ECONSTOR
Make Your Publications Visible.

A Service of

ZBW Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Johansson, Edvard; Böckerman, Petri; Prättälä, Ritva; Uutela, Antti

Working Paper

Alcohol mortality, drinking behaviour, and business cycles: Are slumps really dry seasons?

ETLA Discussion Papers, No. 986

Provided in Cooperation with:
The Research Institute of the Finnish Economy (ETLA), Helsinki

Suggested Citation: Johansson, Edvard; Böckerman, Petri; Prättälä, Ritva; Uutela, Antti (2005) : Alcohol mortality, drinking behaviour, and business cycles: Are slumps really dry seasons?, ETLA Discussion Papers, No. 986, The Research Institute of the Finnish Economy (ETLA), Helsinki

This Version is available at:
https://hdl.handle.net/10419/63991

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

ETLA
ELINKEINOELÄMÄN TUTKIMUSLAITOS
THE RESEARCH INSTITUTE OF THE FINNISH ECONOMY
Lönnrotinkatu 4 B 00120 Helsinki Finland Tel. 358-9-609 900
Telefax 358-9-601 753 World Wide Web: http://www.etla.fi/

Keskusteluaiheita – Discussion papers

No. 986

Edvard Johansson* – Petri Böckerman** –

Ritva Prättälä*** – Antti Uutela***

ALCOHOL MORTALITY, DRINKING BEHAVIOUR, AND BUSINESS CYCLES: ARE SLUMPS REALLY DRY SEASONS?

* The Research Institute of the Finnish Economy. Address: Lönnrotinkatu 4B, FIN-00120 Helsinki, FINLAND. Phone: +358-9-609900. Fax: +358-9-601753. E-mail: edvard.johansson@etla.fi.

** Labour Institute for Economic Research. Address: Pitkänsillanranta 3A, 6. krs. FIN-00530 Helsinki, FINLAND. Phone: +358-9-25357330. Fax: +358-9-25357332. E-mail: petri.bockerman@labour.fi.

*** National Public Health Institute. Address: Mannerheimintie 166, FIN-00300 Helsinki, FINLAND. E-mails: ritva.prattala@ktl.fi and antti.uutela@ktl.fi.

ISSN 0781-6847 16.06.2005

JOHANSSON, Edvard – **BÖCKERMAN**, Petri – **PRÄTTÄLÄ**, Ritva – **UUTELA**, Antti, **ALCOHOL MORTALITY, DRINKING BEHAVIOUR, AND BUSINESS CYCLES: ARE SLUMPS REALLY DRY SEASONS?** Helsinki: ETLA, Elinkeinoelämän Tutkimuslaitos, The Research Institute of the Finnish Economy, 2005, 10 p. (Keskusteluaiheita, Discussion Papers, ISSN 0781-6847; No. 986).

ABSTRACT: This paper explores the connection between alcohol mortality, drinking behaviour and macroeconomic fluctuations in Finland by using both aggregate and micro-level data during the past few decades. The results from the aggregate data reveal that an improvement in regional economic conditions measured by the employment-to-population rate produces a decrease in alcohol mortality. However, the great slump of the early 1990s is an exception to this pattern. During that particular episode, alcohol mortality did indeed decline, as there was an unprecedented collapse in economic activity. The results from the micro-data show that an increase in the employment-to-population rate and expansion in regional GDP produces an increase in alcohol consumption while having no effect on the probability of being a drinker. All in all, the Finnish evidence presented does not overwhelmingly support the conclusions reported for the USA, according to which temporary economic slowdowns are good for health. In contrast, at least alcohol mortality seems to increase in those bad times that are not exceptional economic crises like the one experienced in the early 1990s. However, there is evidence that alcohol consumption is strongly procyclical by its nature. This suggests that alcohol consumption and mortality may be delinked in the short-run business cycle context.

JEL: E32, I12, R11

KEY WORDS: alcohol mortality, drinking, business cycles

JOHANSSON, Edvard – **BÖCKERMAN**, Petri – **PRÄTTÄLÄ**, Ritva – **UUTELA**, Antti, **ALCOHOL MORTALITY, DRINKING BEHAVIOUR, AND BUSINESS CYCLES: ARE SLUMPS REALLY DRY SEASONS?** Helsinki: ETLA, Elinkeinoelämän Tutkimuslaitos, The Research Institute of the Finnish Economy, 2005, 10 s. (Keskusteluaiheita, Discussion Papers, ISSN 0781-6847; No. 986).

TIIVISTELMÄ: Tutkimuksessa tarkastellaan alkoholikuolleisuuden, juomakäyttäytymisen ja suhdannevaihtelujen välistä yhteyttä Suomessa käyttäen makro- ja mikrotason aineistoja viimeisen kahdenkymmenen vuoden ajalta. Makrotason aineiston valossa alueellisen työllisyysasteen paraneminen alentaa alkoholikuolleisuutta. 1990-luvun suuri lama on kuitenkin poikkeus tässä suhteessa, sillä tuolloin alkoholikuolleisuus aleni talouden taantuessa voimakkaasti. Mikrotason aineistosta saatujen tulosten mukaan alueellisen työllisyysasteen paraneminen ja alueellisen BKT:n kasvun ripeytyminen kasvattavat alkoholin kulutusta. Suhdannevaihteluilla ei ole sitä vastoin lainkaan vaikutusta niiden suomalaisten osuuteen, jotka ovat raittiita. Tulokset eivät siten ole täysin sopusoinnussa aiemmin Yhdysvalloista saatujen tulosten kanssa, joiden mukaan tilapäiset taloudelliset taantumat ovat hyväksi ihmisten terveydelle. Suomen tulosten valossa näyttää pikemminkin siltä, että alkoholikuolleisuus yleistyy taloudellisten taantumien aikana, jotka eivät ole poikkeuksellisia talouskriisejä kuten Suomen 1990-luvun alun lama. Alkoholikulutus on sitä vastoin selvästi myötäsyklistä. Tämän tähden alkoholikulutus ja toisaalta alkoholikuolleisuus eivät ole välttämättä tiukassa yhteydessä suhdannevaihtelujen aikajänteellä.

JEL: E32, I12, R11

AVAINSANOJA: alkoholikuolleisuus, alkoholikulutus, suhdanteet

1 Introduction

Economic conditions matter for health. This notion has produced a strand of literature. The results are mixed. The first empirical studies based on time-series analysis revealed a positive relationship between measures of health and economic conditions (Brenner, 1973; 1975; 1979). However, many authors concluded that these studies suffer from serious technical problems (Gravelle, Hutchinson & Stern, 1981; Stern, 1983; Wagstaff, 1985). Studies that have tried to control for the shortcomings have usually failed to find a consistent relationship between health and economic conditions (Forbes & McGregor, 1984; McAvinchey, 1994; Joyce & Mocan, 1993). Recent studies for developed countries have, surprisingly, found a negative relationship between economic conditions and health (Ruhm, 2000; 2003a, 2003b; Neumayer, 2004).[1] There is substantial evidence that mortality declines in slumps. These studies use fixed-effects (FE) models in order to exploit within-region changes in macroeconomic conditions that automatically control for time-invariant factors that may be spuriously correlated with economic conditions across regions.

Furthermore, some of these newer studies have also not only used fixed regional effects on aggregate regional data, but individual microdata as well (Ruhm, 2003b; Ruhm & Black, 2002). Physical health seems to improve during bad times. Ruhm (2003b) asks whether these improvements in health during bad economic times arise owing to changes in health behaviour. Using US microdata from the Behavioural Risk Factor Surveillance System 1987-2000, he shows that smoking, body-mass index, and leisure-time physical inactivity decline when economic conditions worsen. In addition, drinking seems to decrease during temporary economic slowdowns. Ruhm and Black (2002) argue that this pattern arises owing to the decline in alcohol use among heavy consumers. These are all provocative claims, because they challenge the conventional wisdom according to which economic progress is always and everywhere good for one's health.[2]

---

1 Ruhm (2005) provides a survey of this literature.

2 It should be noted, however, that there are some studies (e.g., Dee, 2001) that report that binge drinking, i.e. the consumption of large amounts of alcohol on the same occasion is strongly countercyclical. Such a result supports the hypothesis that drinking, at least binge drinking, is sometimes used as a form of self-medication in time of psychological stress.

This paper focuses on the relationship between alcohol mortality, drinking behaviour and macroeconomic fluctuations in Finland.[3] We use both aggregate and micro-level data for the past few decades to pursue the issue at hand. The connection between drinking behaviour and business cycles is a complex one, because there are a number of different factors at work at the same time. For instance, drinking may decrease in slumps, because people have less money to spend on alcohol along with other items of consumption. In addition, there may be less work-related stress during economic slowdowns, which induces less drinking among workers. On the other hand, the unemployment that typically soars during slumps can stimulate consumption of alcohol among unemployed persons. In this paper, we do not make an attempt to disentangle those different effects that may have an impact on drinking behaviour. The aim of this paper is more modest; we aim to provide a comprehensive picture of the connection between alcohol mortality, drinking behaviour and macroeconomic fluctuations based on the data sets that are well-suited to give an answer to that particular question.

By investigating the effects of macroeconomic conditions on alcohol mortality and drinking behaviour in Finland, we aim to increase the understanding of these matters in several ways. First, these matters have not been investigated in Finland before, and it is not clear that the US results on alcohol mortality and drinking behaviour are also valid in other countries such as in Finland. There are a number of reasons for this. There may be some differences in the way in which people react to changes in macroeconomic fluctuations across countries. In addition, there was an extreme economic slowdown in Finland during the early 1990s. The national unemployment rate rose very rapidly from 3 to 17 per cent. This makes it possible to investigate the issue during a very deep economic crisis, which is not a possibility with data from very many countries. Second, this study is interesting because of the relatively large regional differences in economic outcomes and health in Finland. In this respect, this study will complement and expand earlier studies of regional health differences in Finland (e.g. Vartiainen, Puska, Jousilahti, Korhonen, Tuomilehto & Nissinen, 1995) by incorporating the effects of economic conditions into the analysis. In particular, the prevalence of large regional disparities is helpful in identifying the effects of business cycle fluctuations on alcohol mortality and drinking behaviour. Third, since

[3] There has been quite a large amount of research on socio-economic differences in mortality within a sociological tradition in Finland. Perhaps the most well-known paper in this literature is Martikainen and Valkonen (1996). There has also been some research concerning alcohol mortality (e.g., Mäkelä, 1998; Martikainen et al., 2001). These studies, however, for the most part, focus on the difference in various types of mortality between socio-economic groups, and they do not directly estimate the impact of business cycle fluctuations on mortality. A paper on the relationship between unemployment and overall mortality in a style more familiar to economists is Jäntti et al. (2000).

the data sets we use in this study cover a longer time span (1975-2002) than the earlier data used in this strand of the literature, we are in a better position to investigate the effects of the business cycle, as there are a greater number of macroeconomic peaks and troughs in our data sets. Fourth, we provide evidence on the issue based on both aggregate data and micro-level data. It has been common to use either aggregate data or micro-level data in the literature.

The paper is organised as follows. Section 2 provides a description of the data sets. Section 3 reports the estimation results. The last section concludes.

2 The data

The aggregate data on alcohol mortality originates from Statistics Finland.[4] The data is comprehensive and is based on registers that cover all Finns. The data spans the period 1975-2001. Alcohol mortality is measured in this study by deaths per 100 000 inhabitants. There are large disparities in alcohol mortality across the Finnish regions (Fig. 1). The average alcohol mortality over the period 1975-2001 is around two-times higher in certain parts of the country compared with the region of Pohjanmaa, in which it is at the lowest level. Thus, there are large permanent regional differences across regions that have to be taken into account in the estimation of the models. Fig. 2 documents the relationship between the employment-to-population rate in the Finnish economy and overall alcohol mortality for the period 1975-2001. This figure reveals that alcohol mortality seemed to decline a lot during the great slump of the early 1990s.

The micro-level data we are using in this study is Health Behaviour and Health Among the Finnish Population conducted by the National Public Health Institute. This survey has been conducted annually since 1978. The data is repeated cross-section data; around 5000 randomly selected 15-64-year-old individuals are included every year. The survey is conducted as a postal questionnaire. The data set contains detailed questions on drinking behaviour and the questions have remained the same over the period. In addition, socioeconomic background variables such as age, education and marital status that are important for the drinking behaviour of individuals based on the literature are recorded in the survey. We include those particular variables as controls in the estimated models.

[4] Alcohol mortality is defined as deaths from alcohol-related diseases and alcohol poisoning. Using the ICD10 (1998-) classification, this refers to the following classes: F10, G312, G4051, G621, G721, I426, K292, K70, K860, O354, P043, X45.

Fig. 1. Average alcohol mortality 1975-2001 per region (deaths per 100 000 inhabitants)

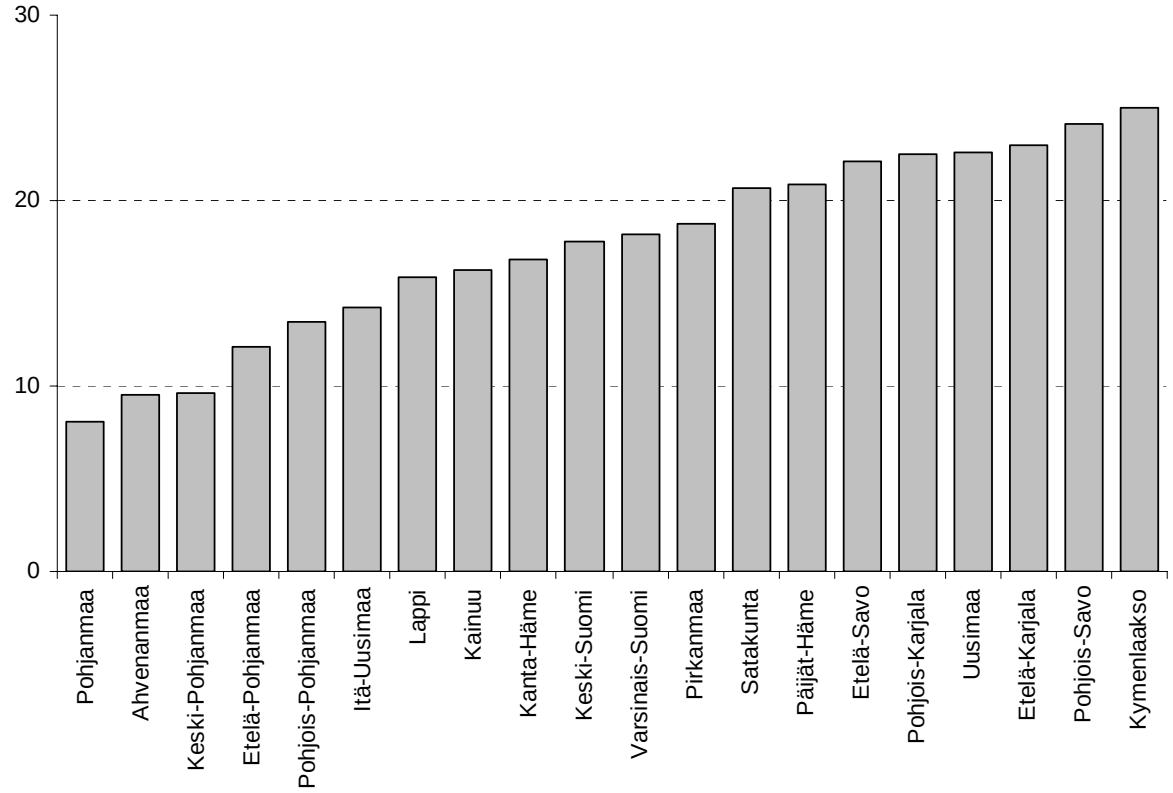
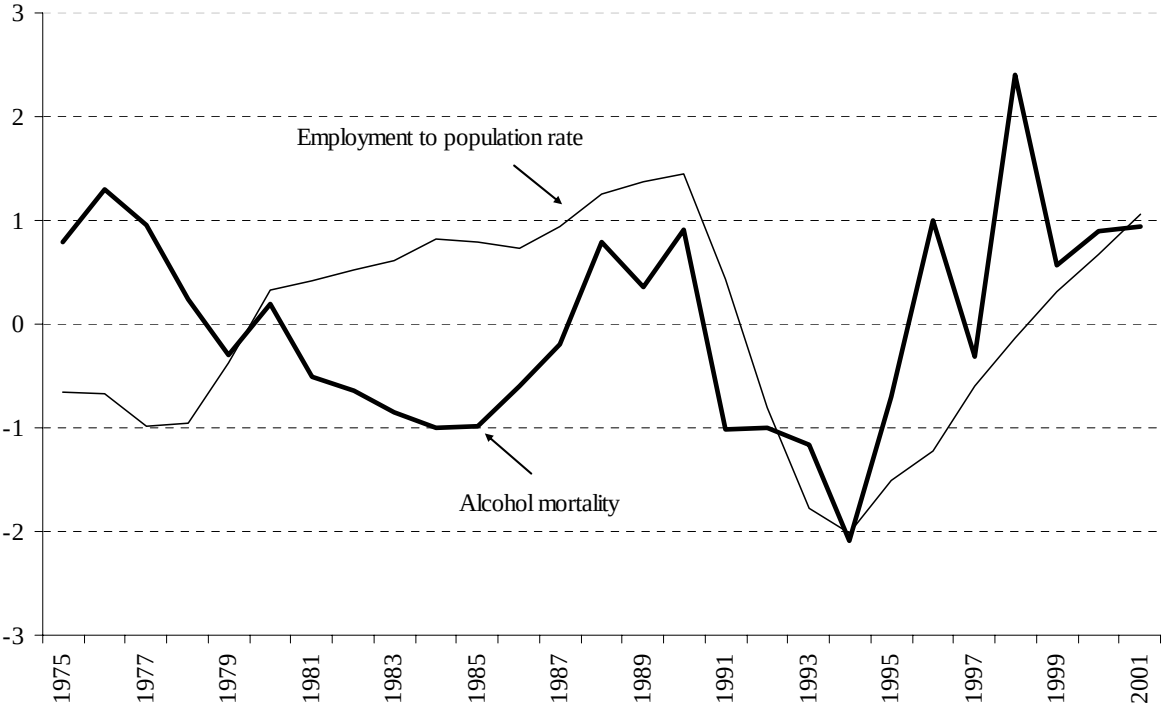


Fig. 2. The employment-to-population rate and alcohol mortality in Finland 1975-2001



Note: Both series are de-trended and normalised to having an average of 0 and a standard deviation of 1.

To examine the effect of economic conditions, we link these data sets, using information on individuals' place of residence, to data from regional national accounts produced by Statistics Finland. Individuals' residence is aggregated to twenty provinces that correspond to the so-called NUTS3 regions stipulated by the European Union. Recently constructed regional national accounts by Statistics Finland are available from 1975. This means that we are in a good position to investigate the relationship between alcohol mortality, drinking behaviour and macroeconomic conditions, because the time span of the data includes a number of business cycle fluctuations.

Macroeconomic fluctuations are measured by the regional employment-to-population rate and by the change in regional real GDP in this study. The unemployment rate has been favoured as a measure of economic conditions in most of the previous literature. Unfortunately, the regional unemployment rates are not available for the entire period of investigation in our case. Further, some authors, e.g. Clark and Summers (1982), have argued that the employment-to-population rate is a better measure of labour market conditions for groups that frequently enter and exit the labour market. The reason for this that these entries and exits to the labour market do not change the size of population, but they do change the size of the labour force. This means that the employment rate is more stable measure than the unemployment rate. This point is relevant, because Ilmakunnas and Maliranta (2003) report that the turnover of jobs and workers was intensive in the Finnish economy during the turbulent 1990s.

3 Empirical strategy and results

Econometrically, we estimate models of the following type for the micro-data:

$$Y_{ijt} = \alpha_j + \beta X_{ijt} + E_{jt} + \lambda_t + \varepsilon_{ijt}$$

where Y is the outcome (measures of drinking behaviour) for individual *i* living in region *j* in year *t.* X is a vector of individual characteristics (such as age and education), *E* measures economic conditions (the employment-to-population ratio or the growth rate of regional real GDP), ε is an error term, and α and λ represent unobserved determinants of lifestyle behaviours associated with respectively, the region and the survey year. The fixed effects for regions are important, because there are large, permanent differences in alcohol mortality and drinking behaviour across the Finnish regions. Some of these differences may arise, for in-

stance, from the varying strictness of prevailing religious attitudes and other preferences towards drinking. Thus, in this FE set-up, the effects of macroeconomic fluctuations are identified by intra-region variations, relative to the corresponding changes in other regions.[5] For aggregate data on alcohol mortality, we estimate FE models that are otherwise similar, in order to explain (the log of) alcohol mortality, but naturally we are unable to include individual-level controls. Controls for gender structure of the regions are included in the models, instead.

The estimation results reported in Tables 1-2 reveal that an improvement in regional economic conditions measured by the employment-to-population rate produces a decrease in alcohol mortality over the period of investigation, other things being equal. However, the great slump of the early 1990s is a clear exception to this pattern. During that particular episode, alcohol mortality did decline, as there was an unprecedented collapse in economic activity. This estimation result is in line with figure 2.

Table 1. The effect of macroeconomic fluctuations on alcohol mortality for the population between 16 and 65

	1975-2001	1975-1987	1988-2001	1990-1996
Employment-to-population rate	-0.024	-0.032	-0.004	0.119
	(-2.24)*	(-1.28)	(-0.23)	(3.18)*
N	536	280	256	140
Regional GDP growth	-0.625	-0.590	-0.387	0.409
	(-1.34)	(-1.10)	(-0.48)	(0.56)
N	516	280	236	140

Notes: Dependent variable is the natural logarithm of alcohol mortality per 100 000 inhabitants per region. Regressions include controls for the proportion of the population that is male, year, and region. Robust standard errors are reported in parentheses. They are corrected for clustering by regions. * significant at 5%; ** significant at 1%.

Table 2. The effect of macroeconomic fluctuations on alcohol mortality for the population between 16 and 65, some variations

	1975-2001	1975-2001	1975-2001	1975-2001
Employment-to-population rate	-0.024	-0.037	-0.021	-0.045
	(-2.24)*	(-5.37)**	(-4.52)**	(-8.71)**
N	536	536	536	536
Year dummies	Yes	Yes	No	No
Regional dummies	Yes	No	Yes	No

Note: See notes to Table 1.

[5] We take into account the fact that observations are clustered by regions in the calculation of standard errors of estimates. Moulton (1990) has stressed that otherwise standard errors are seriously biased downwards in a data set that combines aggregate variables such regional unemployment on micro units, because there is a correlation of error terms within regions.

The evidence from the micro-data on the probability of being a drinker and the amount of alcohol consumption shows that there is no overall connection between business cycles and the probability of being a drinker in the data after controlling for the respondent's age, education and marital status (Table 3). The only statistically significant results emerge for alcohol consumption. They show that an increase in the employment-to-population rate and an expansion in regional GDP produces a substantial increase in alcohol consumption. This result may be driven by the income effect. Thus, there is some evidence that is in line with the notion that slumps are healthier times.

Table 3. The effect of macroeconomic fluctuations on the probability of being a drinker and alcohol consumption

	1982-2001	1982-1987	1988-2001	1990-1996	1982-2001	1982-1987	1988-2001	1990-1996
Dependent variable	Drinker	Drinker	Drinker	Drinker	No. drinks	No. drinks	No. drinks	No. drinks
Employment-to-population rate	0.001 (0.01)	-0.050 (1.66)	-0.114 (1.09)	-0.084 (0.36)	0.429 (1.46)	0.590 (1.01)	0.481 (1.28)	1.199 (2.14)*
Log of regional GDP growth	0.021 (0.44)	0.019 (1.31)	-0.052 (1.03)	-0.063 (0.82)	0.358 (2.33)*	0.440 (1.30)	0.340 (2.07)*	0.331 (1.40)
N	72947	12004	49861	25160	44496	12275	32221	16545

Notes: A drinker is someone who has reported a positive number of drinks during the survey week. The dependent variable (i.e. number of drinks) is the number of glasses (regular restaurant portions) of the following the respondent has had during the previous week (7 days): beer/free-mixed highballs/strong alcohol, spirits (restaurant portion 4 cl), wine or equivalent. Regressions control for the respondent's age, education and marital status. Regressions contain regional and annual dummies. Regressions in columns 1-4 are probit models. Regressions in columns 5-8 are Tobit models. Robust standard errors are corrected for clustering. Observations are assumed to be clustered by year and region. * significant at 5%; ** significant at 1%.

4 Discussion

This paper explored the relationship between alcohol mortality, drinking behaviour and macroeconomic fluctuations in Finland. This objective was pursued by using both aggregate and micro-level data. The results from the aggregate data reveal that an improvement in regional macroeconomic conditions measured by the employment-to-population rate produces a substantial decrease in alcohol mortality over the period of investigation, other things being equal. However, the great slump of the early 1990s is an interesting exception to this pattern.

During that particular episode, alcohol mortality did indeed decline, as there was an unprecedented collapse in economic activity. This is a rather remarkable result, as it is possible that it is due to the fact that drinking of the kind that leads to death is eventually sensitive to changes in incomes.

The results from the micro-data reveal that an increase in the employment-to-population rate and expansion in regional GDP produces an increase in alcohol consumption while having no effect on the probability of being a drinker. An explanation for this pattern is that soberness may be driven by people's preferences that are immune to temporary business cycle conditions, while alcohol consumption responds positively to the income level that typically increases during good economic times.

The Finnish evidence presented does not overwhelmingly support the conclusions reported for the USA, according to which temporary economic slowdowns are good for health. In contrast, at least alcohol mortality seems to increase in those bad times that are not exceptional economic crises like the one experienced in Finland in the early 1990s, but there is evidence that alcohol consumption is strongly procyclical by its nature. This suggests that alcohol consumption and mortality may be delinked in the short-run business cycle context.

References

Brenner, H. (1973). *Mental Illness and the Economy.* Cambridge: Harvard University Press.

Brenner H. (1975). Trends in alcohol consumption and associated illnesses: Some effects of economic changes. *American Journal of Public Health, 65*(12), 1279-1292.

Brenner, H. (1979). Mortality and the national economy. *Lancet, 15,* 568-573.

Clark, K. & Summers, L. (1982). The dynamics of youth unemployment. In Wise, D. (Ed.), *The Youth Labor Market: Its Nature, Causes, and Consequences*. Chicago: University of Chicago Press.

Dee, T. (2001). Alcohol abuse and economic conditions: Evidence from repeated cross-sections of individual-level data. *Journal of Health Economics, 10*(3), 257-270.

Forbes J. & McGregor, A. (1984). Unemployment and mortality in post-war Scotland. *Journal of Health Economics, 3*(3), 219-257.

Gravelle, H., Hutchinson, G., & Stern, J. (1981). Mortality and unemployment: A critique of Brenner's time series analysis. *Lancet, 26*, 675-679.

Ilmakunnas, P. & Maliranta, M. (2003). The turnover of jobs and workers in a deep recession: Evidence from the Finnish business sector. *International Journal of Manpower, 24*(3), 216-246.

Joyce, T. & Mocan, N. (1993). Unemployment and infant health: Time-series evidence from the state of Tennessee. *Journal of Human Resources, 28*(1), 185-203.

Jäntti, M., Martikainen, P., & Valkonen, T. (2000). When the welfare state works: unemployment and mortality in Finland. In Cornia, A. G. and Paniccia, R. (eds.), *The Mortality Crisis in Transitional Economies*, Oxford, U.K. and New York, NY; UNU/Wider Studies in Development Economics: Oxford University Press.

Martikainen, P. & Valkonen, T. (1996). Excess mortality of unemployed men and women during a period of rapidly increasing unemployment. *Lancet, 348*, 909-912.

Martikainen, P., Valkonen, T., & Martelin, T. (2001). Change in male and female life expectancy by social class: decomposition by age and cause of death in Finland 1971-95. *Journal of Epidemiology and Community Health, 55*(7), 494-499.

McAvinchey I. A (1994). Comparison of unemployment, income, and mortality interaction for five European countries. *Applied Economics, 20*(4), 453-471.

Moulton, B. R. (1990). An illustration of a pitfall in estimating the effects of aggregate variables on micro units. *The Review of Economics and Statistics*, *72*(2), 334-338.

Mäkelä, P. (1998). Alcohol-related mortality by age and sex and its impact on life expectancy. *European Journal of Public Health, 8*(1), 43-51.

Neumayer, E. (2004). Recessions lower (some) mortality rates: Evidence from Germany. *Social Science and Medicine, 58*(6), 1037-1047.

Ruhm, C. (2000). Are recessions good for your health? *Quarterly Journal of Economics, 115*(2), 617-650.

Ruhm, C. (2003a). Good times make you sick. *Journal of Health Economics, 22*(4), 637-658.

Ruhm, C. (2003b). Healthy living in hard times. Working Paper No. 9468, National Bureau of Economic Research (Cambridge, MA).

Ruhm, C. (2005). Macroeconomic conditions, health and mortality. In Jones, A. N. (Ed.), *Elgar Companion to Health Economics.* Cheltenham: Edward Elgar Publishing, (Forthcoming).

Ruhm, C. & Black, W. (2002). Does drinking really decrease in bad times? *Journal of Health Economics, 21*(4), 659-678.

Stern, J. (1983). The relationship between unemployment, morbidity, and mortality in Britain. *Population Studies, 37*(1), *61-74.*

Vartiainen. E., Puska, P., Jousilahti, P., Korhonen, H., Tuomilehto, J., Nissinen A. (1995). Twenty year trends in coronary risk factors in North Karelia and other areas of Finland. In Puska, P., Tuomilehto, J., Nissinen, A., Vartiainen E. (Eds.), *The North Karelia Project. 20 Year Results and Experiences*. Helsinki: National Public Health Institute. Helsinki.

Wagstaff, A. (1985). Time series analysis of the relationship between unemployment and mortality: A survey of econometric critiques and replications of Brenner's studies. *Social Science and Medicine, 21*(9), 985-996.

E L I N K E I N O E L Ä M Ä N T U T K I M U S L A I T O S (ETLA)
THE RESEARCH INSTITUTE OF THE FINNISH ECONOMY
LÖNNROTINKATU 4 B, FIN-00120 HELSINKI

Puh./Tel. (09) 609 900 Telefax (09) 601753
Int. 358-9-609 900 Int. 358-9-601 753
http://www.etla.fi

KESKUSTELUAIHEITA - DISCUSSION PAPERS ISSN 0781-6847

Julkaisut ovat saatavissa elektronisessa muodossa internet-osoitteessa:
http://www.etla.fi/finnish/research/publications/searchengine

No 956 SATU NURMI, Employment Dynamics and Openness to Trade in Finnish Manufacturing. 01.12.2004. 28 p.

No 957 DEREK C. JONES – PANU KALMI – MIKKO MÄKINEN, The Determinants of Stock Option Compensation: Evidence from Finland. 01.12.2004. 32 p.

No 958 EDVARD JOHANSSON, Job Satisfaction in Finland – Some results from the European Community Household panel 1996-2001. 01.12.2004. 46 p.

No 959 HANNU PIEKKOLA – ANNI HEIKKILÄ, Active Ageing and Pension System: Finland. 07.12.2004. 35 p.

No 960 ANTTI KAUHANEN, Yrittäjien ansiot, työajat ja työkuormitus: Selvitys ekonomien ja insinöörien yrittäjyydestä. 09.12.2004. 22 s.

No 961 ANNI HEIKKILÄ, The Regional Distribution of Professional Competence in Finland. 16.12.2004. 20 p.

No 962 KARI E.O. ALHO, A Gravity Model under Monopolistic Competition. 31.12.2004. 15 p. Revised version 18.02-2005. 17 p.

No 963 KARI E.O. ALHO – VILLE KAITILA – MIKA WIDGRÉN, Speed of Convergence and Relocation: New EU Member Countries Catching up with the Old. Original version31.12.2004. 20 p., This version 23.05.2005. 21 p.

No 964 MAIJA GAO – ARI HYYTINEN – OTTO TOIVANEN, Demand for Mobile Internet: Evidence from a Real-World Pricing Experiment. 11.01.2005. 39 p.

No 965 MIKA MALIRANTA, Foreign-owned firms and productivity-enhancing restructuring in Finnish manufacturing industries. 19.01.2005. 21 p.

No 966 CHRISTOPHER PALMBERG – MIKA PAJARINEN, Determinants of Internationalisation through Strategic Alliances – Insights Based on New Data on Large Finnish Firms. 28.01.2005. 22 p.

No 967 OLLI-PEKKA RUUSKANEN, Ajankäytön muutosten vaikutus työllistymishalukkuuteen. 01.02.2055. 21 s.

No 968 SERGEY BOLTRAMOVICH – VLADISLAV YURKOVSKY – PAVEL FILIPPOV – HANNU HERNESNIEMI, Russian Infrastructure Clusters. A Preliminary Study. 01.02.2005. 67 p.

No 969 PEKKA SULAMAA – MIKA WIDGRÉN, Economic Effects of Free Trade between the EU and Russia. Original version 22.02.2005, this version 23.05.2005. 14 p.

No 970 HANNU HERNESNIEMI – KATI JÄRVI – JARI JUMPPONEN – GRIGORI DUDAREV – TAUNO TIUSANEN, Itäisen Suomen ja Venäjän liiketaloudellisen yhteistyön mahdollisuudet. 04.03.2005. 49 s.

No 971 JYRKI ALI-YRKKÖ – MONIKA JAIN, Offshoring Software Development – Case of Indian Firms in Finland. 07.03.2005. 14 p.

No 972 HANNU PIEKKOLA, Knowledge Capital as the Source of Growth. 17.03.2005. 35 p.

No 973 PEKKA YLÄ-ANTTILA – CHRISTOPHER PALMBERG, The Specificities of Finnish Industrial Policy – Challenges and Initiatives at the Turn of the Century. 29.03.2005. 25 p.

No 974 TUOMAS MÖTTÖNEN, Talouspoliittisen päätöksenteon tietoperustat. Esimerkkinä yritys- ja pääomaverouudistus. 29.03.2005. 90 s.

No 975 JYRKI LESSIG, Suhdannevaihteluiden symmetriaa kultakannan aikana. Ruotsin modernisoituminen, ulkomaankauppa ja taloudellinen integraatio 1800-luvun eurooppalaisten valuuttaliittojen aikana. 31.03.2005. 56 s.

No 976 SAMI NAPARI, Occupational Segregation during the 1980s and 1990s – The Case of Finnish Manufacturing. 18.04.2005. 54 p.

No 977 JYRKI ALI-YRKKÖ – ANTHONY DE CARVALHO – PAAVO SUNI, Intia maailmantaloudessa. 03.06.2005. 31 s.

No 978 RAINE HERMANS – MARTTI KULVIK – ANTTI-JUSSI TAHVANAINEN, ETLA 2004 Survey on the Finnish Biotechnology Industries – Background and Descriptive Statistics. 22.04.2005. 40 p.

No 979 ELIAS OIKARINEN, The Diffusion of Housing Price Movements from Centre to Surrounding Areas. 25.04.2005. 36 p.

No 980 JYRKI ALI-YRKKÖ, Impact of Public R&D Financing on Employment. 06.05.2005. 24 p.

No 981 MAARIT LINDSTRÖM, Onko luovilla aloilla taloudellista merkitystä? Luovat alat, kulttuurialat ja taidekoulutetut eri toimialoilla. 19.05.2005. 26 s.

No 982 MARTTI NYBERG – MAARIT LINDSTRÖM, Muotoilun taloudelliset vaikutukset. 20.05.2005. 25 s.

No 983 NIKU MÄÄTTÄNEN, Vapaaehtoiset eläkevakuutukset, verotus ja säästäminen. 24.05.2005. 31 s.

No 984 TUOMO NIKULAINEN – MIKA PAJARINEN – CHRISTOPHER PALMBERG, Patents and Technological Change – A Review with Focus on the Fepoci Database. 25.05.2005. 26 p.

No 985 PEKKA SULAMAA – MIKA WIDGRÉN, Asian Regionalism versus Global Free Trade: A Simulation Study on Economic Effects. 27.05.2005. 12 p.

No 986 EDVARD JOHANSSON – PETRI BÖCKERMAN – RITVA PRÄTTÄLÄ – ANTTI UUTELA, Alcohol Mortality, Drinking Behaviour, and Business Cycles: Are Slumps Really Dry Seasons? 16.06.2005. 10 p.

Elinkeinoelämän Tutkimuslaitoksen julkaisemat "Keskusteluaiheet" ovat raportteja alustavista tutkimustuloksista ja väliraportteja tekeillä olevista tutkimuksista. Tässä sarjassa julkaistuja monisteita on mahdollista ostaa Taloustieto Oy:stä kopiointi- ja toimituskuluja vastaavaan hintaan.

Papers in this series are reports on preliminary research results and on studies in progress. They are sold by Taloustieto Oy for a nominal fee covering copying and postage costs.