Finland 2011	3.42 %	CPI Finland 2001	2.58 %
CPI Finland 2010	1.19 %	CPI Finland 2000	3.04 %
CPI Finland 2009	0.01 %	CPI Finland 1999	1.16 %
CPI Finland 2008	4.07 %	CPI Finland 1998	1.40 %
CPI Finland 2007	2.51 %	CPI Finland 1997	1.19 %
CPI Finland 2006	1.57 %	CPI Finland 1996	0.63 %
CPI Finland 2005	0.62 %	CPI Finland 1995	0.80 %
average inflation	inflation	average inflation	inflation
CPI Norway 2014	1.99 %	CPI Norway 2004	0.47 %
CPI Norway 2013	2.13 %	CPI Norway 2003	2.48 %
CPI Norway 2012	0.71 %	CPI Norway 2002	1.29 %
CPI Norway 2011	1.30 %	CPI Norway 2001	3.02 %
CPI Norway 2010	2.40 %	CPI Norway 2000	3.09 %
CPI Norway 2009	2.17 %	CPI Norway 1999	2.33 %
CPI Norway 2008	3.77 %	CPI Norway 1998	2.27 %
CPI Norway 2007	0.73 %	CPI Norway 1997	2.58 %
CPI Norway 2006	2.33 %	CPI Norway 1996	1.25 %
CPI Norway 2005	1.52 %	CPI Norway 1995	2.45 %

Source: inflation.eu