Master Thesis

The Pricing Policy of Alcohol Monopolies: the Case of Sweden and Quebec

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ABSTRACT

Alcohol is the reason behind a lot of valuable social interaction, but on the other side also causes a lot of harm. This harm is created by externalities that people do not take into account when they drink. A good example of this is drunk-driving. One policy measure to tackle the problem is to restrict the freedom in the market. One such way is for the government to take control over the sale and distribution of alcoholic beverages. Such alcohol monopolies exist for example in parts of North America and Scandinavia. This thesis is designed to take a closer look at the pricing policy of such alcohol monopolies to see how these companies try to reach the goals they have. To do this the pricing policies of the alcohol monopolies in Sweden and Quebec are analyzed. Generally speaking North American alcohol monopolies are found to have tax collection as a main goal, while Scandinavian alcohol monopolies are mainly concerned about improving upon the public health situation. Because this difference and other factors, alcohol monopolies cannot be judged as a whole. However, a very general conclusion is that alcohol monopolies have a higher price for their products than other free retailers and that especially cheap spirits are relatively expensive in Sweden, which supports their health goals. Furthermore, the pricing in Quebec raises the question whether this alcohol monopoly acts different than a privately-owned company would.

KEYWORDS

Alcohol, alcohol policy, alcohol monopolies, alcohol pricing, Systembolaget, SAQ.

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1. INTRODUCTION

Drinking alcoholic beverages is a important societal phenomenon that leads to pleasure and social interaction. Alcohol however also brings a lot of problems. Drunk people do damage to themselves and others. This has led most countries to adopt some form of alcohol policy, which supports drinking in a healthy way and which often includes restrictions to battle the negative adverse effects that come with it. An example of that are alcohol monopolies. Alcohol monopolies are a general term for countries or provinces where the government has given the mandate to one (mostly government-owned) organisation to perform the sales, distribution and/or production of alcoholic beverages. Having such a monopoly gives a relative big amount of control in comparison to countries with a more lenient alcohol policy. The question that this addresses is whether alcohol monopolies have a different pricing policy than other free alcohol retailers. Furthermore there will be a look at the goals and see how the pricing policy fits with the goals set and how this compares to the optimal situation.

To determine the pricing policy the price data for two monopolies and three Internet sites have been collected for a range of different beverages. With wine and spirits, two main groups can be identified. Comparing these prices, in groups and for different variables, the pricing policies will be compared with each other, to find out how they use this measure to reach their goals. Summarizing this, first the pricing policy will be identified and then its success will be analyzed.

This thesis is structured as follows. First, the related literature is discussed to see what has been already written about alcohol policy and how this applies to the subject of this thesis. In this section the SAQ and Systembolaget are also discussed, the two organisations that form the backbone of this thesis and they will be discussed them in detail, as well as the general alcohol situation in their country or province. In section 3 the gathered data will be explained and put in perspective. In section 4 the gathered knowledge will be put to use and the price data for first wine and then spirits will be analyzed and the results will be discussed. In section 5 a model will be used to put the pricing policy in the correct perspective and analyze what would be best. Section 6 will conclude and discuss the implications of this thesis.

2. RELATED LITERATURE

Alcohol policy is frequently discussed in the literature. Unfortunately specific pricing policies have not been discussed very frequently and at the most form only a limited part of the articles. However, some insight in the general alcohol policy literature is necessary to be able to put the rest of the thesis in the right context.

Holder (1993) discusses the different forms of public policy approaches to alcohol availability. He presents it as a simple continuum, which has prohibition and 'total open sale' at the two opposite sides. Prohibition is a complete ban on the manufacture, distribution and retail sale of alcohol beverages. The first step towards more liberation on the continuum is a public monopoly, which involves alcohol production, distribution and retail sale. A monopoly may include only one or two of these aspects, but for example in Sweden it includes all three elements. Another step on this continuum is the so-called 'restrictive free market'. In this variant the government controls and regulates the retail market by licensing private individuals to perform the production, distribution and/or retail sale. This way it can influence certain factors by deciding who gets the license. The most unrestricted alternative is the 'totally free market', where there is no governmental interference.

Before the 19th century state monopolization was mainly used to increase the state benefits (Room, 1993). After that, concerns about the negative consequences of alcohol use became of greater public interest. In the Swedish town of Falun the first alcohol monopoly was implemented and soon other Swedish towns followed. The main motivation for this was formed by the misbehaviour of visitors of saloons and the policy was intended to battle this disorder and violence.

Early local monopolies in North America were more concerned with the "off-premises" sales. The first so-called dispensary system was set up in Athens, Georgia in 1891 (Room, 1993). More places followed and the systems started to operate on a wider basis. Following the aftermath of World War I, alcohol monopolies became more common in North America. Between 1933 and 1935 15 U.S. states set up wholesale monopolies and in most cases also retail monopolies. Later they were joined by three more states (Room, 1993).

Room (1993) separates three main aims of the alcohol monopolies by 1940, which are still relevant for most governments today. These three reasons are:

1) To secure government revenue

2) To eliminate organized crime in alcohol distribution[1]

3) To structure purchasing and consumption so as to minimize harmful drinking.

[1] This was important in the aftermath of the Prohibition.

Horvevak & Österberg (1992) agree that an important justification of the monopolies is that the exclusion of private interests from the alcohol trade makes it possible to direct the regulation of sales towards a more favourable social outcome. A free market would lead to expansion of the alcohol production, leading to a higher consumption and therefore also a higher amount of alcohol-related problems. They call this health motive fairly recent and say that in history tax collection was the main motive for a state monopoly.

The three aims presented by Room cannot automatically be transferred to the whole world, as they differ between monopolies. The second aim for example is more relevant for North America than for the European situation. Room also argues in which ways an alcohol monopoly can be used as an instrument for public health:

1) The location, number and hours of sale of sales outlets, and the conditions of sale can be set to balance public health and order interests against considerations of convenience.
2) The private profit motive is eliminated from the sales transaction.
3) Some research studies are more readily carried out in the context of a provincial, state or national monopoly.
4) Server training and intervention against selling to the already toxicated or the underaged can be more effectively implemented in a monopoly system with a relatively well paid and stable workforce.
5) A government store system provides a servicable and hospitable base for public health-oriented educational programs and health promotion campaigns.

Especially point 1, 2, 4 and 5 are key points for how the North American and Scandinavian alcohol monopolies legitimize their business practice.

2.1 Effectiveness

There is a lot of literature supporting the effectiveness of following a restrictive alcohol policy. Apart from the already mentioned articles, which discuss why it should work in theory, this has been often confirmed by performing tests. In American studies it is found that higher beer taxes are associated with fewer crash deaths on the highway (Ruhm, 1996), as well as deaths caused by liver cirrhosis (Cook, 1981). [2] For Ireland, the same results were found; a simultaneous increase of the excise duties with 12,5% on spirits and 20% on beer would reduce the liver cirrhosis death rate by 6% and the road fatality rate by 4% (Walsh, 1986). Also, American studies suggest that the behaviour of

[2] Liver cirrhosis is commonly related to be a consequence of alcohol abuse.

younger drinkers is more affected by alcohol taxes than that of older drinkers (Grossman et al., 1994). Kenkel (1996) provides an unusual view and calls alcohol taxation a second-best solution. Drunk driving causes a large portion of the alcohol-related harm. Giving more frequent and more severe punishment would be another solution to reduce alcohol-related harm.

The effectiveness of alcohol monopolies in reducing the harmful effects of alcohol abuse seems to be undisputed in the literature. Criticism is more focused on the restrictive nature of most alcohol policies. Room (2003) gives some explanation why the effective measures can be unpopular. He notices that these strategies can hurt the economic interests. But a more important reason is that effective strategies that are unused are usually unused because they are hard to combine with the ideas and values the population has. The effective strategies that the culture easily accepts are already in place. Further steps will "push at the boundaries of cultural acceptance". Room says that the implication is not that further steps are impossible, but that they will be more difficult to take for the political process. Room et al. (2005) explain that in many places the alcohol industry effectively has exercised a veto on the alcohol policy measures, which they use to move the main policy measures to more ineffective protective policy such as education. Education (which in North America is often funded by the alcohol industry) in turn can be used to portray drinking as something that adults do. This way an image can be created which can encourage the current youth to become a customer when they become an adult (Room, 2003).

Because the alcohol monopolies in Quebec, Canada (SAQ) and Sweden (Systembolaget) offer the most comprehensive price information on their Internet sites these two monopolies will be used as an example. Furthermore, it is an opportunity to look at differences between Scandinavian and North American alcohol monopolies. The objectives and the structure of these two monopolies will be discussed in more detail in the next two sections.

2.2 Systembolaget

Systembolaget, or the Swedish Alcohol Retail Monopoly, is the Swedish alcohol monopoly.[3] Systembolaget's vision is to "establish a healthy drinking culture, whereby we can enjoy Systembolaget's drinks without harming either ourselves or other people".[4] The mandate that Systembolaget has from the Swedish government focuses on helping to limit the medical and social harm that is caused by alcohol and thereby improving public health. In practice this leads to a couple of guidelines, which are:

[3] http://www.systembolaget.se
[4] http://systembolaget.se/Applikationer/Knappar/InEnglish/ourvision.htm

- The restriction of availability through the number of stores, opening hours and retail rules.
- Not attempting to maximize the profit.
- Not promoting additional sales.
- Being brand-neutral.
- Providing a high standard of customer service.
- Being financially efficient.

Systembolaget's history starts in Falun, 1850, where a company was formed that got full rights to the sale and serving of alcoholic drinks in this town. This was the first alcohol monopoly in the world granted by a government and because of its success it subsequently spread over the rest of Sweden. All the local monopolies were merged into Systembolaget in 1955.

Systembolaget takes pride in having a wide product range and they claim to have one of the most extensive product lines in the world, with a range of 3.000 brands of beer, wine and spirits. They are also proud on the knowledge of the staff and their nationwide service. Anno 2009, Systembolaget has 412 stores and over 500 agents that serve smaller communities (Systembolaget, 2009). The agents do not hold any stock, but they claim that the entire product range can be ordered and will be delivered the next day or the day after that, depending on the location in Sweden.

Holder et al. (2007) researched what the consequences would be if the current monopoly system would be abolished. In order to do that they made a general forecasting model, which tries to identify key variables that influence drinking and derive the elasticity and the expected changes in the key variables. Step 2 consisted of estimating the future per capita consumption and then an estimation of the future alcohol-related harm is made. There are two alternatives of which the first is ‘the sales in licensed stores that only sell alcoholic drinks’. Here they estimate an increase of the annual consumption per person of 14%. This increase was 29% for a second alternative where drinks are sold in food stores. According to the report this would have a detrimental effect on the public health and safety of the Swedes and the estimations are more likely to underestimate the effect than overestimate.

Table 1: Increase in certain alcohol-related harm and diseases if the alcohol monopoly is abolished (2006)

	Special stores	**Food stores**
Alcohol-related diseases, deaths	460	1,060
Fatal accidents	110	240
Suicide	130	290
Murder	10	30
Total Deaths	720	1,620
Reported cases of violence/abuse	7,900	16,700
Days claiming sick leave	4,900,000	10,700,000

Source: Holden et al. (2007) - If Retail Alcohol Sales in Sweden were Privatized, what would be the Potential Conseguences? Swedish National Institute of Public Health, updated by Thor Norström using the figures for 2006.

2.2.1 European Union

Sweden became a European Union member state in 1995. The EU approved of the Swedish monopoly because the fundamental purpose was to protect the public health from the negative effects of alcohol. Still, Systembolaget needs to comply with the European law, which includes for example that there is no discrimination between the products. Swedish products have to be treated the same as foreign products and prices have to be set by certain criteria that do not favour the local products. Also, suppliers should be able to appeal to the decisions of Systembolaget, which led to the introduction of the Swedish Alcohol Product Range Board (Systembolaget, 2009, p.12). This led for example to the decision that it should be allowed to sell bag-in-box wines and mixed drinks in Sweden, after this was rejected in first instance. Furthermore, the Swedish Competition Authority closely monitors Systembolaget.

The influence of the European Union on Sweden's alcohol policy is extensive. The fact that there are no trade barriers within the European area means that it is harder for Sweden to have a firm control over alcohol imports and exports. Also, the restrictive alcohol policy came under tension. In the Franzén ruling[5] however Systembolaget was ruled compatible with the EU law. There were more court rulings necessary to decide on the rules regarding import and export. In 2006, in the Joustra ruling, the European Court of Justice decided that products acquired by private individuals for their own use and that are transported personally by the private individual that purchased them are

[5] Case C-189/95 (European Court). This ruling is more extensively discussed in section 5.3.

exempt of excise duties in the state of importation. For Swedish people specifically this means that they cannot order alcohol from foreign shops by means of trying to avoid to pay the excise duties. The following year, in the Rosenberg ruling, it was decided that the Swedish law that banned remote sales of alcohol contradicted EU law. This means that alcohol can be ordered from other countries, but that the Swedish alcohol tax will still need to be paid.

Alcohol imports are still a major limitation for the independence of the Swedish alcohol policy and because of the differences of Europe, tax cuts have been made to lower the price and to make it fit better to the rest of Europe and neighbouring countries.

2.2.2 Support

Systembolaget keeps track of the support of the retail monopoly. The Opinion Index (OPI) is one of their performance indicators. In a yearly survey they ask the following question:

"Do you think that Systembolaget and the monopoly on the sale of strong beer, wine and spirits should be retained, or would you like strong beer, wine and spirits to be sold in other stores?"

According to the results of the first survey in 2001, 49% of the respondents wanted to keep Systembolaget. After that there has been an upward trend, reaching a 66% level of support in 2009. Support is slightly higher for females, young (age 15-29) and old (65+) people and in the northern parts of the country (which has a relatively lower population density). Main reasons for support are that the system makes sure that alcohol can be sold in a controlled way and the size and quality of the product range. People that oppose the monopoly give as their main reasons that they are principally opposed to monopolies and they believe that the availability and opening hours would be better in the absence of a monopoly (Systembolaget, 2009).

The right-wing Moderate party in the Swedish government is historically opposed to the alcohol retail monopoly, but has not pushed the issue in recent years. On Internet forums however reactions and discussions of people both approving and disapproving can be found. The arguments used in this discussion roughly equal the results of Systembolaget's survey, which suggests limited openings hours and availability, together with a general disapproval of monopolies, are the main arguments against the current situation. Most forum messages show the signs of irritation regarding limitations in their freedom, often making comparisons to the more lenient policy in other European Union countries. The discussion on forums is mostly by people with limited expertise on the subject however and in scientific articles Systembolaget's existence, to my knowledge, never has been seriously challenged.

2.3 SAQ

The SAQ (Société des Alcools du Québec) is a government-owned corporation that is responsible for the trade of alcohol beverages in the Canadian province Quebec. The mandate of the SAQ from the government is to sell alcohol beverages and the mission is to provide superior service to Quebecers in every region of the province by offering a broad range of quality products (SAQ, 2010). The mandate of the SAQ involves importing, warehousing, distributing and selling several thousand types of products.

The SAQ works with strategic plans in order to set goals, with which they outline the future policy. Currently, the Strategic Plan 2010-2012 is in force, which is built on four strategic orientations:

-the organisation's agility
-the reputation as a responsible corporate citizen
-new growth paths within our industry
-customers' shopping experience

In the plan they also present a vision for this same period; for 2010-2012 this is: "The SAQ, a world leader in the selection and sale of wines and spirits." The SAQ relies on the innovativeness, know-how and enthusiasm of its employees to reach this.

2.3.1 History

The existence of the SAQ is connected to the era of Prohibition in Northern America. This period dates back to the second half of the 19th century, where Canadian states got the power to prohibit the retail sale of liquor after holding public consultations (Petkantchin, 2005). In 1898 there was a referendum in Canada to impose total prohibition, but even though a majority voted in favour of the proposal, it was not implemented because of the low turnout. Later attempts to enforce total prohibition in Quebec were unsuccessful. In 1918 however, the Quebec government managed to pass such legislation, but in a referendum the majority of Quebecers voted to exclude beer, wine and cider. This was an unusual result, since in 1919 Quebec became the only North American jurisdiction without a total prohibition, since only a ban on spirits was introduced.[6]

In 1921 the Alcohol Beverages Act was adopted in Quebec, with which partial prohibition was abolished and the SAQ was established.[7] The SAQ holds a monopoly on the sale of alcoholic beverages in Quebec, as well as the right to import and transport them. The SAQ was now also

[6] This information comes from the SAQ website (www.saq.com).
[7] The SAQ was named the Quebec Liquor Commission at the time.

responsible by means of permits to have a control over the sales to hotels, restaurants and clubs and got the task to perform checks on their responsibility.

Since 1921, relatively little changes have been made, except that the rules got a little less strict. For example, in 1978 a policy change was adopted that allows grocery stores to sell domestically produced wine. This was extended in 1983 by including imported wine that was bottled by privately owned manufacturers in the province (Trolldal, 2005). Currently the SAQ has 416 outlets and 395 agencies, as well as selling through their website (SAQ, 2010).

2.3.2 Support

The retail monopoly in Quebec seems to be more criticized than its Swedish counterpart. Most notable is the research by Petkantchin (2005) of the Montreal Economic Institute. He argues why privatization would lead to better results (health and government revenues), while intervening less with the freedom. As he puts it:

> "The justification for creating a government monopoly in 1921 with the establishment of the SAQ has been lost in the mists of time. Today's SAQ, on the contrary, is a commercial outfit with monopolistic powers, taking the place of private businesses that could very easily be doing this job."

The paper has led to moderate discussion in newspapers. In 2007, the President of the Youth department of the Liberal Party in Quebec, followed Petkantchin's reasoning and explained that the monopoly is outdated since it was set up in the context of the prohibition in the 1920's and that the government would not lose any power in regulation and prevention if things would change. However, supporters of the monopoly argue that the monopoly helps to reduce alcohol consumption and battle health issues. Figures of the percentage of Quebecers that actually support the SAQ have not been found.

When comparing it becomes apparent that the SAQ and Systembolaget are two relatively different organisations that seem to focus on different goals. This is directly visible in the mandates both monopolies got from their respective governments. Systembolaget's mandate, "helping to limit the medical and social harm that is caused by alcohol and thereby improving public health", immediately signals the main reason for the monopoly, which is coming more from a health perspective. The mandate the SAQ has is simply "to sell alcoholic beverages", which hardly gives any direction of what the organisation has to focus on. Criticism that the SAQ acts the same as a privately owned company (Petkantchin, 2005) can be supported by the little guidance that the mandate offers. A big example to illustrate that is that the SAQ does have promotional activities, while

Systembolaget does not make any advertisement for their products.[8] Promotional activities were even used to battle a decline in the sales of alcohol products in Quebec (Bégin et al., 2003). Looking at the literature however, Nelson (1999) did not find a statistically significant effect of alcohol advertising on alcohol consumption. Another big difference is that the SAQ features very prominently that they gather a lot of tax revenues and even mention this as their main goal on their website. Systembolaget, in contrary, features public health as the main reason and states clearly that all profit is invested in reducing alcohol-related harm, to show that the revenues are not a motive. Also, in their written material the SAQ puts a lot of weight on their international position and the worldwide competition for the best products. If there is indeed such a worldwide market for being able to offer the best wines, the SAQ and Systembolaget can actually be seen as competitors. This is something that might be reflected in the prices. This thesis will explore to what extent the SAQ's intentions can be seen back in their pricing.

2.4 Taxation

In this thesis the pricing of alcohol monopolies is compared with other 'free' retailers. One part of the price is the taxation of the alcoholic beverages. Drinks are usually distributed among a couple of categories, with which they make sure heavier alcohol is more heavily taxed. In this section the taxation in Canada, Sweden and France is discussed, since these are the countries where our primary data is from.

Sweden (and Scandinavia in general) has a reputation of being a country with high taxation. This reputation is confirmed when it comes to alcohol. The value-added tax (VAT) on alcoholic beverages is 25%, which together with Denmark and Hungary is the highest percentage in the European Union. The excise duties on alcoholic beverages works in steps and has some different categories that all have their own different taxation. Per hectolitre of wine there is a tax of 211,80 euro. For a regular bottle of wine of 0,75 litre this means 1,5885 euro specific alcohol tax (EU, 2010). There is a reduced rate for wines with an alcohol percentage lower than 8,5%, but these beverages are relatively uncommon. Fermented beverages other than wine and beer have the same tax calculation. Intermediate products have a stronger taxation of 443,32 euro per hectolitre of the product, with a reduced rate of 266,96 euro for beverages containing less than 15% of alcohol. Swedish tax on ethyl alcohol is the highest in Europe. Per hectolitre of ethyl alcohol 4921,09 euro is paid.

Taxation in Canada is rather complex when comparing it to a more European system. Comparable to the United States of America, Canada's provinces have a significant amount of

[8] This even goes as far as that Systembolaget is not allowed to cool any products, because this would create an unfair advantage for the chilled products in comparison to the other ones.

independence. This shines through in the taxation because taxes are levied on a national as well as a provincial level. On a nationwide level there are federal excise duties. For spirits the tax is 11.066 dollar per litre of ethyl alcohol (with the exception of spirits with an alcohol percentage of less than 7%). For wine the rate is 51,22 dollar per 100 litre, with a reduced rate for wine with an alcohol percentage less than 7%. These specific excise duties are lower than in Sweden and lead to the following specific price influence:

Table 2: A comparison of excise duties per litre of ethyl alcohol and per litre of beverage for beers, wines and spirits of the same alcoholic strength, in Canadian dollars.

% Alcohol content	Federal Excise in $ per litre ethyl alcohol			Federal Excise in % per litre of beverage		
	Beer	Wine	Spirits	Beer	Wine	Spirits
3.5%	$8.00	$7.03	$7.03	$0.28	$0.25	$0.25
7%	$4.00	$3.51	$3.51	$0.28	$0.25	$0.25
10%	$2.80	$5.12	$11.07	$0.28	$0.51	$1.11
15%	n/a	$5.12	$11.07	n/a	$0.51	$1.66

Source: Stockwell et al. (2006)

On a federal level there is also a Goods and Services Tax (GST) (Stockwell et al., 2006). This tax, as of the 1st of January 2008, is 5% and this is applied to the final price. There are taxes on the provincial level as well. These taxes differ between the different Canadian provinces. Our focus here is on Quebec specifically. In Quebec there is another provincial sales tax of 7,5%, which is also applied over the federal sales tax, leading to an effective rate of 7,875%. This rate is planned to be increased to 9,5% by 2012. However, Quebec does not have a specific additional alcohol sales tax, which makes sure that the total sales tax on alcohol in Quebec is 7,5%, which is amongst the lowest percentages in Canada. In Quebec there is also an additional to fund educational programs about alcohol in Quebec through the organisation Educ'alcool (Stockwell et al., 2006). This is calculated by 0,12 dollar per case of wine; 0,24 dollar per case of fortified wine and 0,36 dollar per case of spirits. There is another special levy of 0,89 per litre of wine and spirits and 0,40 dollar per litre of beer, when it is purchased in a shop or store. For on-premise consumption, there is a higher rate of 0,65 per litre of beer and 1,97 per litre of wine (Stockwell et al., 2006). This might explain for the lack of an alcohol sales tax. In table 2 an overview of the tax on some products is given and in the appendix table A1 gives the complete overview including every specific tax. Figure 1 shows another breakdown of price, for a 750 ml local spirits and a 750 ml imported wine.

Table 3: Summary of Federal and Provincial taxes on alcohol per standard drink applied to different strength alcoholic drinks in a Quebec Liquor Store

Beverage	Brand Name	% alcohol	$ Retail	SDs	$/SD	Total Taxes/SD	%Tax/$ Retail
Wine							
750ml wine	Famese	12,5%	10.50	5.45	1.93	0.437	0.23
750ml sherry	Brights 74	18,0%	11.25	10.46	1.08	0.329	0.31
Spirits							
750ml spirits	Smirnoff (Vodka)	40.0%	21.75	17.43	1.25	0.471	0.38
750ml liqueur	Hiram Walker (Schnapps)	22.0%	20.95	9.58	2.19	0.581	0.27
330mlx4 pack	Mike's Hard Lemonade	7.0%	11.20	8.05	1.39	0.303	0.22
355mlx4 pack	Motts Clamato Caesar	5.5%	12.00	6.81	1.76	0.350	0.20

SD = Standard drink[9], GST= General Sales Tax, PST= Provincial Sales Tax

Source: Stockwell et al. (2006)

[9] "The concept 'standard drink' is based on the idea that usual "units" of beverage such as a glass of wine of 12%, a bottle of 5% beer and a measure of 40% spirits all contain roughly the same amount of alcohol. In Canada, this is estimated to be 13.6 grams or 17.2 mls of ethul alcohol" (Stockwell et al., 2006)

Figure 1: Breakdown of the Sales Price of local spirits and imported wine in Canadian Dollars

Local spirits, 750 ml format
(in dollars and percentages)
March 27, 2010

Markup[10]	$11,59	52,8%
Supplier price, in Canadian dollars, including shipping	$3,68	16,8%
Excise taxes paid to the Government of Canada	$3,51	16,0%
Provincial sales tax	$1,53	7,0%
Federal goods and services tax	$0,97	4,4%
Specific taxes paid to the Government of Quebec	$0,67	3,0%
Retail price (per bottle)	$21,95	100%

Imported wine, 750 ml format
(in dollars and percentages)
March 27, 2010

Markup	$7,33	46,0%
Supplier price, in Canadian dollars, including shipping	$5,65	35,4%
Provincial sales tax	$1,11	7,0%
Federal goods and services tax	$0,71	4,4%
Specific taxes paid to the Government of Quebec	$0,67	4,2%
Custom duties and excise taxes paid to the Government of Canada	$0,48	3,0%
Retail price (per bottle)	$15,95	100%

Source: SAQ (2009)

To be complete, a brief look at the taxation in France will be presented, since in the first data analysis the SAQ and Systembolaget are compared with the prices on French websites. France has a very limited taxation on wine (3,55 euro and 8,77 euro per hectolitre for respectively still and sparkling wine), as well as on other fermented beverages than beer or wine. On intermediate products the rate is 223,29 euro per hectolitre of the product. The French tax on ethyl alcohol is 1512,96 euro per hectolitre of pure alcohol. The VAT in France VAT is 19,6%. In short, French tax on wine is very low compared to other countries including Sweden and Canada. French tax on intermediate products is above average in the European Union.

[10] The markup covers selling and marketing, distribution and administrative expenses and generates net earnings.

Table 4: Excise duties per hectolitre of product (in euro's):

	Canada (2008)	Sweden (2010)	France (2010)
Beer	1.93 (<1,2%) 11.62 (1,2%-2,5%) 23,23 (>2,5%)	16,29 (>2,8%)	2,71 (>2,8%)
Wine	1,53 (<1,2%) 21,95 (1,2%-7%) 46,13 (>7%)	211,80 (reduced rate for wines with a lower strength than 8,5%)	3,55 (still wine) 8,77 (sparkling wine)
Fermented Beverages other than Wine and Beer	N/A	211,80 (reduced rate for wines with a lower strength than 8,5%)	3,55
Intermediate Products	N/A	443,32	223,29
Ethyl Alcohol	823,39	4921,09	1512,96

Source: EU Excise Duties July 2010, Treff & Ort (2009), Stockwell et al. (2006)

Exchange rate of 29-11-2010 using www.xe.com l N/A = Not Available

2.5 Purchasing Process

Because this thesis takes a look at the prices and the pricing decision, an important aspect to analyze is to take a look how the process looks in which these prices are formed. In the previous section there was a look at the taxation, which especially for heavy drinks is a large factor in determining the price. In the SAQ section it was already visible that they see the wine market as a worldwide market and comparable to Systembolaget, the SAQ takes pride in offering a big and diverse selection of products.

2.5.1. Systembolaget

Systembolaget's purchasing process works with tenders and at the end of 2009 consists of 767 registered importers that are invited to tender. 409 were active in 2009. In total Systembolaget received 12.803 tenders, which made them try 10.008 products. Systembolaget yearly presents a document, called the 'Launch Plan', which is designed to show the product range strategy for the specific year. In this report they explain that the market is becoming more concentrated because of mergers on an international level. For Sweden specifically, this does not influence the market share and small suppliers were more prominent in 2009 than in 2008 (Systembolaget, 2010). It is noticeable that in the Launch Plan a specific reason is given for every product added to the product

line. However, Systembolaget does not make a notion of any international competition the way the SAQ does.

2.5.2. SAQ

The publications of the SAQ indicate that they want to strengthen its position strategically. In the annual report they say "when it comes to purchasing the SAQ is in competition with other major players around the globe" (SAQ, 2010). This is very different than the tenders for Swedish importers that Systembolaget uses. The SAQ also uses a tender system. The law in Quebec provides that only the SAQ has the authority to import alcohol beverages or to purchase them from another province. This is different from Systembolaget where the products about imported by external Swedish importers. When enquiring how the pricing of a specific product works, the SAQ answered that it is too time consuming for the personnel to react on individual enquiries.

3. DATA & HYPOTHESES

3.1 Data on wine

The data on the wine prices of different suppliers was collected between the 23rd of August and the 3rd of September 2010 using the respective Internet sites of SAQ, Systembolaget and the French Internet supplier 1855.com. Price information from the Internet site wine-searcher.com was also collected. This Internet site is used to create an overview of the average price of certain wines for all French suppliers.[11] It is possible that prices may have showed slight differences between these days, but this is assumed to have only a minor influence. Also, by means of testing this with a random sample, no changes have been found. While Systembolaget has a policy on never giving any discount on wine, there are three wines that had a lower price. This is explained on the Internet site as wine of which they are trying to sell their last stock, because no new stock will be bought and the wine will disappear from their collection. The SAQ and 1855.com do have discounts, but no radical differences have been found. As a result, the few prices with discount will be used as the actual price; also because discounts are a relevant element of the pricing decision.

While the wine profiles of the Internet sites of SAQ and 1855.com are detailed, the site of Systembolaget appeared to give less detailed information. Therefore it is not possible to present a full guarantee on the correctness of every wine. However, the different wines have been compared on different aspects other than name and year, such as appellation, producer and alcohol strength. All entries conveying any doubt have been removed.

All the collected data is about French wine, to exclude any possible effects from differences between the wine distribution in different countries. Also, all alcohol monopolies seem to have the most variety when it comes to French wine. While collecting the data the first focus was on the French region of Bordeaux and the famous 1855 classification of wines. This will be discussed in detail in a later stage. However, it is important to note that the classification consists of five categories, which differ in price, which makes it interesting to see the difference in prices.

To increase the amount of data points to use for the comparison of the pricing of the different suppliers all data from wines from Bordeaux that are not in the classification and that are sold by both the SAQ and Systembolaget are collected. Still having too little data points, this was first extended by adding wines sold in the French region Champagne. After that, because of the lack of wines in a lower price category, all French wines with a low price, sold by both suppliers, were added to the data set. This resulted in a data set consisting of the prices for 120 different wines sold by both suppliers. This includes 18 wines, for which there were prices available for multiple years. Since the

[11] Wine-searcher.com is not an actual supplier itself, which is a limitation. However, it is useful as a tool to get a quick and useful overview of the prices of all suppliers and because it is an average a general market price can be found. The results should however be treated with care.

same wine from a different year can be considered an individual product. That these prices have not found to form a particular pattern confirms this idea. The complete list can be found in Table A2 of the appendix.

3.2 Data on spirits

To increase the relevance of this thesis it is a good idea to extend this analysis, because alcohol monopolies also sell other drinks. Spirits are drinks which generally have an alcohol percentage of around 40%. Therefore it can be argued that they form a higher risk for public health, because drinking these beverages is a faster way to get drunk. Examples of spirits are gin, vodka, brandy, rum, tequila and cognac. Taxes on spirits are typically higher and that is why it is interesting to also compare the prices of these products for the alcohol monopolies. For spirits the process will be basically the same as with the wine section, with the exclusion of the wine sites, because they do not offer the products from this product category. Comparing the selections of the monopolies has led to a data set of 39 different drinks consisting of 2 brandy's, 15 cognac's, 3 gins, 3 rums, 1 tequila, 6 whisky's and 9 vodka's. This compromises a diverse set of data with drinks on both sides of the price spectrum. The countries of production of these spirits are mixed. Some are produced in Europe, some in North America and the location of the distributor can be different than the location of the original company. This might lead to small influences on the price. However, these influences are expected to be limited and should be in balance because there is no obvious pattern in the origin of the products.

Comparable to the wine chapter, data has been collected on the websites of the SAQ and Systembolaget. The data is correct as of the 11th of November and the national currencies are converted to the euro with the exchange rates of that same day. A complete list of the selected spirits can be found in Table A3 of the appendix.

It appeared to be more complicated to make the comparison with free retailers than for wine, because this category consists of multiple specific products and retailers tend to specialize instead of having a big collection across all beverages. The Internet retailer ‘The Whisky Exchange’ has found to have 22 out of 39 spirits. This is enough to make a small comparison with a big online free retailer. The Internet shop is from the United Kingdom and this country has about the half the taxes Sweden has, but roughly about three times the excise duties of Canada.

3.3 Hypotheses

From the previous literature research about alcohol policies, it clearly follows that the alcohol monopoly in Sweden is very different from the one in Quebec. The biggest difference is that Systembolaget seems to be very focused in preventing alcohol-related harm, whereas the SAQ has a

more widespread and commercial approach. This thesis will research the pricing policy to see how the monopolies compare to each other, but also how they compare to other open (Internet) retailers. This look at the pricing policy and how this policy complements the goals set by the monopoly is the focus of the thesis. The previous literature study has let me to form a couple of hypothesis of what results I would expect to find when comparing the pricing policies.

The taxation of alcohol is higher in Sweden than in Quebec and France. An obvious result would be to see that reflected when comparing the prices. Because for more expensive drinks taxation is relatively a smaller part of the price, the following hypothesis is formed:

1) Because of a higher flat alcohol taxation level 'cheap' alcoholic beverages are more expensive in Sweden, but more expensive drinks should be a relatively cheaper in Sweden.

Both Systembolaget and the SAQ see reducing alcohol-related harm as a goal. This can be seen as internalizing an externality. Other suppliers are expected to maximize their profit and not take this negative externality into account. This leads to a second hypothesis:

2) Alcohol monopolies' prices are higher in comparison with other (Internet) suppliers.

Sweden has responsible drinking as a main explanation for the existence of its alcohol monopoly and puts more attention to this than the SAQ. This is something that also follows from the level of excise duties, since the Swedish taxes are higher. This is clearly something that should be reflected in the price. From a health perspective, it is preferable that consumers choose drinks with a lower alcohol percentage, since this poses a lower health risk. This leads to the third hypothesis:

3) Drinks with a higher alcohol percentage are relatively more expensive in Sweden than in Quebec.

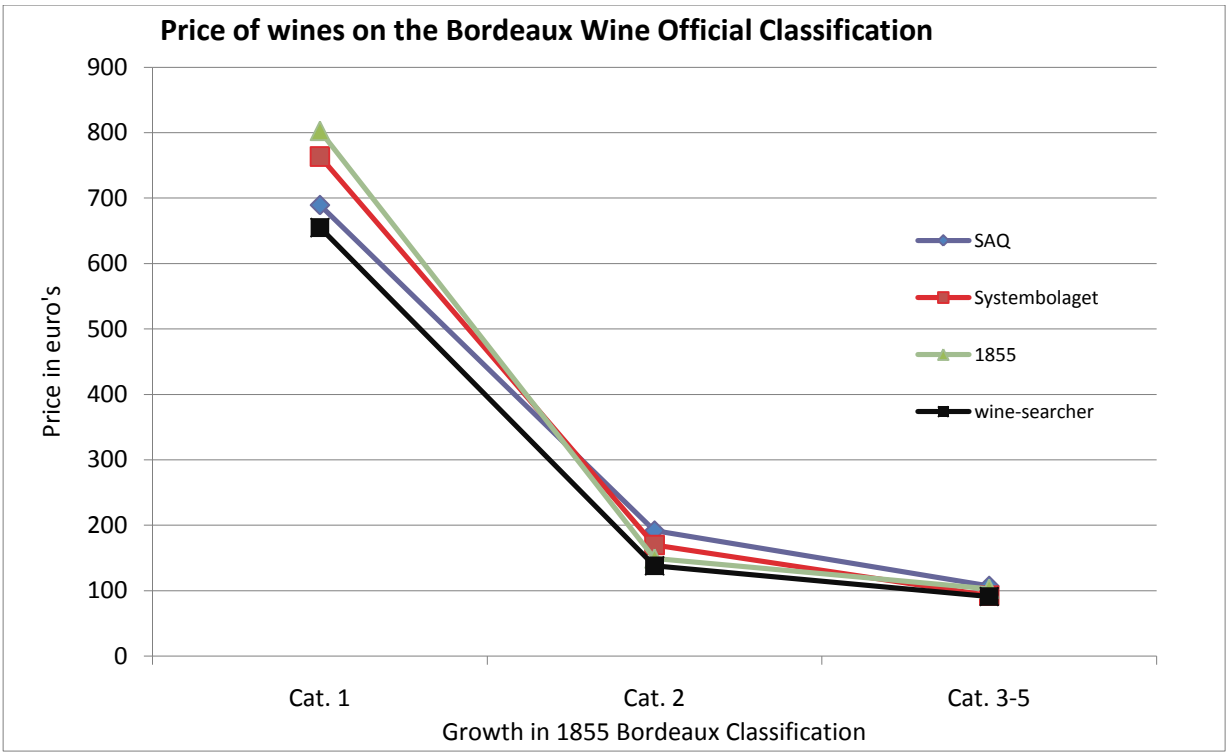
4. RESULTS

4.1 Wine

The first look will be at wines that are mentioned in the famous Bordeaux Wine Official Classification 1855 classification. On request of emperor Napoleon III wines were distributed among five categories ('growths') based on their reputation and the trading price. Since 1855 only two changes to the categories have been made, which has led to criticism that it is outdated as well as alternative classifications to make up for that. However, the 1855 classification still has an important influence and offers a first chance to look at the differences in a price category setting, since wines from the highest category (first growth) are typically more expensive.

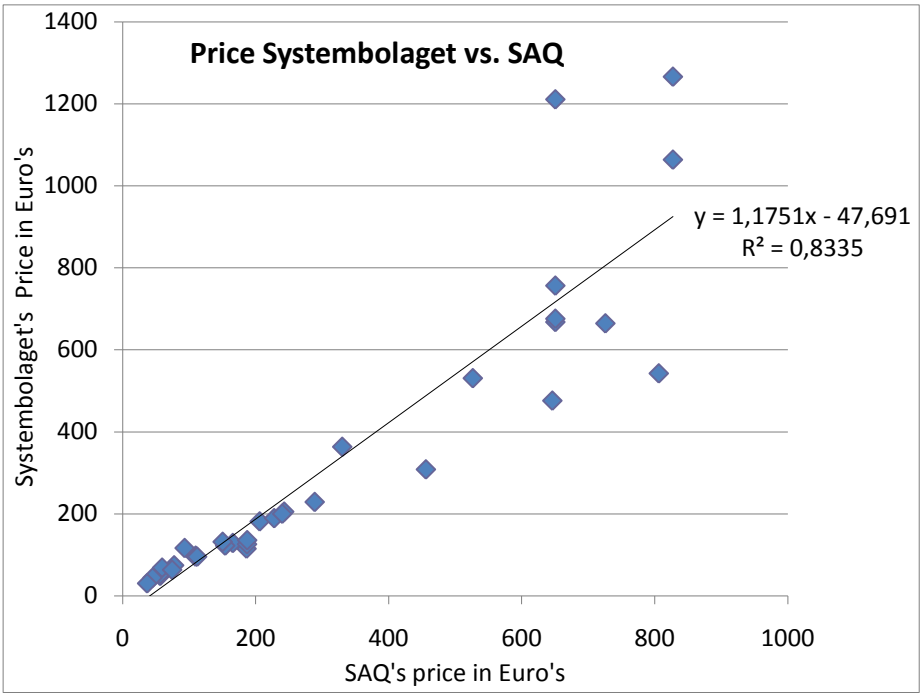
The overlap between the collections of The SAQ, Systembolaget and 1855.com provided 33 data points. First and second growth wines, the most famous one, are well represented, but for the latter three growths only eight data points turned up. This led to the decision to put these three in one category in order to be able to make a comparison.

Figure 2:



Wine-searcher.com has the lowest price in every category. What is noticeable is that SAQ is clearly cheaper when it comes to the first growth wines. Studying their prices it is clear that their way of pricing is very consistent. The first growth wines all fall in between 450 and 850 euro's, while 1855.com and Systembolaget price several wines above 1.000 euro's.

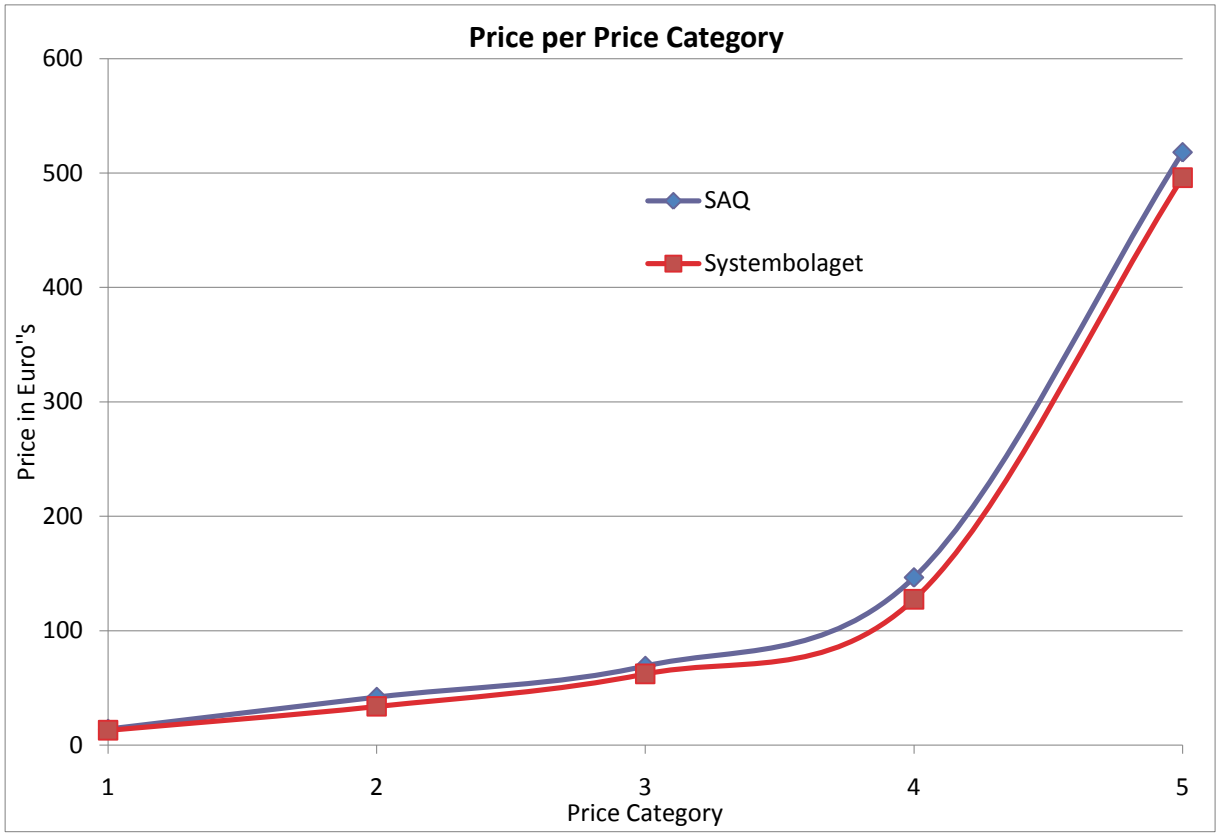
Figure 3:



Here the two monopolies are compared with their prices for wines that are mentioned in the Bordeaux classification. Systembolaget is displayed on the vertical axis and the SAQ on the horizontal axis. The trendline explains 83,35% of the variation and shows that the points are somewhat skewed to the left if you compare it with the line you would get by drawing a straight line.

To get an even better overview and comparison, more data points are needed. Now all the previously mentioned data points are added. First the two monopolies will be compared to see how their pricing compares to each other and to see if obvious differences can be found. The following graph shows the development of the average price when the wines are put in five different groups by their price. The categories are respectively: < 25 euro, 25-50 euro, 50-100 euro, 100-200 euro and > 200 euro. This leads to the following graph:

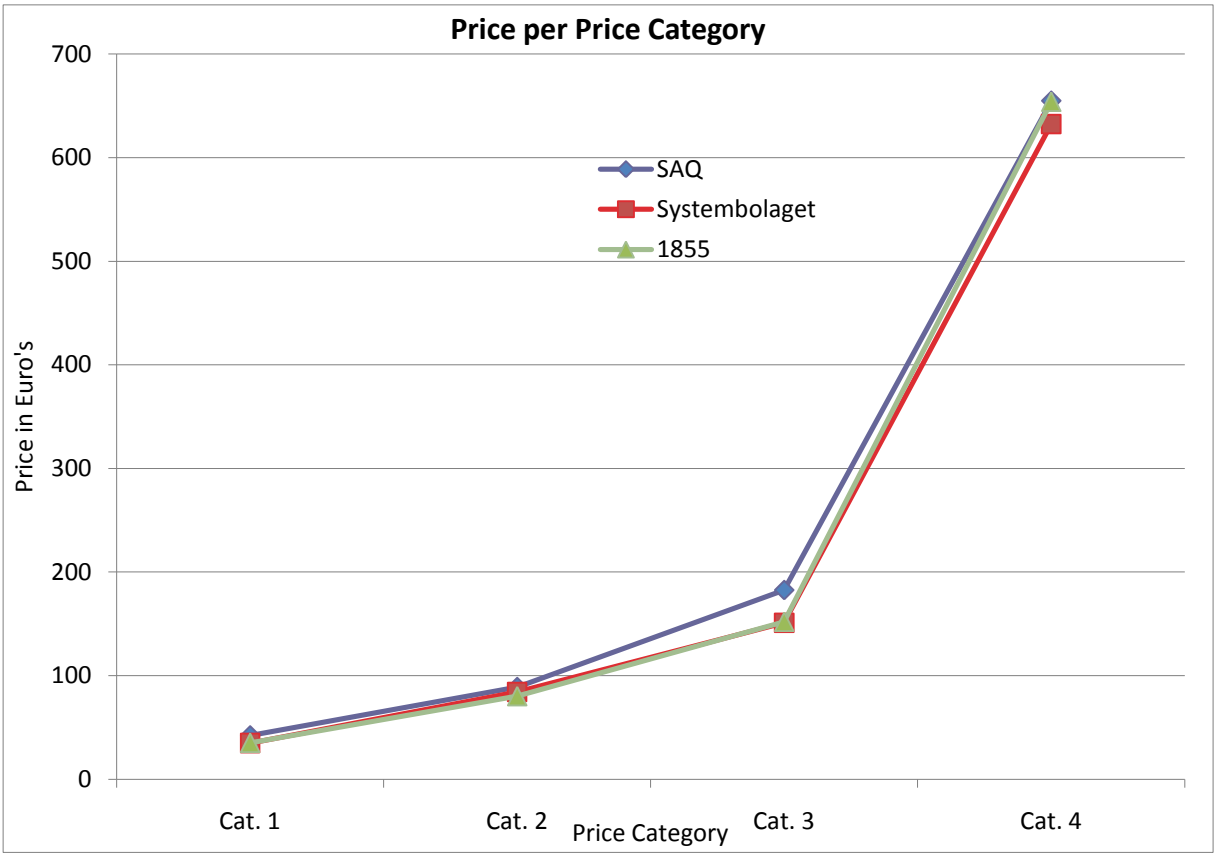
Figure 4:



What can be seen is that the SAQ has a higher average price amongst every category. The average price difference is mostly between 7,5% and 15%. Category 2 and category 5 stand out. In category 2 the SAQ's prices are 24,1% higher. This category for the most part consists of champagne wine, which for some reason might be a little more expensive in Quebec relative to other wines. For the highest category, there is only a 4,5% difference between the two monopolies.

To make a comparison between the pricing of monopolies and other suppliers, data of the second group needs to be added. It turns out that it is hard to find an Internet supplier with a broad selection of wines like the monopolies. 1855.com has been found to have a good 80 wines out of the 120 wines both monopolies offer. Wines that are excluded are mostly the cheaper wines and the champagne wines. For this test four categories have been made, which each include 20 wines. The first category consists of the 20 cheapest wines, the second of the 20 cheapest wines remaining etc.

Figure 5:



Again, the SAQ is the most expensive in every category, followed by 1855.com and then Systembolaget, with exception of category 2 where 1855.com is the cheapest. However, differences are minor, with the biggest difference being 4,9% between 1855.com and Systembolaget. The difference between the SAQ and 1855.com is not constant and varies between 20% (Categories 1 and 3) and 0% for category 4. This data seems to be rather limited to base conclusions on. First the wine-searcher.com-data will be added which gives a quick overview of the average prices. Then patterns in the pricing will be tried to identified by looking at every price difference separately instead of taking the average price. The following graphs show how the prices from suppliers differ from the average price that wine-searcher.com gives. The y-axis shows the percentage price difference with this price. The number in the middle does not give an actual value, but is nothing more than the order of wines starting from the cheapest wine on wine-searcher.com to the most expensive one. These graphs offer us a quick look at the price comparison and also how the trend compares for cheaper and more expensive wines. Products that are very cheap or very expensive at a certain shop will be discussed later to see if they are comparable and show a certain pattern.

The first graph shows the price differences for the SAQ and wine-searcher.com. The SAQ seems to be relatively more expensive for most wines, with a few exceptions. Other than that the pricing does not seem to be clear-cut.

Figure 6:

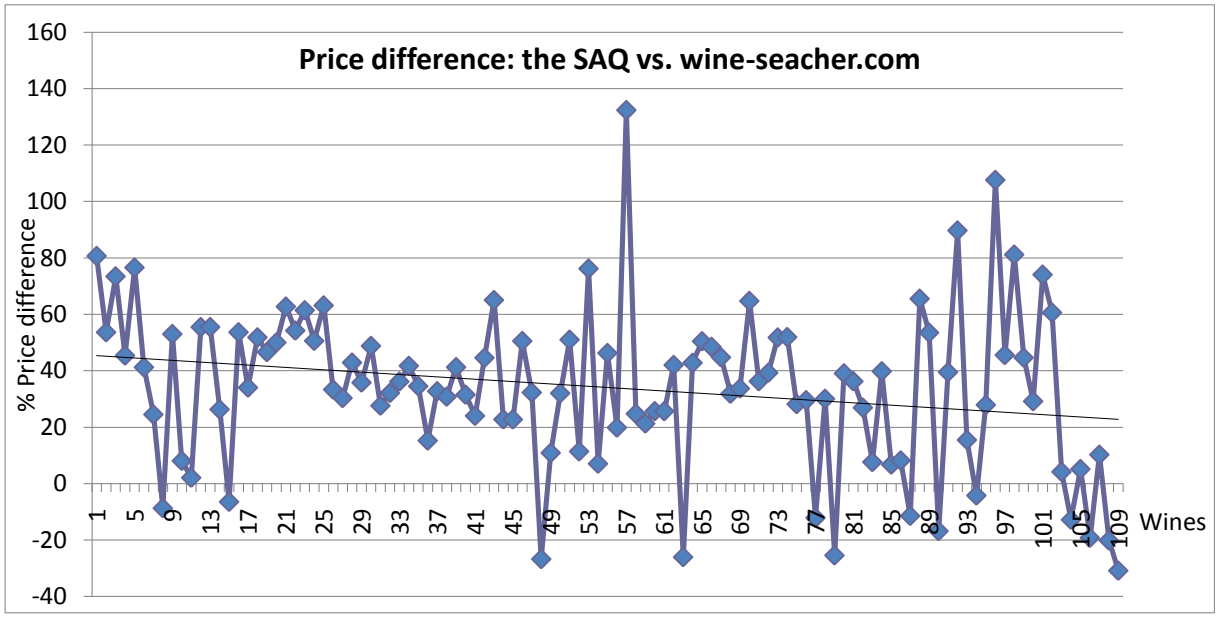
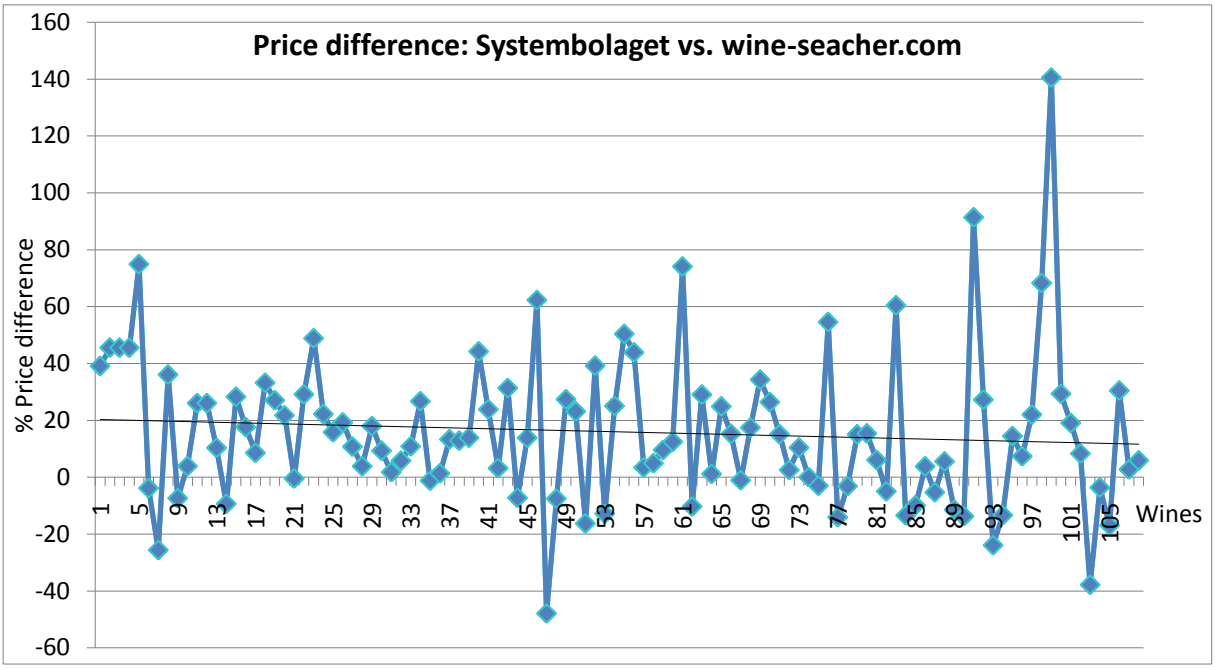


Figure 7 compares Systembolaget and wine-searcher.com. This graph confirms the idea that Systembolaget is generally less expensive than the SAQ. Apart from that, the same conclusion can be drawn; the prices are not clear-cut, even though the prices for Systembolaget seem to be in general a little more constant across different price categories.

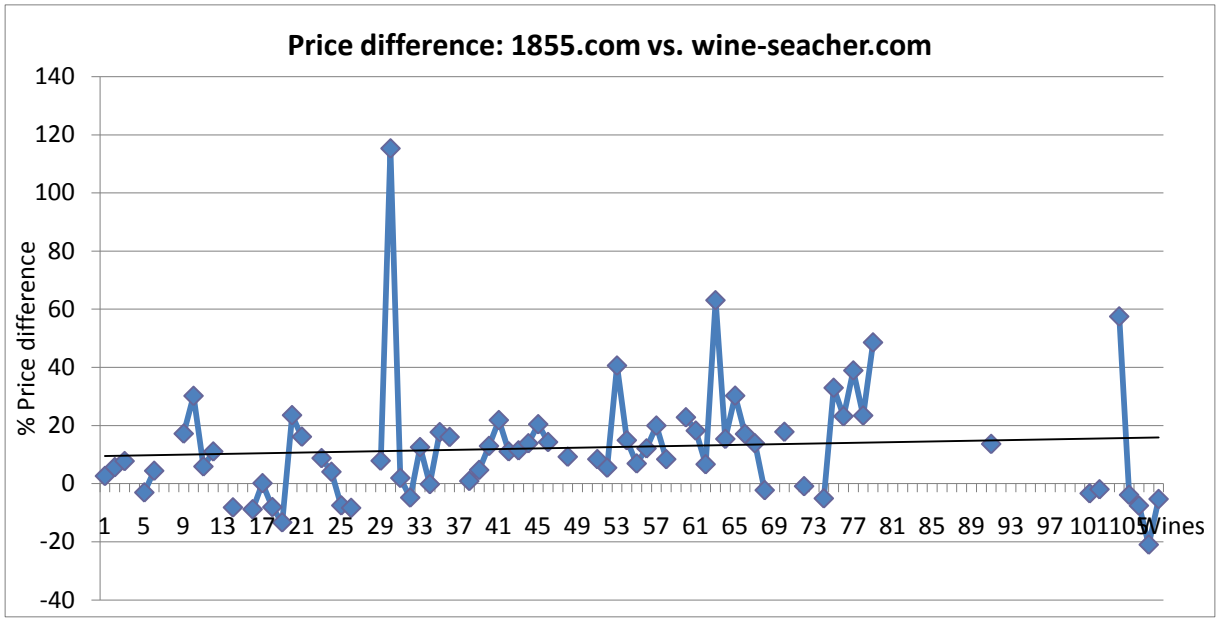
Figure 7:



Then the third comparison is between 1855.com, an online wine-selling company and wine-searcher.com. As with the other cases, the trendline does not seem to explain much. What is noticeable however is that the price differences between wine-seacher.com and 1855.com show much less volatility. With a few exceptions prices of 1855.com seem to differ not more than 25% from the wine-searcher.com price. This could be explained by the effects of the free market. 1855.com, as a Internet supplier, competes with a lot of other Internet suppliers and therefore wants to have competitive prices.[12] From the data it is not unthinkable that they use wine-searcher.com as a part of their method to determine these prices[13].

[12] The price of 1855.com is one of the prices included in the wine-searcher.com average price as well. However, since mostly these prices consist of an average of above 20 companies, it is assumed that this does not alter the average that much that is gives a tainted picture.
[13] The highest point on figure 8 (of almost 120%) was priced significantly lower two weeks later.

Figure 8:



Comparisons between the SAQ/Systembolaget and 1855.com have also been made. These graphs show the percentage of difference of the prices of SAQ and Systembolaget respectively compared to 1855.com. Again, no clear pattern seems to emerge and there is not a clear trend visible in the differences between cheaper and more expensive wines, even though both have a trendline with a downward slope.

Figure 9:

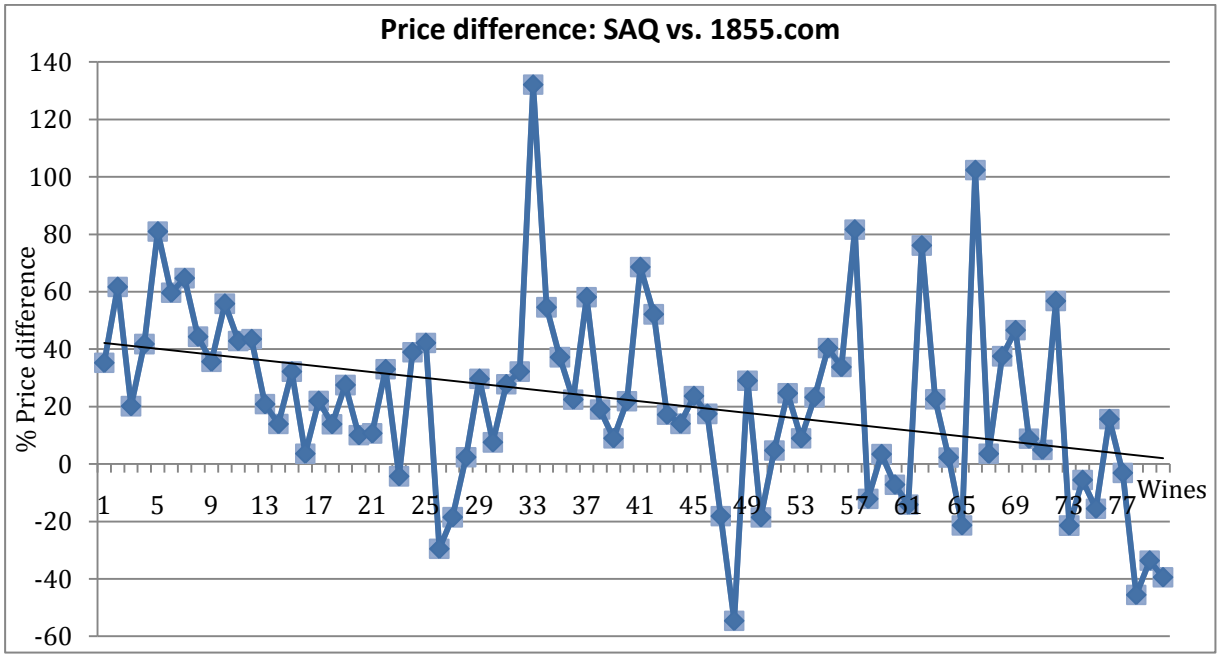
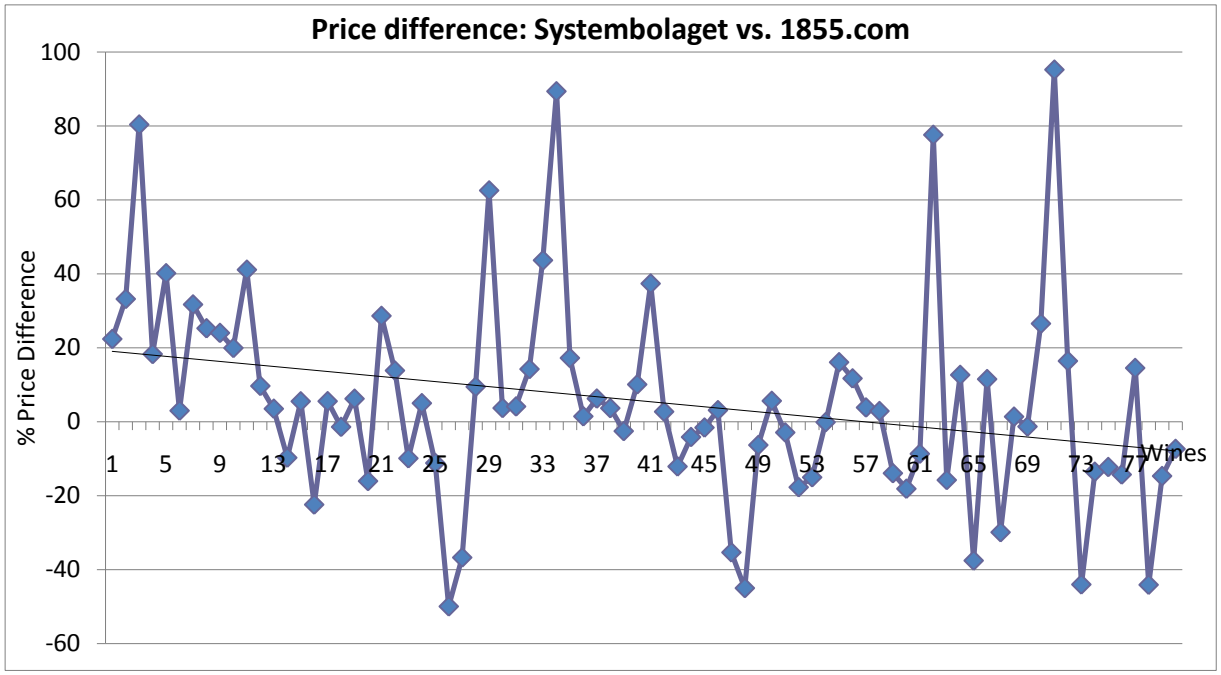
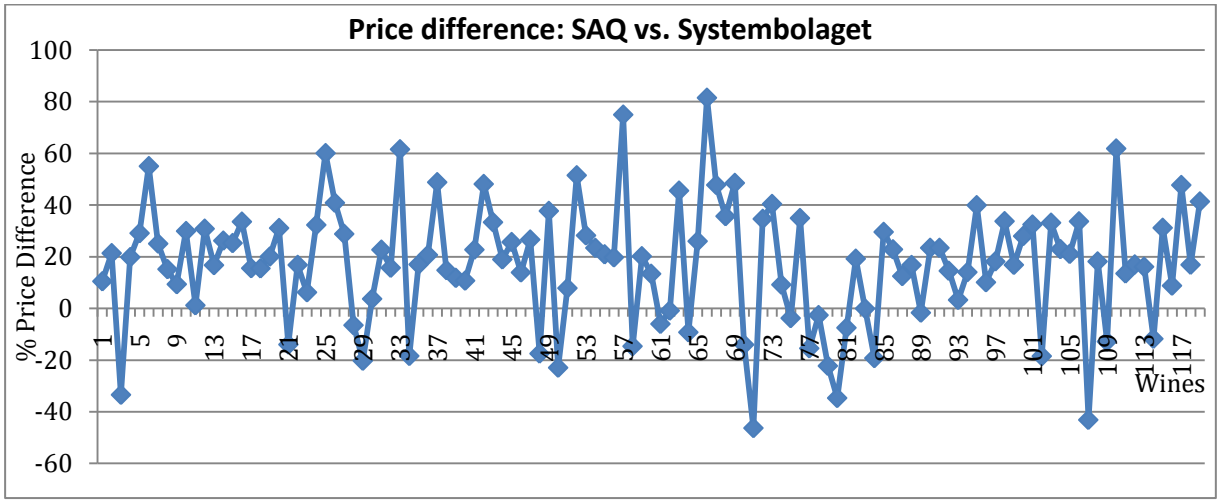


Figure 10:



The last comparison to be made is for the differences between the SAQ and Systembolaget. The findings from earlier graphs and tests are confirmed. Systembolaget is generally cheaper than the SAQ, but the differences are considered to be moderate, in comparison with some huge price differences that were found in other comparisons.

Figure 11:



These graphs give a general idea of how the pricing strategies of the four organisations in question are related. But why are some wines priced so much higher in one store in comparison to another one? To look into that matter, it is interesting to locate which wines are prices higher and to

see if there is any pattern visible. This table shows the differences with wine-searcher.com, because these prices are more moderate and this way the results are less tainted than if they would be compared with 1855.com for example.

Table 5: Differences with wine-seacher.com analyzed

	Expensive wines compared to wine-searcher	**Difference**	**Cheap wines compared to wine-searcher**	**Difference**
SAQ:	Château Léoville Barton 2001	132,4%	Château Latour 2005	-30,8%
	Château Cheval Blanc 1995	107,7%	Château Roc de Cambes 2004	-26,7%
	Château Léoville-Las Cases 1996	89,8%	Pavillon Rouge du Château Margaux 2006	-26,0%
	Château Latour 1988	81,2%	Château Tertre Roteboeuf 2004	-25,4%
	Fortant Merlot 2006	80,7%	Château Margaux 2005	-20,1%
	Expensive wines	**Difference**	**Cheap wines**	**Difference**
Systembolaget	Château Margaux 2006	140,5%	Château Roc de Cambes 2004	-48,0%
	Fortant Merlot 2006	95,4%	Bollinger Vieilles Vignes Francaises 1999	-37,9%
	Château Léoville-Las Cases 1996	91,4%	Riesling Dopff&Irion Alsace 2009	-25,6%
	Clos la Coutale 2008	74,9%	Château Palmer 2005	-23,9%
	Château Clinet 2001	74,1%		
	Expensive wines	**Difference**	**Cheap wines**	**Difference**
1855.com	Château Belair 2005	115,4%	Laurent-Perrier Brut	-21,0%
	Veuve Clicquot Brut	67,2%	Louis Roederer Brut Premier	-15,2%
	Pavillon Rouge du Château Margaux 2006	63,1%	Louis Roederer Cristal Brut 2002	-13,4%
	de Venoge Brut Blanc de Noirs	57,5%	Bollinger Rosé	-13,0%
	Château Lafite Rothschild 2006	48,6%		

There is some pattern visible in the types of wine that are mentioned as the most expensive wines. Wines from an older year seem to be somewhat more volatile and these wines make up for three of the five wines with the biggest difference for the SAQ. Other wines that turn up tend be the cheaper ones, since a difference of a couple of euro's can make up for a high percentage of difference. Apart from that, 1855.com seems to offer champagnes for a relatively low price. In the following graphs the wines of the SAQ and Systembolaget are plotted by their difference to wine-

searcher.com and the year the wine was produced. The further to the right the newer the wine is. In order to create better graphs, the oldest wine from 1988 is removed for interpretation purposes.[14]

Figure 12: SAQ

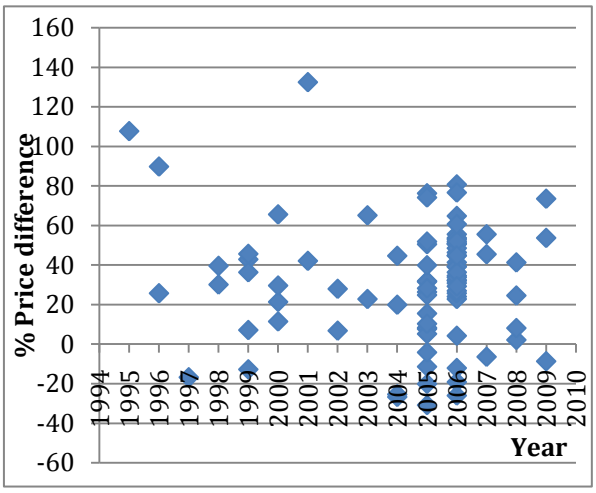
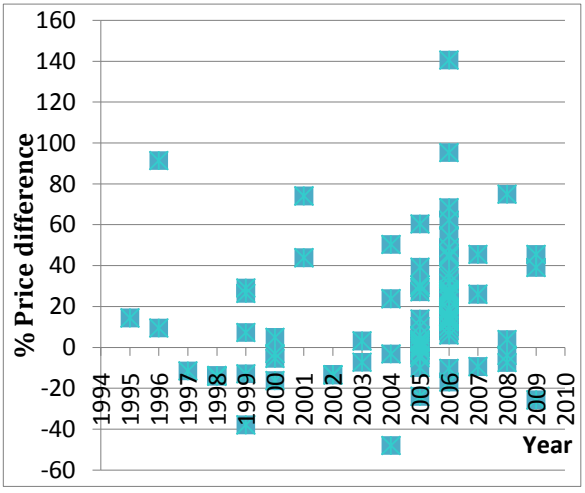


Figure 13: Systembolaget



On first sight the graphs do not seem to give much information, however, looking at the data and the results a few small remarks can be made. Prices for older wines show less compactness and seem to be relatively more volatile, than the wines from years like 2005 and 2006. This volatility might be originated because these wines are available for sale less, what leads to higher differences in prices. More recent wines, from 2007 onwards, are relatively volatile as well, but there are not enough examples to see this clearly in figure 12 and figure 13, because these 'futures' have a very limited availability at the alcohol monopolies. In total however, the age of the wine does not seem to explain much of the variance.

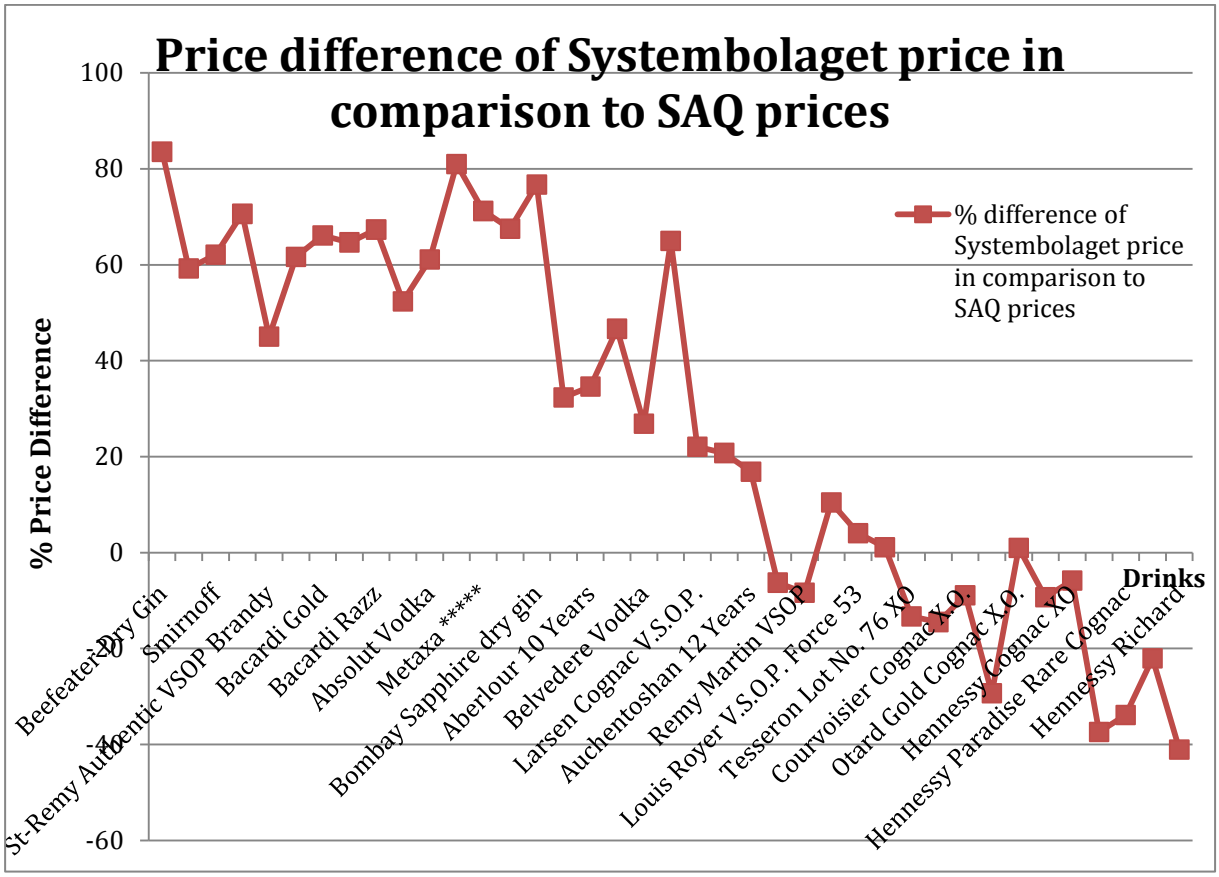
All in all, the pricing of wine by the alcohol monopolies is not clear cut. However, looking at the spirits might present a different view, because these beverages form the other big source of sales for the monopolies.

4.2 Spirits

Figure 15 shows the percentage difference of the prices of Systembolaget as compared to the price of the same product at the SAQ.

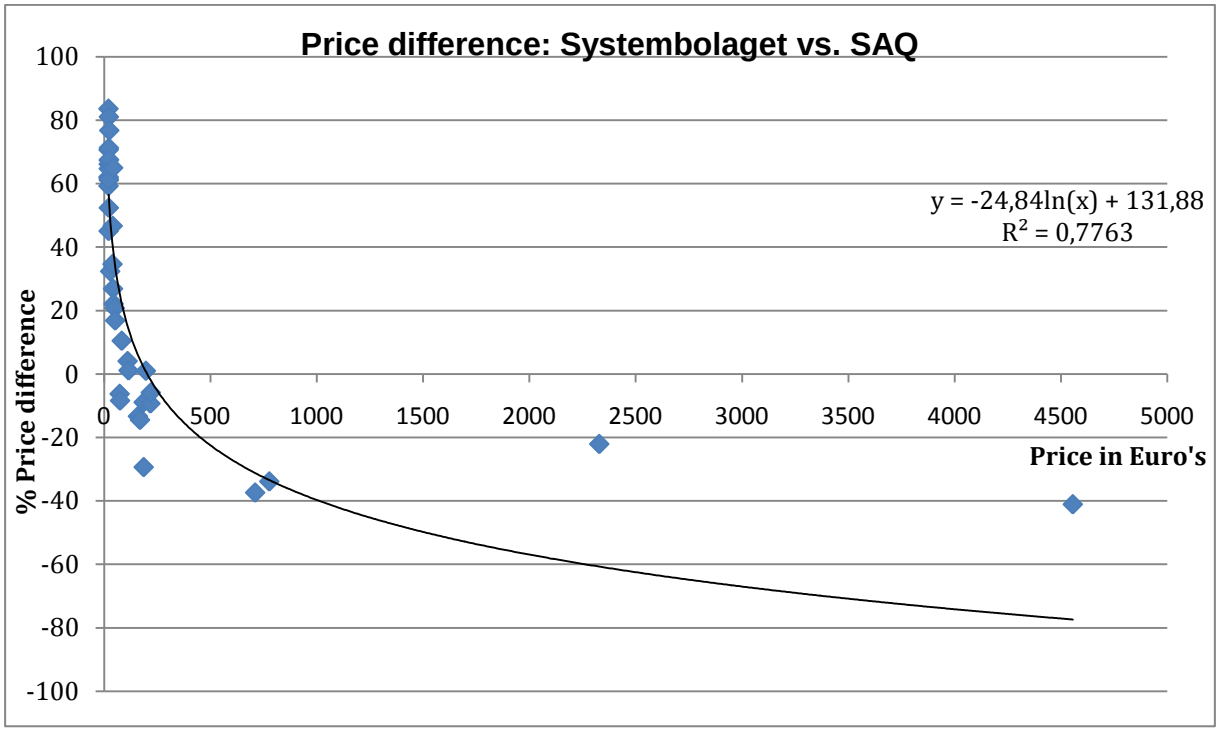
[14] This wine is 80% more expensive at the SAQ and 20% at Systembolaget.

Figure 14:



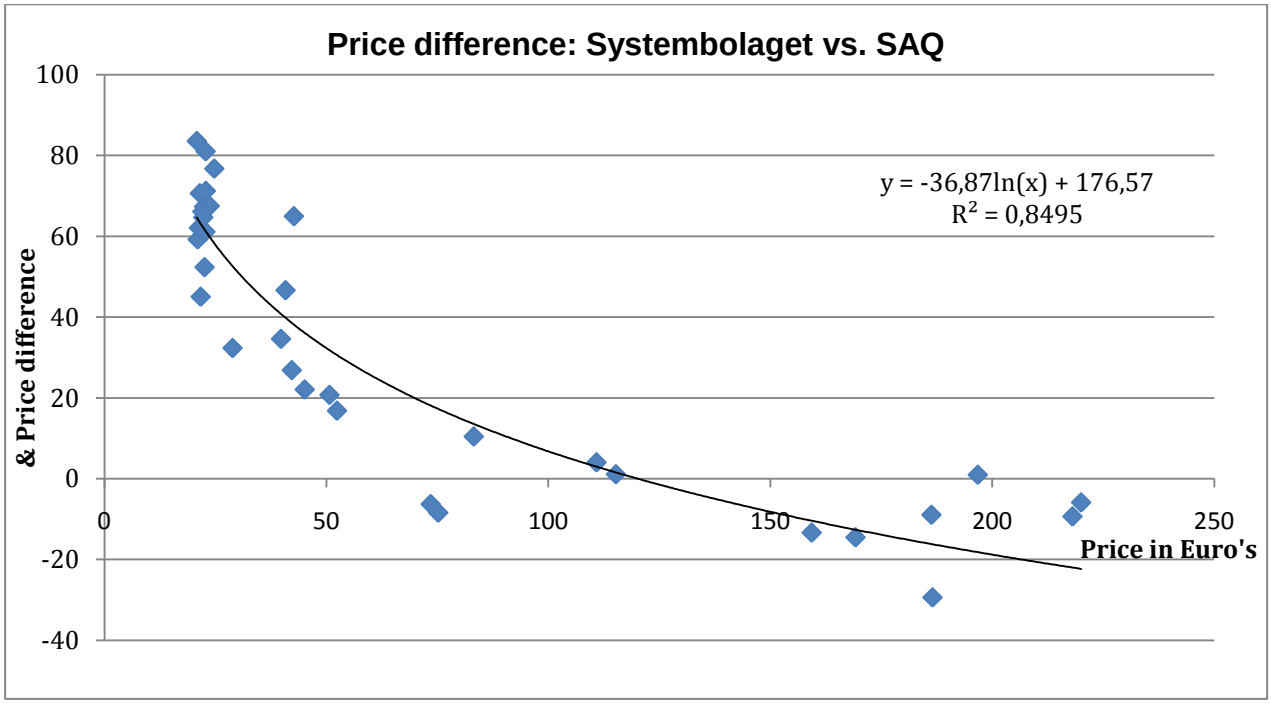
Spirits are often sold in bottles of 700 ml in Sweden, while more frequently the same product is sold in 750 ml bottles in Quebec. To standardize this the price of the product per litre be used. On the left side of the graph is the product that is cheapest at the SAQ (Beefeater dry gin) in this case, which costs 20,82 euro. The further to the right, the more expensive the product is, with the cognac Hennessy Richard having the highest price of 4555,35 euro. In comparison to the wine section there is a very clear pattern visible. The cheaper drinks are relatively much more expensive in Sweden. This line drops as the drinks get more expensive (or as the excise duties become a smaller percentage of the price). On the right side of the figure most drinks are actually cheaper at Systembolaget. This image clearly shows what you would expect because of the higher taxation in Sweden. Because the tax makes such a big percentage of the price, 'cheaper drinks' are more expensive, but expensive drinks are relatively cheaper in Sweden. This confirms that the pricing policy might benefit the health prospect. It is relatively more expensive to get drunk and in return not many people would choose an expensive cognac for this purpose. The turning point where a drink becomes cheaper in Sweden is around 70 euro's (including taxes).

Figure 15:



The percentage difference between the SAQ and Systembolaget is relatively well presented by plotting it with a logarithmic trendline. It explains 77,63% of the variation. The same pattern as earlier discussed is visible. To have a more representative look the four most expensive drinks are removed, because this allows us to have a closer look at the majority of the data points.

Figure 16



The trendline fits even better now, while at the same moment the pattern is also visible with the naked eye. Expensive drinks are relatively cheaper and cheaper drinks are relatively more expensive in Sweden. This is also the result that was expected before.

Now the comparison to 'The Whisky Exchange' is made. The graphs show the comparison with their prices. Left is the cheapest drink at the Whiskey Exchange, right is the most expensive one. There is still a considerable variety among prices and types of drinks.

Figure 17

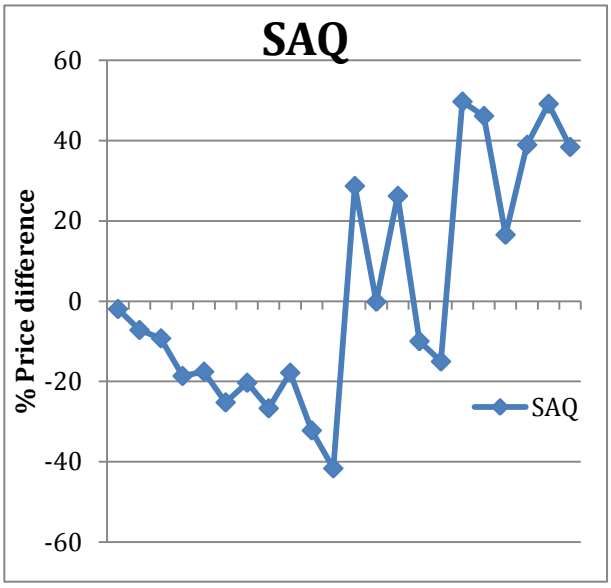
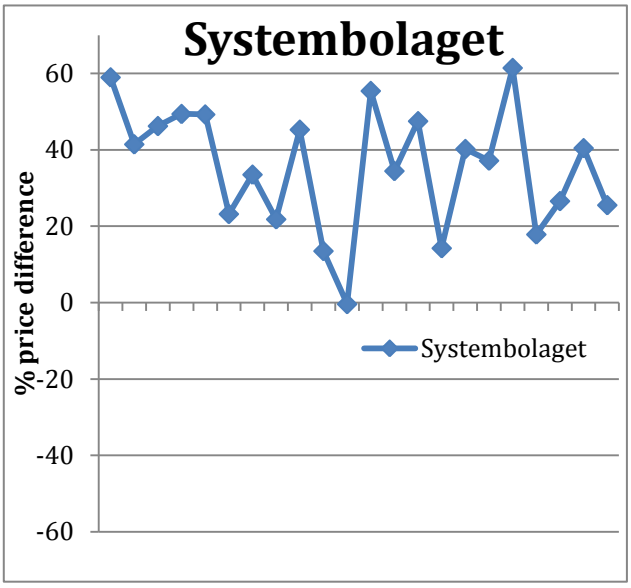


Figure 18



What is interesting is that the prices of the free retailer are more diverse, leading to a less straight line. However, the SAQ seems to be cheaper for cheap products and more expensive for more expensive products (comparable with what was found in the comparison between the SAQ and Systembolaget). The higher price of Systembolaget seems to be relatively constant, which is an interesting finding. Apparently the price before taxation of the free retailer and Systembolaget are much more constant and comparable. These graphs are consistent with the image that was established so far. Systembolaget seems to be caring more about the public health and the pricing of the SAQ indicates that they care to a smaller extent about the negative consequences of alcohol use. This comparison just contains one free retailer, which makes it hard to generalize this conclusion to the market as a whole, but a general direction is clearly visible.

5. DISCUSSION

The SAQ and Systembolaget can be taken as a good example of the contrast between North American and European alcohol monopolies. The SAQ is much more profit oriented and uses the monopoly to collect taxes to benefit the state finances. Systembolaget presents itself more as an organisation concerned with protecting public health, putting profit on the second level. When combining these two sections, it is possible to take a look at how the current pricing policy complements the goals set by the organisations. How effective is the current policy and is there not a better alternative to be chosen?

Pricing strategies of alcohol are frequently researched in the literature. Chaloupka et al. (1996) investigated the effect of the price on binge drinking behavior in an American college. They found that higher taxes reduce binge drinking and underage drinking for female students, while male students seem to be unresponsive to price. Wagenaar et al. (2009) find a significant effect of higher prices and taxes as a tool to reduce alcohol consumption and alcohol-related harm.

Other studies tend to focus more on price elasticities. In a famous US paper Leung and Phelps (1993) have found the elasticities for beer, wine and distilled spirits to be -0,3, -1,0 and -1,5 respectively. They call this a best guess, because their extensive review of the economic literature contains aggregate data.[15] However, there is a clear difference visible between North American and European studies. Fogarty (2006) presented a study based on 64 other studies that investigated the price elasticity of alcohol. He found a lot of differences, especially between countries. The preferred beverage in a country tends to also be the most inelastic one. For North America this is beer, while for Sweden this is more shifted towards spirits. However, it is fair to say that policies meant to battle the harm related to alcohol need to be adjusted for every specific country and cannot be generalized, according to the literature.

5.1 Model

To research the different pricing strategies a simple model will be used. To create this it is assumed that the monopolies do act in the way that they claim. For analyzing purposes this model will examine one product (for example, a vodka with a decent popularity). This is a simplification of

[15] Grossman et al. (1998) looked at the differences between short-run and long-run effects. They estimate an average price elasticity of alcohol demand of -0,29, but the estimated average long-term price elasticity of demand was higher at -0,65. In the Becker-Murphy model that they use the price effect in the short-term describes the reaction to a price change in period t and all of the future periods, that are not anticipated upon before period t starts. In contrary, the long-run price effect is about the price change in every period. Because the previous consumption (before period t) stays equal if the price change is only taken into account in period t, the long-run price effect is bigger than the short-run effect.

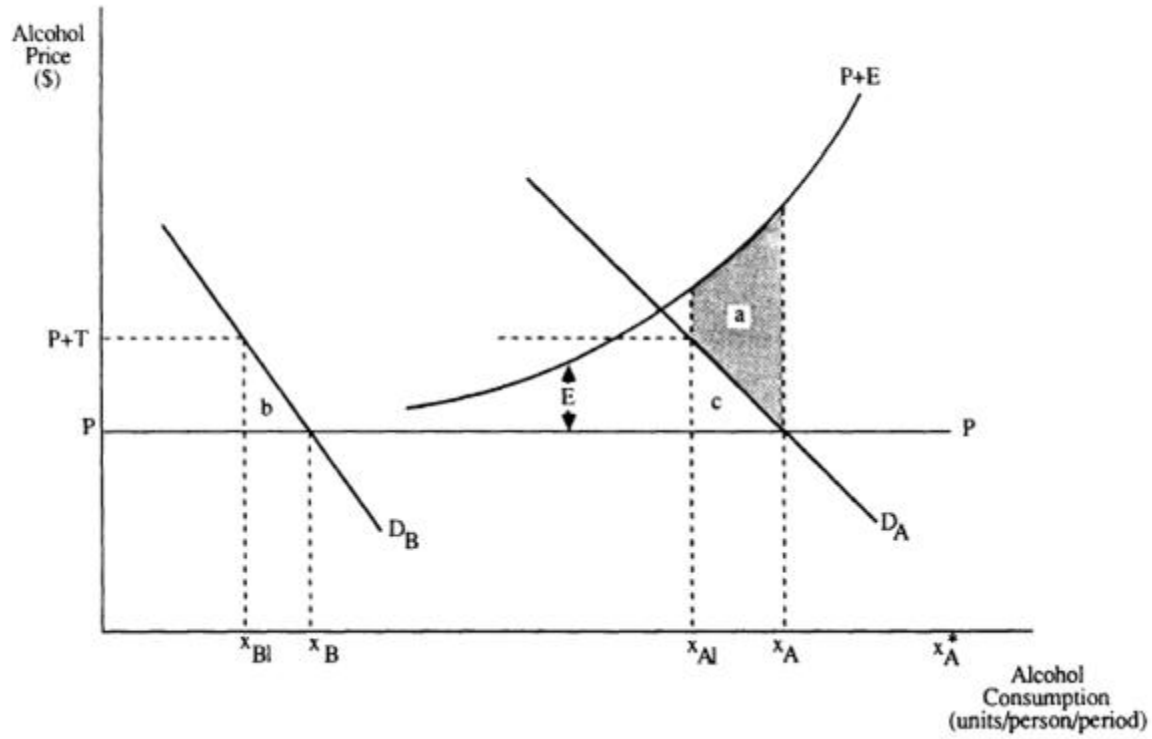
the actual situation, but it still allows to look at the dynamics of the system. Because of their clearer policy objectives Sweden will be taken as an example for the country in the model.

The model that will be adjusted to analyze the situation in this thesis is from an important article by Pogue and Sgontz (1989). Especially figure 19 (figure 1 in the original paper) will be important in explaining how the dynamics of alcohol pricing work. Pogue and Sgontz's model is originally designed to find the optimal taxation. However, when you assume that *T* is an exogenous level of taxation decided upon by the Swedish government, it can be used to examine the price as well.

In the model there is a distinction between abusers and nonabusers. Abusers are people that create alcohol-related harm for themselves, as well as creating external costs for society. Nonabusers are people who drink their alcohol responsibly and therefore do not put a burden on society. This means that D_a and D_b are the respective demand functions, where *a* stands for the abusers and *b* stands for the nonabusers. In this model it is assumed that there is only one beverage. P stands for the price and this is set equal to the long-run marginal and average costs. Consumers pay the price plus the taxation that is decided upon (P+T). Marginal external costs, the costs that are not internalized by the consumer, are illustrated by E. This causes the difference between the P and the P+E line and these costs are very limited for nonabusers, because of the low consumption for this group. The P+E combines the price and the marginal external costs and shows the total cost (internal and external) and therefore combines all the costs associated with the alcohol product, whether they are accounted for or not. In figure 19 three different areas are marked. Area *a* is the welfare gain of the taxation in the case of the abusers. Because of the higher price the consumption moves from x_a to x_{a1} , leading to a reduction in the amount of external costs of the size of this area; these costs are now internalized by the taxation. Areas *b* and *c* show the decrease of the consumer surplus for abusers and nonabusers respectively. This surplus is lost because of the higher price.

In the original model it is assumed that the beverage is produced in a competitive industry under constant cost. While Sweden has an alcohol monopoly, the model is still applicable, since the real competition is between the suppliers of Systembolaget, whereupon Systembolaget charges a mark-up. In that sense, the Swedish industry is spread enough over different institutions, to be able to use this picture.

Figure 19:



Source: Pogue and Sgontz (1989)

What the graphs shows is that that there is a welfare gain of the area *a* multiplied by the number of abusers N_a minus area *b* (welfare loss) multiplied by the number of nonabusers, N_b. The first term in (1) shows the decrease in external costs that the tax has caused. The second and third term show the loss in consumer surplus for abusers and nonabusers.

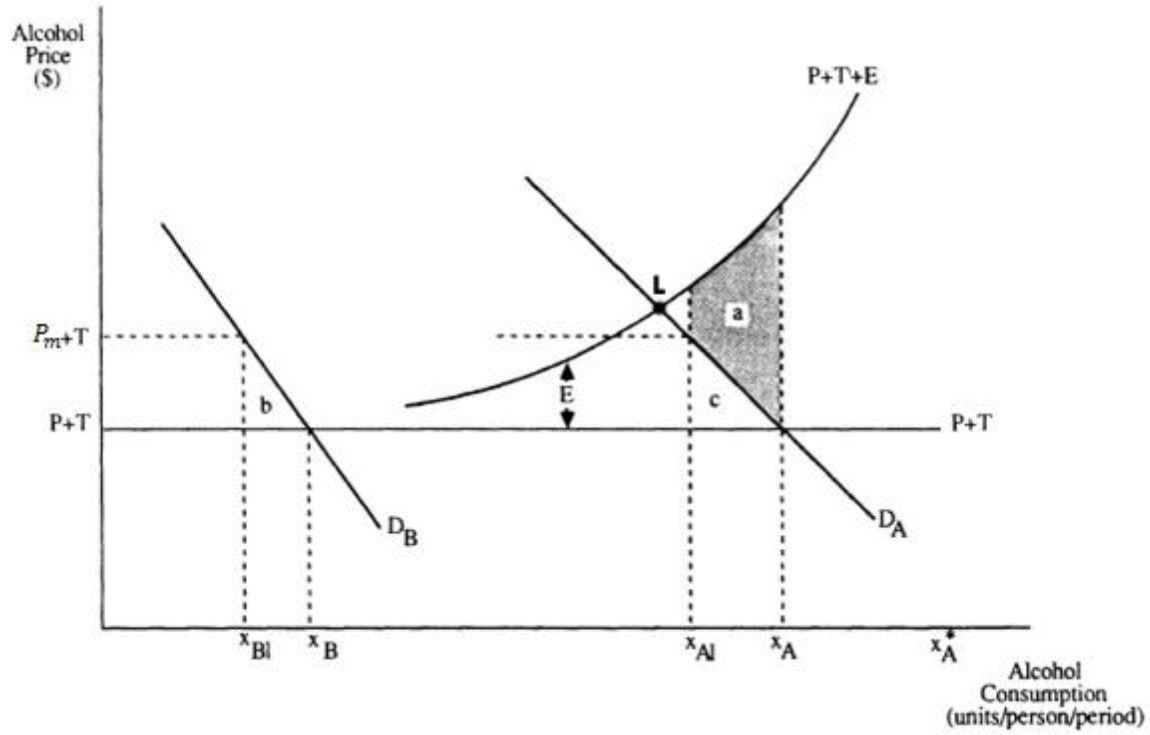
(1) $W = -E\,(\Delta x_a)\,N_a + \tfrac{1}{2}T(\Delta x_a))\,N_a + \tfrac{1}{2}\,T(\Delta x_b)\,N_b$

Pogue and Sgontz use this setup to find the optimal tax rate. In the case of alcohol monopolies this amount is already decided on by the respective governments, leaving only the pricing decision up to the alcohol monopolies. The price *P* is set equal to the marginal and average total cost in the model, but this can easily be transferred as to represent the cost price of the alcohol monopoly (Systembolaget) as well as assuming that the tax level T in the model is the current tax level that is exogenously given by the Swedish government. What you then get is a fixed price (P+T) whereupon Systembolaget still needs to decide upon a mark-up, with which they can reach the goals that were set. This price, including the mark-up, is called P_m.

Figure 20 is an adjusted version of figure 19, now explaining Systembolaget's situation. As long as a higher price for alcohol internalizes more externalities this leads to a welfare gain. The coloured area marked by *a* shows the welfare gain from the mark-up when compared to the cost price, with *b* and *c* still showing the loss of consumer surplus. The P+E-line has been renamed to the P+T+E-line, since taxation is now exogenously given.

Previously established was that Systembolaget's vision is to "establish a healthy drinking culture, whereby we can enjoy Systembolaget's drinks without harming either ourselves or other people" and the mandate from the government also facilitates to create a healthy drinking culture. All marginal external costs are internalized at the point where the P+T+E-line intersects with the demand of the abusers (the D_a-line). This point is called point L in the figure. This point is the point where a healthy drinking culture is created, because there are no externalities left unattended. Figure 20 is adjusted to the situation in this thesis.

Figure 20:



Adjusted from: Pogue and Sgontz (1989)

Figure 20 is adjusted by interchanging the function of price and taxation have in the graph, because in this example the tax is given and the price can be adjusted. However, now the mark-up can be varied and this is the difference between P_m and P. This means that in (1) T will be replaced by the difference between P_m and P, which will be indicated by ΔP in the formula. P+T is the cost price

including tax for the monopoly and includes the exogenously given tax. P_m+T is then the price including the mark-up. The mark-up of 19% that Systembolaget charges can be imagined as the situation that this graph represents. This leads to the following adjusted formula:

(2) $W = -E(\Delta x_a) N_a + \frac{1}{2}\Delta P(\Delta x_a) N_a + \frac{1}{2} \Delta P(\Delta x_b) N_b$

The first term in this welfare function is equal to (1) and still shows the welfare gain that is caused by the decrease in external costs that is induced by the mark-up. The second and third term show the decrease of the consumer surplus decreases for abusers and nonabusers. This leads to the same situation as in the original model, but where tax is fixed and price is adjustable. The difference in the alcohol consumption that is induced by the mark-up depends on the elasticity for the product for abusers and nonabusers. The demand for spirits in Sweden is generally found to be inelastic (Wagenaar et al., 2009). The change in the alcohol consumption of abusers and nonabusers is then as following, where η_a and η_b stand for the elasticity of demand for abusers and nonabusers:

(3) $\Delta X_a = (\Delta P\, \eta_a x_a) / (P+T)$

(4) $\Delta X_b = (\Delta P\, \eta_b x_b) / (P+T)$

When you substitute equation (3) and (4) in (2) this gives:

(5) $$W = \frac{(-E\, \Delta P\, \eta_a X_a)}{(P+T)} + \frac{\frac{1}{2}\, \Delta P^2 \eta_a X_a}{(P+T)} + \frac{\frac{1}{2}\, \Delta P^2\, \eta_b\, X_b}{(P+T)}$$

Here $X_a = x_a N_a$ and $X_b = x_b N_b$ are the total consumption by abusers and nonabusers respectively. The next step is to maximize this welfare function by taking the first-order condition for W. This leads to:

(6) $$\frac{\eth W}{\eth \Delta P} = \frac{(-E\, \eta_a X_a)}{(P+T)} + \frac{\Delta P\, \eta_a X_a}{(P+T)} + \frac{\Delta P\, \eta_b X_b}{(P+T)}$$

The next step is to find the mark-up ΔP that maximizes the welfare. By doing some algebra this leads to (7):

(7) $\Delta P / (P+T) = \frac{E}{(P+T)} \left[\frac{1}{1+\frac{\eta_b X_b}{\eta_a X_a}} \right]$ for $\eta_a > 0$.

This formula shows that higher marginal external costs also mean that a higher mark-up is needed to get to the welfare-maximizing situation. Furthermore, a higher demand elasticity for abusers also leads to a higher optimal mark-up. Pogue and Sgontz (1989) extend their analysis to account for the alternative view that alcoholism is a disease. This makes the analysis different because the formulas presented assume that all consumers of alcohol take a welfare-maximizing decision, while when it is regarded as a disease that might not be the case. The conclusion is that when the disease aspect of alcoholism is taken into account this increases the optimal tax rate. The conclusion for a higher mark-up would not be different, but one could wonder to what extent a slightly higher price (a couple of euro's) has any effect on the amount of alcoholics. From an alcohol monopoly point of view education and alcohol clinics would probably be more efficient in improving public health, than the effect yet another price rise has on a group which has probably a very low demand elasticity.

Pogue and Sgontz test their model with U.S. data, but are somewhat hesitant to draw a strong conclusion, because some parameters are unknown and things differ whether you see alcohol abuse as a disease or not. However, their conclusion is that the average tax rate should at the minimum equal the current 25%, but would probably be better if it was double that percentage. This increase would only bring back the tax to the levels of 1951, since the consumer price has increased a lot in the period 1951-1983. Especially when alcohol is seen as a disease very high taxation is the optimal situation.

The question that was asked is if there is a better way to minimize alcohol-related harm and create a safe drinking culture. This thesis does not contain the necessary data to be able to determine the position of the countries on figure 20. Two things need to be kept in mind. Systembolaget needs the public support in other to continue its business, because when people object to it, politics can pick up the argument and the alcohol sector might be privatized. The other point is that the goal is to create a healthy-drinking culture, so that the government is not interested in raising the price higher than the point where the demand of the abusers intersects with the P+T+E-line.

It depends on the policy makers what they consider a correct benchmark for public support. From a pure economical point of view 50% of support would be enough for continuation, but it is reasonable to assume that some safety margin would be applied in practice. Let *S* be the support and let *B* be a benchmark for public support. The public support is negatively related with the price. S is effected by the difference between the price including the mark-up (P_m,) and the cost price.

(8) $\Delta S = -\frac{(P_m + T) - (P+T)}{(P+T)} * \frac{N_a}{N_b}$

Abusers care more about the price and are therefore more sensitive to price changes. Nonabusers care less. about this. When the amount of nonabusers is higher, it is relatively easier to charge a higher mark-up.

(9) S > B

The most recent public support (S) measured was 66% with the current mark-up of 19%. It depends on the benchmark that is decided upon if there is enough room to raise the mark-up to the higher level. If the benchmark is 50%, there is room to raise the price. Please note that other factors influence the public support as well.[16] However, this price example stays relevant as an indication of how the dynamics work.

5.2.Tradeoffs

What was found is that the pricing decisions are mainly about making tradeoffs. This section is meant to give a short overview of some restrictions on the freedom of the monopolies that will come to use when the effectiveness of possible policies for alcohol monopolies in general will be analyzed.

5.2.1 Monopoly pricing vs. Outside option

Both the monopolies in this thesis are pressured and although, not official, still have to deal with some sort of competition. Both are restrained by the possibility of buying alcohol outside the monopoly and therefore cannot determine their price on a totally independent basis. Sweden, as a member of the European Union, is restrained for example by the alcohol prices in a neighbouring country like Denmark. A certain trade-off exists: the higher the price difference, the more people will buy their drinks on the other side of the border. The same can roughly be said of the controlling power of the European Union membership. In its turn, the SAQ is also limited by the possibility for people to buy their drinks in the United States or neighbouring provinces like Ontario and Newfoundland and Labrador. While it is illegal to do this, without engaging the SAQ in the buys, this

[16] Alcohol availability, shop opening times and the quality of the employees for example.

can be considered a minor offense and the higher price the SAQ will charge, the more people will be inclined to do so. This leads people to buy their alcoholic beverages with the monopoly when:

(10) P_0 + x (trouble, time, dislike because its illegal) > P_m

Where P_0 is the price of the outside option, P_m is the price of the monopoly en *x* is the cost of getting the products on the other side of the border, which differs per person and incorporates the time and trouble it takes to go over the border and the matter of dislike because it is illegal.

5.2.2 Earning money vs. Minimizing alcohol-related harm

Minimizing social harm can be a main goal for a monopoly. In section 5.1 a model was used to see how Systembolaget could create a pricing policy that works best to meet their goals. The SAQ however acts more as a privately owned company would and is therefore also interested in making profits in order to create funds for the government. Of course, reducing alcohol-related harm is also a sub-goal for the Quebecers and therefore they also have a tradeoff to make with their pricing decision. Unfortunately, the lack of data and insight in the SAQ does not allow us to have a more specific insight.

5.2.3 Fulfilling set goals vs. Containing public support

Already discussed in section 5.1, a third aspect that belongs in this section is the public support. Both Sweden and Canada/Quebec are democratic, which roughly means that the political direction needs to be supported by a majority of the population. This means that if most people from the area would oppose the alcohol monopoly then this would probably be picked up by the politicians, since support is a key aspect for a political party. Alcohol monopolies are therefore constrained by the public support. If they price products too high, both voters will react because they will oppose this strategy, as well as the parties involved in the government will oppose, since both the SAQ and Systembolaget are state-owned companies, which means the government will feel and can be held responsible for the efficiency and success of the company. This forms another tradeoff, since minimizing social harm is constrained by the satisfaction of the buyers of alcoholic beverages, as well as by profits that the SAQ deliberately wants to make. This tradeoff is reflected by (8) and (9).

5.3 Systembolaget

Systembolaget's policy seems to be relatively well adjusted to its goals. When Sweden is compared to other European countries the consequences of their restrictive policy is visible as well.

Table 6: Alcohol consumption among adults aged > 15 years (litres of pure alcohol per person per year), selection of European countries, 2005

Country:	**Litres**				
Estonia	16,2	Slovakia	11	Poland	9,5
Czech Republic	14,8	Bulgaria	10,9	Cyprus	9,3
Ireland	13,4	Romania	10,5	Greece	9,2
France	13,2	Slovenia	10,5	Italy	8
Austria	12,7	Latvia	10,2	Iceland	7,1
Croatia	12,5	Serbia	10,1	**Sweden**	**6,6**
Hungary	12,5	Switzerland	10,1	Norway	6,4
Lithuania	12,5	Finland	10	The former Yugoslav Republic of Macedonia	5,8
Portugal	12,2	Spain	10	Malta	5,3
Germany	11,7	Belgium	9,7	Albania	4,9
Luxembourg	11,7	Bosnia and Herzegovina	9,6	Turkey	1,1
Denmark	11,3	Netherlands	9,5	United Kingdom of Great Britain and Northern Ireland	0,3

Source: WHO (2010)

In 2005 an average Swede older than 15 years drank 6,6 litres of pure alcohol per year. This number is comparable to other Scandinavian countries with alcohol monopolies like Norway (6,4) and Iceland (7,1). Countries that score lower are countries with a big percentage of Muslims in their population, like Albania, The Former Yugoslav Republic of Macedonia and Turkey. There are only two exceptions. One is Malta (5,3) and the other one is the United Kingdom (0,3), for which the big difference with the number of litres for 2003 (11,75) raises doubt about the correctness of this number. A neighbouring country for Sweden is Denmark and their average of 11,3 litre per person per year is a useful number for comparisons, because it is a Scandinavian country as well. Apparently the current policy in Sweden does a good job in reducing alcohol consumption, since it is among the lowest in Europe.

In the European Court during the Fränzen ruling Systembolaget defended their monopoly stating that they "consider that neither Article 30 nor Article 37 of the Treaty preclude national provisions such as those referred to by the national court in this case. They point out that Article 37 does not require the abolition of retail monopolies but simply requires that they be adjusted so that they do not involve rules which are discriminatory according to the origin of products or according to the nationality of traders. In their view, the monopoly in question in the main proceedings meets

those conditions. They also consider that the rules applicable to the monopoly do not hinder, directly or indirectly, intra-Community trade. Such rules limit or prohibit certain selling arrangements and affect the marketing of domestic products and imported products in the same way." [17] The purpose of article 37 is to give member states the possibility to maintain certain monopolies of a commercial character for public interests. That would be the public health in this case.

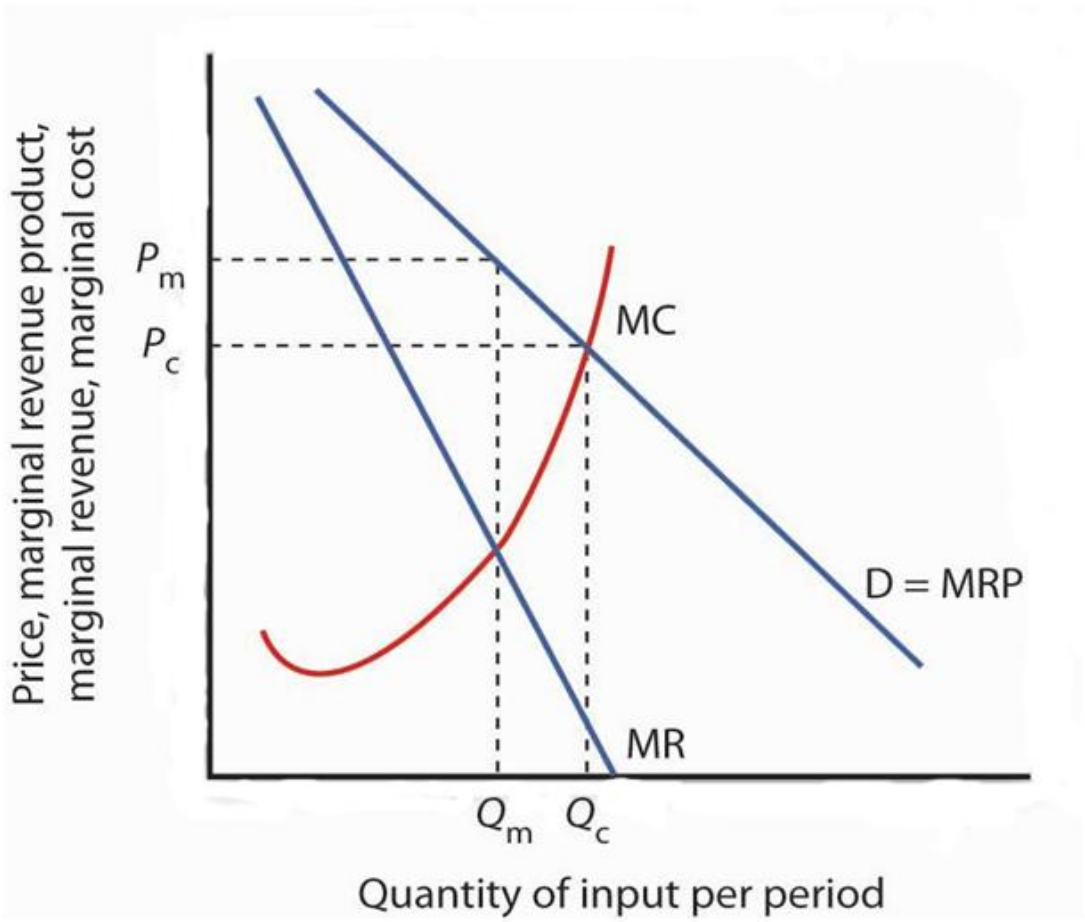
Systembolaget is not allowed to discriminate by giving an advantage to domestic producers. The European Commission agrees with the defense that the offers that Systembolaget selects are based purely on commercial criteria (the price competitiveness of the product, commercial history, etc.) and qualitative criteria, like the blind tasting process as earlier described. For the rest it should be safe to say that at least the 19% mark-up that is currently charged, makes sure that there is no discrimination between products pricewise, since there is no difference in the pricing method. From an European point of view this is efficient.

5.4 SAQ

The SAQ presents a different story than Systembolaget. They seem to be important for the finances of the Quebec government, with putting awareness and battling alcohol-related harm as a less important side goal. Throughout this thesis it has followed that the SAQ can be seen as acting more like any other commercial company. The best way for a monopolist to make the most profit is when making an intersection where the marginal cost curve meets the marginal revenue curve, causing a higher price and lower quantity offered than would be optimal for consumers. However, the optimum for consumers (the intersection between the MC-curve and the demand curve) does not internalize some of the negative externalities that come with alcohol consumption. By internalizing this it already turns the price and quantity towards a solution closer to the monopoly point, because the supply is restricted.

[17] Case C-189/95 (European Court), available on: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61995J0189:EN:HTML#SM

Figure 21[18]:



A similar analysis to the one with Systembolaget will not be executed here. The goals of the SAQ are less clear-cut and the monopoly does not want to give out too much information about their way of pricing. Because they have control about their imports and are relatively free with their pricing, it is safe to assume that their current policy complements the goals they have and is therefore well suited for them. An inefficiency that could obstruct their business is for example a bad communication of the goals between the employees and the management. The only real restriction for the SAQ is that because of a lack of border controls, it is technically possible to get alcoholic beverages from neighbouring Canadian provinces, which means that the SAQ is probably more to the right on the graph, charging a somewhat lower price and offering a somewhat higher quantity, than an general profit-maximizing monopoly would.

[18] Source: http://www.flatworldknowledge.com/pub/1.0/principles-economics/1286/139461#web-139461

5.5 Monopoly Dilemma

In this thesis it was discussed that because of the economies of scale of alcohol monopolies they are able to offer a larger selection than companies in a free market could. Because of the size, the monopolies will also be buying larger quantities. This means that they have more bargaining power, which makes them to be able to get a better deal from suppliers. This means that monopolies are able to buy their products for less than what retailers in a free market would.

When you think about the public health being a main goal in Sweden, as well as a sub-goal in Quebec, this is not a desirable situation. If restricting alcohol consumption is a goal, the lower cost prices present a problem. If you think about the fixed mark-up that Systembolaget charges, the bargaining power leads to lower prices for consumers in comparison to what would be the result of a market with more than one retailer. The question that arises is whether the monopolies should be allowed to have this better deal. This problem can be seen as the 'Monopoly Dilemma' and applies to monopolies that are granted a mandate from the government with a public health perspective. This is an issue that does not seem to have been previously mentioned in the existing literature.

The question that remains is how this problem can be solved. Section 2.5 already describes the purchasing process. Systembolaget makes use of (big and small) Swedish importers. The big importers face exactly the same economies of scale, because the demand for alcoholic beverages is not affected with this change and therefore the point stays valid. The question remains how to approach this problem. To be able to reach a health goal it can be said that these alcohol monopolies should not be allowed to have this better deal. A possible solution could be to introduce an extra tax to make up for the difference in the cost price between a free market and a monopoly situation. This way it can be secured that the monopoly does not have a negative influence on the public health by not unnecessary increasing alcohol consumption. On the same note, this safety measure brings in funds that can be used to battle alcohol misuse by spending it on for example education on alcohol or extra controls on drunk driving. This is a solution which would be in line for an alcohol monopoly with a public health motive.

6. CONCLUSION

In section 3.3 three hypotheses were formed and these can be answered now.

1) Because of a higher flat alcohol taxation level 'cheap' alcoholic beverages are more expensive in Sweden, but more expensive drinks should be a relatively cheaper in Sweden.

Hypothesis 1 has been confirmed by what was found in this thesis. The effect is not clear for drinks that have a lower taxation (wine for example), but for spirits this is clearly visible. This leads to the conclusion that the hypothesis is correct for spirits, but not for wine and this can be explained by the differences in taxation..

2) Alcohol monopolies' prices are higher in comparison with other (Internet) suppliers.

This hypothesis is found to be correct as well. The selection of Internet suppliers is a bit prone to supplier-specific characteristics and selecting them is something that has to be done with care. What was important for the method used, is that the suppliers had a wide range of the same products the SAQ and Systembolaget also have. Even when using suppliers with a wide selection and reputation this is not an easy process, since for some drinks every year forms a different product. Systembolaget and the SAQ were both found to be more expensive than the other retailers for wine. This might indicate that there is enough room for these organisations to exercise some monopoly power. For spirits, the SAQ is cheaper for the more affordable products and more expensive for the other products than the free retailers. Systembolaget is clearly more expensive than the free retailer. To a large extent hypothesis 2 is confirmed.

3) Drinks with a higher alcohol percentage are relatively more expensive in Sweden than in Quebec.

This hypothesis appears to be too complex to give a simple answer to. Drinks with a higher alcohol percentage are not necessarily more expensive, but this is something that is more connected to the percentage of the price that is made up by the excise duties. When comparing Sweden and Quebec the cheaper spirits are relatively more expensive in Sweden, but at around 70 euro's there is a turning point, which makes the more expensive spirits actually more affordable in Sweden. Because of this the answer to the hypothesis is twofold. For Sweden, drinks until 70 euro's with a high alcohol percentage are relatively more expensive, while drinks over 70 euro's are relatively cheaper than in

Quebec. Making the cheaper spirits more expensive is effective for a policy that intents to protect public health.

There is a lot of variety between the different alcohol monopolies and they all are distinctive and have individual aspects. The Scandinavian variant is very focused on health and is relatively successful in reducing the alcohol consumption with a combination of high taxation and other measures that pay more attention to the adverse effects of alcohol use. The North American alcohol monopolies seem to show a more unclear pattern, where health arguments are used alongside profit motives. The SAQ gives the impression that it does not act much different than how an privately-owned company would and therefore a discussion about the legitimacy is warranted. This discussion is outside the scope of this thesis however.

The model in section 5.1 shows that alcohol monopolies that want to minimize the alcohol-related harm should try to find a balance point, where because the price and the taxation all the externalities are internalized. This is restricted however by a few tradeoffs, which limit the possibilities to increase the price to extreme heights. This finding is valid for all alcohol monopolies that have as their main goal to limit the harmful effects of alcohol consumption. However, not all alcohol monopolies are similar to this Scandinavian example and therefore a good and thorough look is necessary before translating this conclusion to another monopoly.

Another finding is the Monopoly Dilemma, which says that the monopoly should not profit from the better deals they can get because of their economies of scale. Together with these findings the main contribution of this thesis to the alcohol policy literature is that this is, to my best knowledge, the first alcohol monopoly pricing policy analysis, where differences between different monopolies, as well as the difference with the free market, has been analyzed. This has led to some interesting results, which deserve more attention in further research by using more extensive data for specific countries and alcohol monopolies. By doing this a closer look can be taken at the demand function and the reaction of consumers on price changes, thereby taking a good look at the effectiveness of the pricing policies.

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APPENDIX

Table A1: Summary of Federal and Provincial taxes on alcohol per standard drink applied to different strength alcoholic drinks in a Quebec Liquor Store

Beverage	Brand Name	% alcohol	$ Retail	SDs	$/SD	GST/SD	PST/SD	Excise Tax/SD	Oer Litre Prov Tax	$ Addit'l Tax Levy	Total Taxes/SD	Tax/L Drink	%Tax/$Retail
Wine													
750ml wine	Famese	12,5%	10.50	5.45	1.93	0.12	0.13	0.071	0.67	0.12	0.437	3.18	0.23
750ml sherry	Brights 74	18,0%	11.25	10.46	1.08	0.07	0.07	0.071	0.89	0.12	0.329	3.44	0.31
Spirits													
750ml spirits	Smirnoff (Vodka)	40.0%	21.75	17.43	1.25	0.08	0.08	0.191	0.67	0.12	0.471	10.95	0.38
750ml liqueur	Hiram Walker (Schnapps)	22.0%	20.95	9.58	2.19	0.13	0.14	0.191	0.67	0.11	0.581	7.42	0.27
330ml x4 pack	Mike's Hard Lemonade	7.0%	11.20	8.05	1.39	0.09	0.09	0.004	1.17	0.12	0.303	1.85	0.22
355ml x4 pack	Motts Clamato Caesar	5.5%	12.00	6.81	1.76	0.11	0.12	0.004	1.26	0.12	0.350	1.68	0.20

SD = Standard drink[19], GST= General Sales Tax, PST= Provincial Sales Tax

Source: Stockwell et al. (2006)

[19] "The concept 'standard drink' is based on the idea that usual "units" of beverage such as a glass of wine of 12%, a bottle of 5% beer and a measure of 40% spirits all contain roughly the same amount of alcohol. In Canada, this is estimated to be 13.6 grams or 17.2 mls of ethyl alcohol" (Stockwell et al., 2006)

Table A2: List of wines used for data analysis

Arthur Metz Gewurztraminer	2009
Bollinger La Grande Année	2000
Bollinger Rosé	
Bollinger Special Cuvée Brut	
Bollinger Vieilles Vignes Francaises	1999
Bourgogne Couvent des Jacobins Louis Jadot	2008
Bruno Paillard Première Cuvée	
Château Bahans Haut-Brion	2006
Château Belair	2005
Château Belgrave	2006
Château Bonnet	2009
Château Canon	2005
Château Canon La Gaffelière	2006
Château Cheval Blanc	1995
Château Cheval Blanc	2005
Château Cheval Blanc	2006
Château Clinet	2001
Château Clinet	2003
Château Cos d'Estournel, St.-Estèphe	2005
Château Cos d'Estournel, St.-Estèphe	2006
Château de Fargues	2005
Château de Fontenille	2006
Château d'Issan, Cantenac-Margaux (Margaux)	2006
Château Ducru-Beaucaillou, St.-Julien	2005
Château Ducru-Beaucaillou, St.-Julien	2006
Château d'Yquem	2005
Château Figeac	2005
Château Giscours, Labarde-Margaux (Margaux)	2006
Château Haut-Brion	2006
Château Kirwan, Cantenac-Margaux (Margaux)	2006
Château La Conseillante	2006
Château Lafaurie-Peyraguey	2005
Château Lafite Rothschild	2006
Château Lafon-Rochet, St.-Estèphe	2006
Château l'Angélus	2006
Château Latour	1988
Château Latour	1999
Château Latour	2005
Château Léoville Barton, St.-Julien	2001
Château Léoville-Las Cases, St.-Julien	1996
Château Léoville-Las Cases, St.-Julien	2005
Château Léoville-Las Cases, St.-Julien	2006
Château Magdelaine	2006
Château Margaux	2002
Château Margaux	2005
Château Margaux	2006
Château Montrose, St.-Estèphe	2006
Château Mouton Rothschild	2005
Château Mouton Rothschild	2006
Château Palmer	2005

Château Palmer	2006
Château Pape-Clement	2006
Château Petit Village	2006
Château Pichon Longueville Baron	2005
Château Pichon Longueville Baron	2006
Château Pichon Longueville Comtesse de Lalande	2004
Château Pichon Longueville Comtesse de Lalande	2005
Château Pichon Longueville Comtesse de Lalande	2006
Château Pontet-Canet, Pauillac	2004
Château Rauzan-Ségla, Margaux	1996
Château Rauzan-Ségla, Margaux	2006
Château Roc de Cambes	2004
Château Suduiraut Blanc	2006
Château Tertre Roteboeuf	2004
Château Teyssier Grand Cru	2004
Château Troplong-Mondot	2006
Château Trotanoy	2005
Château Vignelaure Coteaux d'Aix-en-Provence	2005
Clos la Coutale	2008
Comtes de Champagne Brut Blanc de Blancs	1999
Cuvée William Deutz Rosé	1999
De Ladoucette Pouilly-Fumé	2006
De Saint Gall Orpale Grand Cru	1996
de Venoge Brut Blanc de Noirs	
Delamotte Brut	
Deutz Brut Classic	
Dom Pérignon	2000
Domaine du Vieux Lazaret	2007
Fortant de France Cabernet Sauvignon	2006
Fortant Merlot	2006
Gros Manseng/Sauvignon Brumont vin pays des Côtes de Gascogne	2009
Guigal Côtes du Rhône	2006
Guigal Crozes-Hermitage	2006
Heidsieck & Co Monopole Blue Top	
J.P. Chenet Cabernet-Syrah	2009
Krug Rosé Brut	
La Devèze	2007
La Grande Dame	1998
La Grande Dame Rosé	1998
Lanson Black Label	
Lanson Rose Label	
Laurent-Perrier Brut	
Les Baronnes Sancerre	2009
Les Forts de Latour	2000
Les Forts de Latour	2006
Louis Bouillot Crémant de Bourgogne Rosé Brut	
Louis Roederer Brut Premier	
Louis Roederer Cristal Brut	2002
Moët & Chandon Brut	2003
Moët & Chandon Brut Impérial	
Moët & Chandon Rosé Impérial	

Mouton Cadet	2008
Mumm Cordon Rouge	
Parallèle 45 Côtes du Rhône	2007
Pavillon Rouge du Château Margaux	2006
Piper-Heidsieck Brut	
Pol Roger Blanc de Blancs	1999
Pol Roger Brut Rosé	2000
Pommery Brut Rosé	
Pommery Brut Royal	
Riesling Dopff&Irion Alsace	2009
Riesling Hugel Alsace	2008
Rully Premier Cru Les Cloux	2007
Salon	1997
Taittinger Brut Réserve	
Taittinger Brut Rosé Cuvée Prestige	
Vacqueyras Le Clos	2007
Veuve Clicquot Brut	
Vieux Château Certan 2005	2005

Table A3: List of spirits used for data analysis

Drink:	Price SAQ	Price Systembolaget	Type of drink	Country
Aberlour 10 Years	39,7805	53,5509	Whisky	Great Britain
Aberlour a'bunadh	83,1995	91,911	Whisky	Great Britain
Absolut Vodka	22,7525	36,6608	Wodka	Sweden
Auchentoshan 12 Years	52,3938	61,2231	Whisky	Great Britain
Bacardi Black	21,4912	36,6716	Rum	US / International Brand
Bacardi Gold	22,0733	36,6716	Rum	US / International Brand
Bacardi Razz	22,4614	37,5932	Rum	US / International Brand
Ballantine's Scotch blended	23,7228	39,7413	Whisky	Great Britain
Beefeater Dry Gin	20,812	38,2065	Gin	Great Britain
Belvedere Vodka	42,2061	53,5509	Wodka	Poland
Bombay Sapphire dry gin	24,7415	43,7305	Gin	Canada / International brand
Bowmore 12 Years	50,6959	61,2231	Whisky	Great Britain
Bowmore 18 Years	115,218	116,512	Whisky	Great Britain
Camitz Vodka	40,8027	59,8419	Wodka	Sweden
Chateau Fontpinot XO	186,532	131,806	Cognac	France
Courvoisier Cognac X.O.	186,289	169,706	Cognac	France
Grey Goose Vodka	42,6913	70,4292	Wodka	France
Hennessy Cognac XO	220,006	207,146	Cognac	France
Hennessy Paradise Rare Cognac	777,175	514,028	Cognac	France
Hennessy Richard	4555,35	2685,23	Cognac	France
Larsen Cognac V.S.O.P.	45,1169	55,0847	Cognac	France
Louis Royer V.S.O.P. Force 53	110,852	115,357	Cognac	France
Metaxa *****	22,8495	39,127	Brandy	Greece
Meukow XO Gold Panther	169,188	144,695	Cognac	France
Otard Gold Cognac X.O.	196,737	198,707	Cognac	France
Otard VSOP	73,4969	68,8943	Cognac	France
Polar Ice Vodka	21,006	33,4493	Wodka	Canada
Remy Martin Louis XIII	2328,61	1815,21	Cognac	France
Remy Martin VSOP	75,1948	68,8943	Cognac	France
Remy Martin XO Excellence	218,065	197,767	Cognac	France
Sauza Blanco	28,8651	38,2065	Tequila	Mexico
Skyy Vodka	22,2674	36,6716	Wodka	US
Smirnoff	21,2971	34,5234	Wodka	Canada (CA) / GB (SE)
Stolichnaya Vodka	22,5585	34,3709	Wodka	Russia
St-Remy Authentic VSOP Brandy	21,6852	31,4547	Brandy	France
Svedka Vodka	21,7337	35,1378	Wodka	Sweden
Tanquerat London Dry Gin	22,801	41,2751	Gin	Great Britain
Tesseron Lot No. 29	710,539	444,979	Cognac	France
Tesseron Lot No. 76 XO	159,313	138,097	Cognac	France