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Weakening of one more alcohol control pillar: a review of the effects of the alcohol tax cuts in Finland in 2004

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ABSTRACT

Aims To review the consequences of the changes in Finnish alcohol policy in 2004, when quotas for travellers' tax-free imports of alcoholic beverages from other European Union (EU) countries were abolished, Estonia joined the EU and excise duties on alcoholic beverages were reduced in Finland by one-third, on average. **Design** A review of published research and routinely available data. **Setting** Finland. **Measurements** Prices of alcoholic beverages, recorded and unrecorded alcohol consumption, data on criminality and other police statistics, alcohol-related deaths and hospitalizations, service use. **Findings** Alcohol consumption increased 10% in 2004, clearly more than in the early 2000s. With few exceptions, alcohol-related harms increased. Alcohol-induced liver disease deaths increased the most, by 46% in 2004–06 compared to 2001–03, which indicates a strong effect on pre-2004 heavy drinkers. Consumption and harms increased most among middle-aged and older segments of the population, and harms in the worst-off parts of the population in particular. **Conclusions** Alcohol taxation and alcohol prices affect consumption and related harms, and heavy drinkers are responsive to price. In Finland in 2004, the worst-off parts of the population paid the highest price in terms of health for cuts in alcohol prices. The removal of travellers' import quotas, which was an inherent part of creating the single European market, had serious public health consequences in Finland.

Keywords Alcohol consumption, alcohol policy, alcohol prices, alcohol-related harm, alcohol taxation, natural experiment.

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INTRODUCTION

The year 2004 saw significant changes in Finnish alcohol control. Quotas on tax-free imports of alcoholic beverages by travellers arriving in Finland from other European Union (EU) countries were abolished on 1 January. This had great significance after Finland's southern neighbour, Estonia, a country with low alcohol prices, joined the European Union (EU) on 1 May. Related to these changes, alcohol taxes were cut on average by one-third on 1 March.

This paper puts the 2004 developments into context and examines their effects on alcohol consumption, its distribution and related harm. We do this by reviewing the published research and routinely available data accumulated on the issue, which have been published only in Finnish or are otherwise not easily available to the international readership. The measures we use when assessing the effects of the changes are: prices of alcoholic beverages; recorded and unrecorded alcohol consumption; data on criminality and other police statistics; alcohol-related deaths and hospitalizations; and data on service use.

WEAKENING PILLARS OF ALCOHOL CONTROL POLICY

Nordic alcohol control has rested on three pillars: strict control of the physical availability of alcohol, a comprehensive state monopoly on alcohol production and trade that prevented private profit-seeking and high prices of alcoholic beverages.

In Finland, the physical availability of alcoholic beverages was very strictly controlled until 1969, when new alcohol legislation was introduced. The most important

Table 1 Reductions in alcohol excise duties and prices of alcoholic beverages in Alko stores on 1 March 2004.

Beverage category	*Tax reduction, %*	*Decrease in off-premise price, %*
Vodkas	44	36
Other distilled spirits	44	28
Intermediate products	40	25
Long drinks[a]	37	17
Wine	10	3
Cider	23	7
Beer	32	13

[a]Long drinks are a popular type of pre-mixed drink. Source: Government Bill 80/2003; Alko Inc.

changes were that medium beer (up to 4.7% alcohol by volume) could be sold in grocery stores and cafés, alcohol sales were enabled in rural municipalities and legal age limits for alcohol purchases were lowered [1]. During the following decades, alcohol availability has increased further as the number of liquor stores and licensed restaurants has expanded, controls of off- and on-premise sales of alcoholic beverages have decreased and opening hours of alcohol outlets have been extended [2].

In 1995, when Finland joined the EU, the state monopoly on the production, import, export and wholesale of alcoholic beverages was dissolved. However, the off-premise retail alcohol monopoly, Alko, was maintained for alcoholic beverages with an alcohol content exceeding 4.7% by volume [3].

During the second half of the 20th century, real prices of alcoholic beverages were held practically at the high level they had reached in 1951. In March 2004, however, the prices of alcoholic beverages decreased greatly when excise duty rates for alcoholic beverages were lowered. The relative decrease was higher for strong alcoholic beverages than for beer and wine (Table 1).

MOTIVATIONS BEHIND THE 2004 ALCOHOL TAX CUTS

A number of factors magnified the potential impact on Finland of the abolishment of travellers' import quotas and Estonia's accession into the EU. The population in Finland is concentrated in the south, and Estonia can be reached from southern Finland in less than 2 hours by boat. The 5 million inhabitants of Finland made approximately 2.5 million trips to Estonia annually at the turn of the millennium. At the beginning of 2004, prices in Estonia for cheap brands of vodka were merely a fifth of the Finnish prices, prices for beer were one-third and for wine two-thirds of the Finnish prices [4]. Since May 2004, Finns have been able to take with them practically any amount of alcoholic beverages for their own use, whereas before that a Finnish traveller having stayed in Estonia for at least 20 hours was allowed to import tax-free merely 1 litre of strong alcoholic beverages or 2 litres of intermediate products, and 2 litres of wine and 16 litres of beer.

The aim of the tax cuts from the government's perspective was to curb the expected growth of travellers' alcohol imports, to maintain the tax base of alcoholic beverages and jobs created by the alcohol industry in Finland and to prevent the emergence of grey markets based on travellers' alcohol imports ([5], p. 28–29). The government anticipated that the tax cuts would increase alcohol consumption and related harms but it emphasized that, due to much greater travellers' imports, they would increase even if no cuts were made in alcohol taxes ([5], p. 26–27). The removal of the import quotas, together with Estonia's EU membership, thus implied that Finland had only bad alternatives to choose from in the spring of 2004.

The differences in tax cuts by beverage category were motivated mainly by differences in the prices of alcoholic beverages between Finland and Estonia. Furthermore, in Estonia the price of ethyl alcohol is lowest in vodka, and it is much easier to transport alcohol in the form of a beverage containing 40–80% alcohol than in the form of wine or beer. For beer, the size of the tax cut was also affected by Finland's industrial policy targets ([5], p. 29).

EFFECTS OF THE TAX CUTS ON PRICES

The share of alcohol tax in the price of alcohol is larger for off-premise than on-premise retail sales. Accordingly, on-premise sales prices declined by only 4% in March 2004, representing approximately two-thirds of the calculated reduction margin resulting from the tax reform.

In off-premise retail sales, the tax reduction was reflected to the fullest extent possible in the retail prices of the state alcohol company Alko's stores, as Alko did not change its margin and the suppliers were not able in March to change the prices at which they sold their beverages to Alko (Table 1). No major price changes took place between April 2004 and the end of 2007. In groceries, where increased international competition made special offers on medium beer increasingly common, the decrease in medium beer prices was even greater than that attributable to the tax reduction. In late 2007, the prices of the most inexpensive vodkas in Estonia were still only one-third of the Finnish level.

One factor that has explained changes in the market shares of different beverages in Finland concerns which brand is the cheapest source of ethyl alcohol. Before the tax cuts, one centilitre of ethyl alcohol cost, at its cheapest, 51 cents in table wines, 55 cents in fortified wines and 69 cents in vodka, compared with 48, 41 and 42 cents,

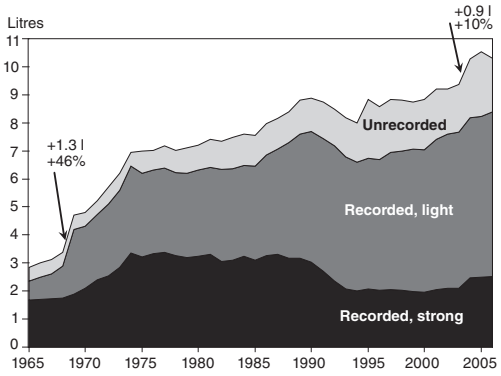

Figure 1 Per capita alcohol consumption in litres of 100% alcohol in Finland in 1965–2006, divided into unrecorded and recorded consumption of light and strong alcoholic beverages. Source: STAKES

respectively, after the cuts (Alko's price list, January and April, 2004). In other words, it became significantly cheaper to buy ethyl alcohol in fortified wines and in vodka than in table wine. For medium beer the price of one centilitre of ethyl alcohol was 67 cents in March 2004 in Alko stores, whereas the lowest discount prices offered by groceries translated to as little as 25 cents, with prices below 40 cents being quite common.

EFFECTS OF THE 2004 CHANGES ON ALCOHOL CONSUMPTION

In the mid-1960s, total per capita alcohol consumption (both recorded and estimated unrecorded) was 3 litres, while it was slightly more than 9 litres in 2003 (Fig. 1). In 2004, consumption increased 10% and has since remained at that level.

Recorded alcohol consumption, which measures accurately the volume of alcohol sales in Finland [6], increased 7% in 2004 over the previous year (Table 2). The percentage growth for 2004, however, fails to reflect the total impact of the tax reform as the post-reform period covered only 10 months of the year.

The immediate effects of the tax change can be evaluated on the basis of weekly Alko sales, contrasting them to the same weeks in the previous year (Fig. 2). Sales increased immediately at the beginning of March (week 10). The growth rate was higher during the months immediately following the tax cuts than during the summer months, when Estonia was already an EU member state.

In 2004, the sales of both strong alcoholic beverages and fortified wines increased 17% over the previous year (Table 2). Beer sales increased by 5%, whereas no increase took place for table wines, and sales of cider and 'long drinks' (a popular type of premixed drink) declined somewhat. The decades-long increasing trend in wine consumption paused in 2004.

On-premise consumption of alcohol has decreased constantly since 1997, on average by 4% a year. In 2004, on-premise sales decreased by 4%, after which the decrease ended.

In Finland, the volume of unrecorded alcohol consumption has been assessed regularly by interview studies [7]. Even if such estimates have inherent uncertainties, they provide a fairly reliable description of the order of magnitude and the direction of change.

Unrecorded alcohol remained roughly unchanged during the first few years of the 2000s [8], but in 2004 it increased by about one-quarter. It continued to grow in 2005, but then decreased in 2006 (Table 3). These changes were driven mainly by travellers' imports which, despite the tax cuts, were estimated to have increased by nearly 80% in 2004. Legal and illegal home production and smuggling of alcoholic beverages had already decreased in the early 2000s, but in 2004 there was a larger, approximately 50%, drop (Table 3).

HOW WAS THE INCREASE IN CONSUMPTION DISTRIBUTED?

Some qualitative data on substitution across beverage types are available, based on discussions with sales staff in Alko stores. According to them, semi-dry white wines and inexpensive fortified wines were favoured by low-income problem drinkers before the tax cuts because of the low price of ethyl alcohol contained in them. The differential tax cuts by beverage type made them shift from inexpensive white wines to inexpensive vodkas. This type of substitution explains the discontinuation of the increasing trend in wine consumption in 2004.

Young people drink mainly beer and cider sold in grocery stores ([9], table 7.2). Among them a similar shift to stronger beverages (as with low-income problem drinkers) was not to be expected, considering that the price of ethyl alcohol in discount beer after 2004 was able to compete with the price of vodkas and that the age limit for buying distilled spirits is 20 years and for beer and cider, which are available in groceries, is 18 years. Youth health surveys show that the increase in the prevalence of abstention that began in the late 1990s has continued into 2004, whereas the downward trend in drinking frequency and binge drinking in some age groups levelled off in 2004 but has continued since then [10,11].

According to a survey conducted by the National Public Health Institute, from 2000–03 to 2004–05 the proportion of people with moderate to heavy alcohol consumption increased most in the group with the lowest level of education [12]. An analysis by age group revealed a distinct division of the male population into two groups: drinking among people over 45 increased clearly, whereas no increase was observed in the age group under

Table 2 Recorded per capita consumption of alcoholic beverages in litres of 100% alcohol by beverage type and channel of distribution in the 2000s, and changes in 2003–2004.

	Litres per capita			*Change 2003–04*	
	2003	*2004*	*2006*	*Litres*[a]	*%*
Strong beverages	2.0	2.3	2.4	0.34	17
Fortified wines	0.1	0.2	0.2	0.02	17
Table wines	1.2	1.2	1.3	0.00	0
Cider and long drinks	0.8	0.7	0.8	–0.04	–5
Beer	3.6	3.8	3.8	0.17	5
Total, of which	7.7	8.2	8.4	0.50	7
On-premise sales	1.4	1.4	1.4	–0.05	–4
Retail sales, of which	6.3	6.8	7.1	0.54	9
Alko liquor stores	3.3	3.6	3.7	0.34	10
Grocery stores	3.0	3.2	3.4	0.21	7

[a]Changes have been calculated on more accurate figures than those shown in the tables. Source: National Product Control Agency for Welfare and Health.

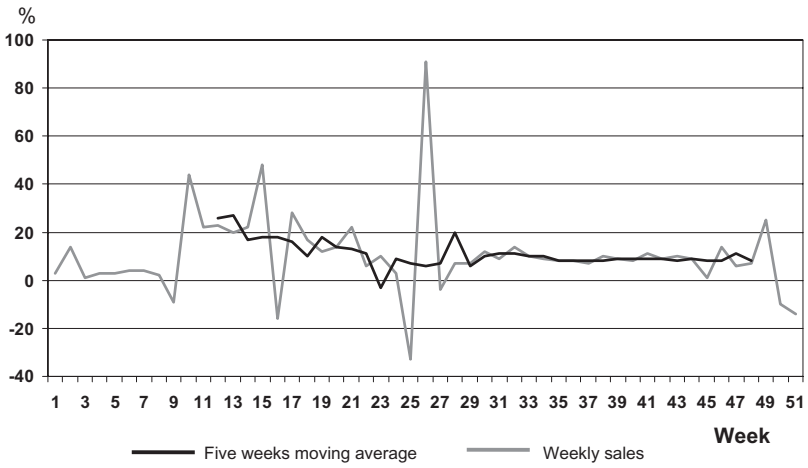

Figure 2 Changes in weekly sales of the Finnish off-premise retail alcohol monopoly, Alko, in 100% alcohol in 2004 compared to the sales in previous year. Tax change in week 10; Easter in week 16 in 2003, in week 15 in 2004; midsummer in week 25 in 2003 and in week 26 in 2004; long weekend for Independence Day in week 49 in 2004. Estonia joined the EU in week 18. Alko's sales are recorded at the time when the bottles are purchased by the customer. Source: Alko Inc.

45. For women, the differences between age groups were similar in direction but less pronounced [12]. In another survey, the increase in alcohol consumption was not observed [13,14], but the changes by age group suggested by the study were similar to the Public Health Institute's survey [12].

TRENDS IN ALCOHOL-RELATED HARMS

Table 4 gives the percentage change in alcohol-related harms from 2003 to 2004 and, due to larger random variation than with the alcohol consumption series, from 2001–03 to 2004–06. The table shows changes as observed and as expected if the trend observed in 2001–03 had continued. Figs 3 and 4 show some central harm series from 1990 onwards.

Data on criminality and other police statistics

In Finland, 70% of assaults are committed while under the influence of alcohol [15], which is towards the higher end of the range observed across countries [16]. The 2004 changes had no permanent effect on manslaughters and murders or attempted manslaughters and murders (Table 4). This result has been confirmed by a time–series analysis by Sirén & Lehti [15], which showed that the increase in manslaughters and murders in March 2004 was statistically significant, but that the effect did not last. The temporary increase in 2004 was accounted for largely by manslaughters within small groups consisting of marginalized drunkards [15].

The observed number of assaults increased somewhat after 2004, but the growth rate was no greater than before 2004 (Table 4, Fig. 4). This result is also confirmed by a time–series analysis [15] which showed that there was no statistically significant intervention effect on assaults in 2004.

Arrests for drunkenness and the total number of drink driving cases recorded by the police increased in 2004, more than could have been expected merely on the basis of the previous trend (Table 4, Fig. 3). In the case of arrests

Table 3 Unrecorded per capita consumption of alcoholic beverages in litres of 100% alcohol by means of acquisition in the 2000s, and changes in 2003–04.[a]

	Litres per capita			*Change 2003–04*	
	2003	*2004*	*2006*	*litres*	*%*
Imports by travellers, of which	0.88	1.56	1.39	0.68	77
Strong alcoholic beverages	0.42	0.88	0.76	0.46	110
Intermediate products	0.07	0.10	0.08	0.03	43
Wines	0.11	0.15	0.18	0.04	36
Ciders and long drinks	0.01	0.07	0.11	0.06	600[b]
Beer	0.27	0.36	0.24	0.09	33
Consumption outside Finland	0.33	0.33	0.30	0.00	0
Legal home production	0.19	0.11	0.09	–0.08	–42
Illegal home production and smuggling	0.27	0.11	0.08	–0.16	–59
Total	1.66	2.11	1.86	0.45	27

[a]The figures are based on interview studies, so they should be taken only as indicative of the order of magnitude, even if the estimates are given with an accuracy of two decimal places in the tables. [b]The strong relative growth in the imports of long drinks and ciders by travellers after 2003 is due to the very small absolute imported amounts before 2004 when they were included in the import quota of wines or strong alcoholic beverages, depending on the method of production. The small quotas were rarely used for importing long drinks or ciders. Source: National Product Control Agency for Welfare and Health and STAKES.

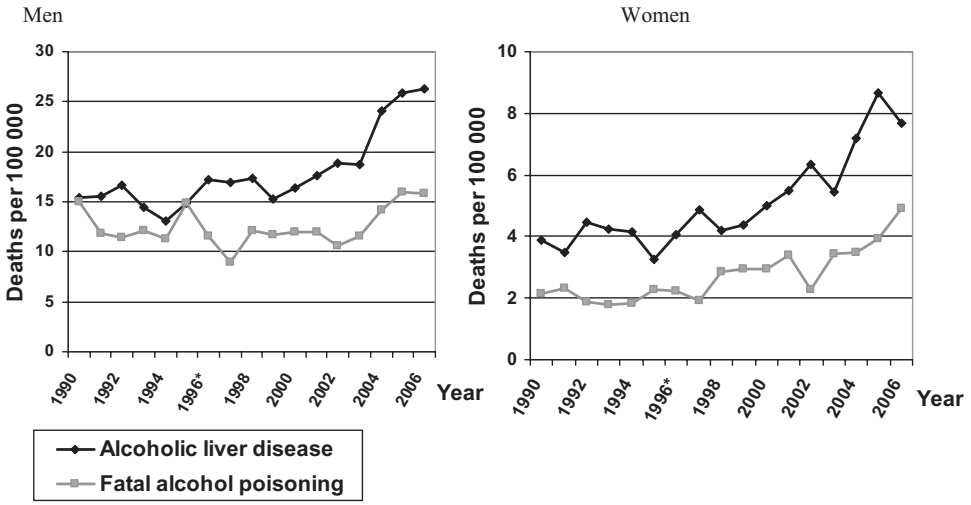

Figure 3 Age-adjusted mortality from alcoholic liver diseases and fatal alcohol poisoning among men (left) and women (right) in 1990–2006. *Change in classification system in 1996

for drunkenness this was due mainly to an increase in the number of arrests per arrested person over the year [17].

Despite the 10% increase in aggravated cases of drink driving in 2004, these cases seemed not to have increased more than expected on the basis of the trend in the early 2000s, while for non-aggravated drink driving 2004 may have marked an end to the decreasing trend in the early 2000s. The number of breath tests conducted by the police increased between 2003 and 2004, but this explains only a part of the increase in drink driving cases [18,19]. The number of people injured in accidents involving drink driving also increased by 9% in 2004 over the previous year. In 2005, however, the figure declined, being close to the 2003 level [20].

Alcohol-related deaths

The 2004 increase in consumption resulted in a dramatic increase in deaths from alcohol-attributable diseases and poisonings in both men and women. The increase was 19% in one year, and 31% from 2001–03 to 2004–06, which was much more than expected on the basis of the trend before 2004 (Table 4). The relative increase was similar among men and women, but the absolute number of deaths increased much more among men. Although accidental and violent deaths with alcohol intoxication as a contributory cause increased less they, too, increased more than expected, particularly among women. According to a time–series analysis, the impact of the alcohol tax

Table 4 Trends in alcohol-related harms in 2000s.

	2003	*2004*	*2006*	*Change 2003–04, %*	*Change from 'before' (2001–03) to 'after' (2004–06)[a], %*	
Criminality and other police data					Observed	Expected[b]
Manslaughters and murders total	103	144	111	40	−5	−46
Attempted manslaughters and murders	347	334	271	−4	−12	−9
Assaults	28 862	29 806	30 885	3	8	9
Arrests for drunkenness	95 275	105 819	99 559	11	7	−1
Drink driving total	22 858	24 861	22 929	9	4	1
Drink driving	8 721	9 368	8 664	7	−1	−11
Aggravated drink driving	14 137	15 493	14 265	10	8	10
Alcohol-related deaths						
All alcohol-related deaths						
Total	2 456	2 826	3 033	15	23	6
Men	2 015	2 285	2 464	13	21	6
Women	441	541	569	23	31	5
Alcohol attributable disease or poisoning						
Total	1 560	1 860	2 032	19	31	9
Men	1 233	1 477	1 599	20	31	10
Women	327	383	433	17	33	6
Accidental and violent deaths with alcohol intoxication as a contributory cause						
Total	896	966	1 001	8	9	1
Men	782	808	865	3	7	0
Women	114	158	136	39	24	5
Alcohol-related deaths by cause						
Liver diseases caused by alcohol	643	831	978	29	46	8
Alcohol cardiomyopathy	108	116	102	7	13	25
Pancreatic diseases caused by alcohol	88	100	117	14	52	127
Poisoning, alcoholism	677	756	767	12	16	6
Alcohol-related hospitalizations						
Total	24 491	26 673	26 016	9	7	−2
Men	19 544	21 338	20 531	9	7	−2
Women	4 947	5 335	5 485	8	9	−2
Alcohol-related hospitalizations by cause						
Alcohol dependence	6 153	6 354	6 001	3	−3	−9
Other disorders caused by alcohol	4 619	5 370	6 060	16	24	−3
Liver diseases caused by alcohol	2 491	2 885	3 220	16	33	17
Intoxication	7 142	8 009	7 255	12	6	−4
Other alcohol diseases	3 744	3 780	3 451	1	−5	−2
Service use						
A-clinics: clients	41 710	42 977	44 443	3	4	−1
Detoxification centres: clients	9 223	10 091	10 569	9	10	−1
Detoxification centres: care days	97 129	106 204	105 519	9	10	7
Rehabilitation centres: clients	6 774	6 848	6 979	1	4	0
Rehabilitation centres: care days	278 082	300 288	301 114	8	12	10

[a]The observed change is from the mean of 2001, 2002 and 2003 to the mean of 2004, 2005 and 2006. To keep the table concise, only years 2003, 2004 and 2006 are shown. Data for all years are available as supporting information on the Wiley-Blackwell website. Please see the end of the paper for details on how to access this. [b]The calculated (expected) percentage change from mean of years 2001–03 to mean of 2004–06 when the annual relative changes in 2004–06 were set to equal those seen in 2001–03, i.e. when the pre-existing trend was assumed to continue. Source: STAKES and Statistics Finland/StatFin online service.

cuts in March 2004 on another category of alcohol-related deaths, namely 'alcohol-positive sudden deaths', was a statistically significant 17% increase [21]. No statistically significant effects were observed for 1 January or 1 May.

The greatest increase occurred in deaths from alcohol-induced liver diseases. The increase in 2004 was 29% on the previous year, and the number of such deaths in 2004–06 was 46% higher than in the early 2000s (Table 4, Fig. 4). Deaths from alcohol poisoning and

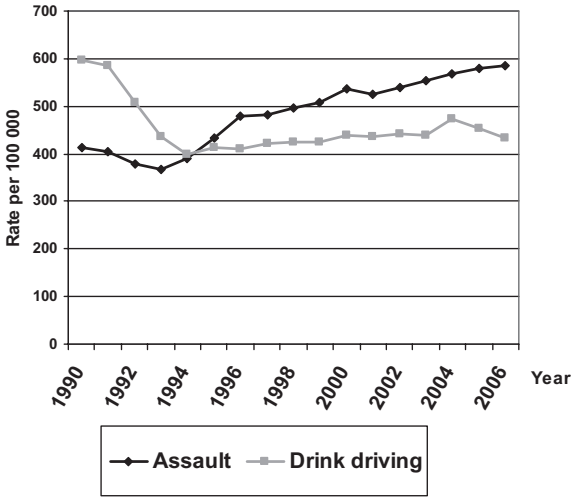

Figure 4 The rate of assaults and drink driving in 1990–2006

alcohol dependence also increased clearly more than expected. By contrast, the increase in the smaller categories of alcohol-induced pancreatic diseases and alcoholic cardiomyopathy was no greater than before 2004.

Another study showed that the growth in alcohol-related mortality was clearly largest in ages 50–70 years, while it was non-existent among men (but not women) aged 35 and younger [22,23]. Additionally, in 2004–05 the increase in alcohol-related deaths did not concern people in active employment or people with underage children, but was concentrated in the worst-off parts of the population: compared with 2001–03, the increase in 2004–05 among men aged 30–59 was 2 per 100 000 person-years for the employed, 166 for long-term unemployed, 101 for other unemployed, 168 for pensioners and 57 for men living alone. The corresponding figures for women were 1, 109, 46, 59 and 23 per 100 000 person-years, respectively.

Alcohol-related hospitalizations

Alcohol-related hospitalizations increased less than alcohol-related deaths. However, the increase was clearly greater than expected on the basis of the development before 2004 (Table 4). The growth in alcohol-related hospitalizations could be attributed largely to three diagnostic categories, namely alcohol intoxication, liver diseases caused by alcohol and the category including psychotic disorders caused by alcohol (ICD-10 codes F10.3–F10.9).

Separate tabulations from the hospital discharge register show that the increase in hospital discharges was associated strongly with age [24]. No increases were observed in 2004 in the 15–44 age group, but rather a slight decrease. The increase concerned mainly over 45-year-olds: it was 9% in the 45–54 age group, 25% in the 55–64 age group and 11% in the age group 65 and older. Additionally, alcohol-related hospitalizations increased 32% among the under 15-year-olds.

Service use

The number of clients and care days in specialized services for substance abusers, the great majority of whom abuse alcohol, increased somewhat from 2001–03 to 2004–06, and more so than they had increased in the early 2000s (Table 4). These figures do not, however, describe directly the demand for treatment, as the number of treatment episodes is affected by local authorities' commitment to pay for treatment in substance abuse units. A national report from 2005 stated that the supply of services for substance abusers has not been able to respond to the increasing need for such services [25]. Additionally, problem users in the poorest condition may have been left without treatment as a consequence of obstacles such as waiting lists and great distances to service units [26], and of a shift among service providers favouring the more socially integrated problem users able to commit themselves to an intensive treatment relationship [27].

DISCUSSION

In 2004, Finland's quotas for travellers' tax-free imports of alcoholic beverages from other EU countries were abolished. At the same time Estonia joined the EU and excise duties on alcoholic beverages were reduced, which together meant a significant reduction in the effective price of alcohol. In that year alcohol consumption increased clearly more than it had increased in the early 2000s. The reaction of Finnish consumers to the price decreases of March 2004 was an immediate increase, and Estonian EU membership led to increases in travellers' alcohol imports and decreases in alcohol sales in Finland in summer 2004. Consumption stabilized to the new, higher level by autumn 2004. These results suggest strongly that the reduction in the effective price of alcohol had a considerable permanent impact on alcohol consumption in Finland.

This finding, based on a natural experiment, confirms what was already known on the basis of time–series and pooled cross-sectional time–series analyses about the effects of taxes and prices on alcohol consumption: changes in prices of alcoholic beverages tend to be followed by opposite changes in consumption [28,29]. In fact, even the size of the Finnish 2004 changes corresponds quite well with pre-2004 predictions, according to which the price elasticity for off-premise sales was –0.93 for spirits, –1.46 for wine and –0.49 for beer [30].

The increase in consumption, in its turn, was followed by an increase in a wide spectrum of alcohol-related harm: arrests for drunkenness, non-aggravated drink driving and alcohol-related deaths and hospitalizations.

For assaults, and for some causes of death or hospitalization, the increase was no larger than could be expected on the basis of the pre-existing trend. In principle, something other than the alcohol policy change under scrutiny could have caused the changes in consumption and harms. Indeed, third factors, such as police control or the supply of treatment, are known to have affected trends in alcohol-related harms in Finland in the past 15 years [19]. However, there are no obvious factors other than alcohol that could explain the increased rate of alcohol-related harms observed after 2003.

The decrease in alcohol prices was expected to manifest itself as an increase in drinking among the population at large, but even more so among people on low incomes, including young people ([5], p. 40). The results reviewed in this paper, based on surveys and on alcohol-related hospitalizations and mortality, showed that it was the middle-aged and older segments of the population whose consumption and related harms increased the most. This observation contrasts with results in the econometric literature, which suggest a higher elasticity among younger than among older drinkers [29,31]

The largest increase in harm was observed for deaths from alcoholic liver cirrhosis and other liver diseases, which were, in 2005, at a nearly 50% higher level than they were in the first years of the millennium. Because liver cirrhosis takes a long time to develop, this sudden increase can mean only that alcohol consumption rose considerably among heavy drinkers who had damaged their livers already before 2004. Hence, the Finnish experience confirms the results from studies showing that heavy drinkers are especially responsive to price [32,33], although opposite results have also been reported [34].

The reduction of socio-economic differences in mortality has been recognized as an important goal ([35,36]), and alcohol-related causes have been found to be a major determinant of socio-economic differences in premature mortality in Finland [37]. Published results [22,23] show that the changes in alcohol policy in 2004 resulted in dramatic increases in severe alcohol-related harm among those parts of the population that are the worst-off: the unemployed, early pensioners and people living alone. Hence, it can be said that high alcohol prices are a useful tool to protect the health of the worst-off parts of the population. It should be mentioned, however, that the aforementioned effects on mortality until the end of 2005 do not exclude the possibility that better-off parts of the population also increased their consumption, as the time lag between increased drinking and death from an alcohol-related cause for a healthy working adult may be several years.

With no information on what would have happened in Finland had taxes not been cut, a proper evaluation of the sensibility of the Finnish policy decision is difficult. However, a comparison can be made with Sweden, which experienced a removal of import quotas similar to Finland [38]. In Sweden, the only tax cut after 2000 was a moderate decrease in the taxes for wines. As a result of the increasing import quotas, private imports and smuggling grew so much that total consumption increased [39] and by 2003, in the region next to Denmark, imports exceeded registered consumption ([39], table 15). This resulted in considerable problems with a black market for alcoholic beverages. However, in Sweden as a whole, alcohol-related deaths have not increased with increasing consumption, even if there was an increase in the south of Sweden [40]. It is possible, albeit not proven, that the Swedish approach saved lives compared to a tax reduction approach, although it happened at the expense of compliance with the law, employment and state revenues.

In the EU, economic issues tend to be guided by 'hard law', or binding legislation, and public health issues by 'soft law', such as recommendations and strategies [41], which is problematic from a public health viewpoint. The EU has recognized this, and in 2006 adopted a Health in All Policies approach [42]. The fact that the EU, aiming to remove barriers to trade, has forced member states to abolish travellers' import quotas of alcohol and tobacco is a prime example of this conflict of interests. As this paper has shown, in Finland the removal of import quotas, mediated largely by reduced taxes, resulted in severe public health consequences, a finding that should be taken into account in future trade policy decisions.

Declarations of interest

None.

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Supporting information

Additional Supporting Information may be found in the online version of this article:

Table S1 Trends in alcohol-related harms in 2000s.

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