A sobering analysis of the link between alcohol affordability, consumption and harms in the EU

Stockholm, 11 June 2009

Lila Rabinovich, Han de Vries, Philipp-Bastian Brutscher, Jan Tiessen, Jack Clift, Anais Reding

Scope of the study

- **Study commissioned by European Commission DG SANCO**

- **Scope**
  - **Review of previous research in the field**
  - **Review of alcohol taxation and retail in the EU**
  - **Alcohol retail (on- vs. off-trade) in the EU**
  - **Econometric analysis:**
    - **link between alcohol affordability and consumption**
    - **link between alcohol consumption and harms**
  - **Three country case studies on cross-country alcohol consumption**
  - **Discussion: affordability as a policy lever to reduce alcohol consumption and harms?**

RAND

RAND Europe…

- Not-for-profit, independent public policy think tank

- European unit of the RAND Corporation

- Carry out research in diverse public policy areas:
  - Health and Health Care
  - Crime and criminal justice
  - Arts and Culture
  - Transport policy
  - Science and Technology Policy

RAND

The real value of alcohol excise duty has decreased across the EU since 1996

- Great variability in the excise duty rates on alcoholic beverages across the EU

- But some decrease in the *real value* of excise duty in most MS

- Minimum excise duty rates not changed since 1992, a 25% reduction in their real value

Alcohol retail

- Evidence of growing off-trade alcohol sales across the EU

- Off-trade alcohol tends to be cheaper

- Concerns that cheaper off-trade alcohol are linked with higher and more harmful consumption

- But data on off- versus on-trade alcohol consumption in Europe, and differential impact, still patchy

# *Alcohol affordability has gone up in most EU countries*

- **Affordability is a function of relative price and disposable income:**

$$af\!f\,orda\!bil\!ity\_index = \frac{real\_diposable\_income\_index}{relative\_alcohol\_price\_index} * 100$$
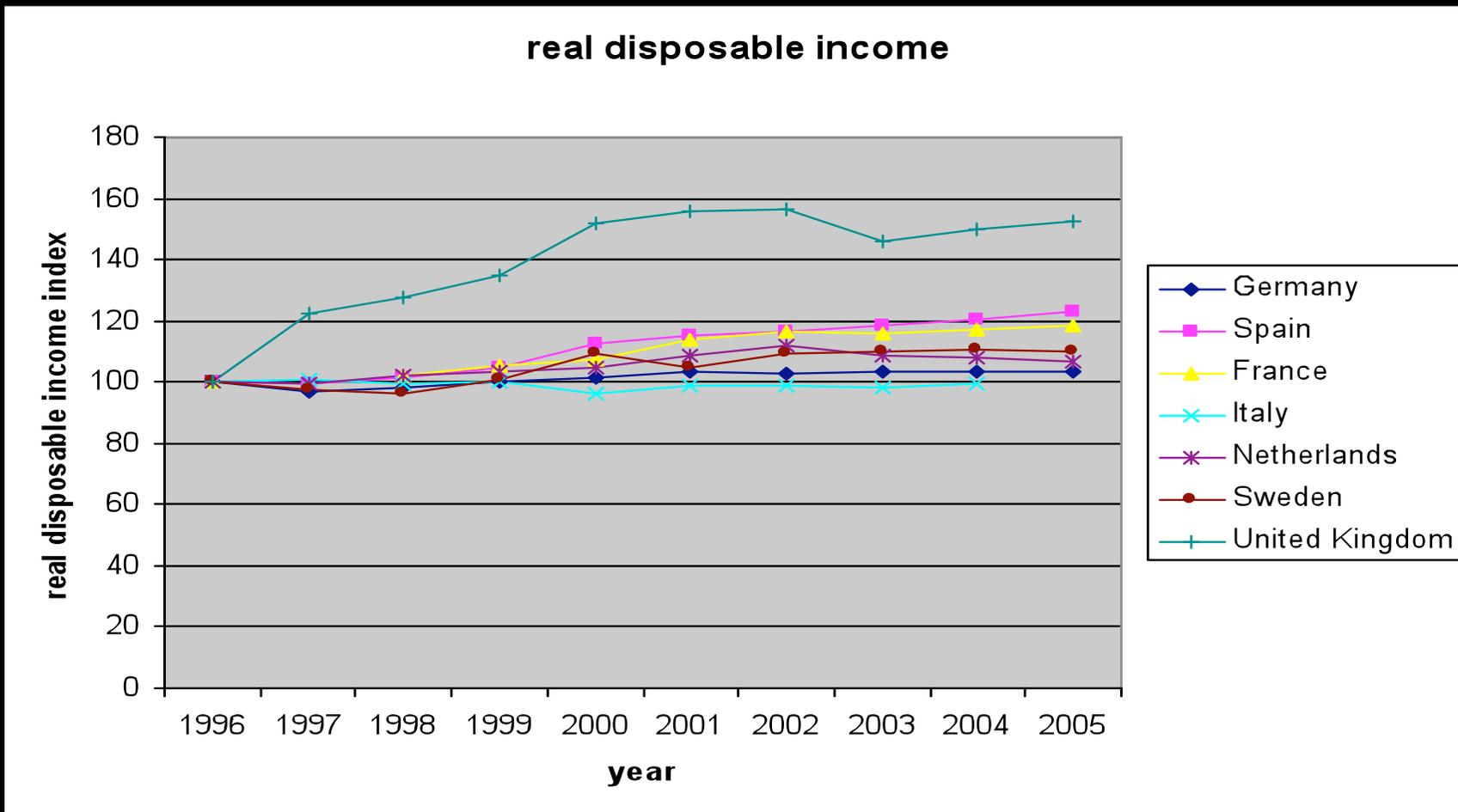
- **Affordability of alcohol has increased in all countries since 1996, apart from Italy**

- **Across the EU 84% in the change in affordability can be attributed to changes in disposable income; 16% to changes in prices.**
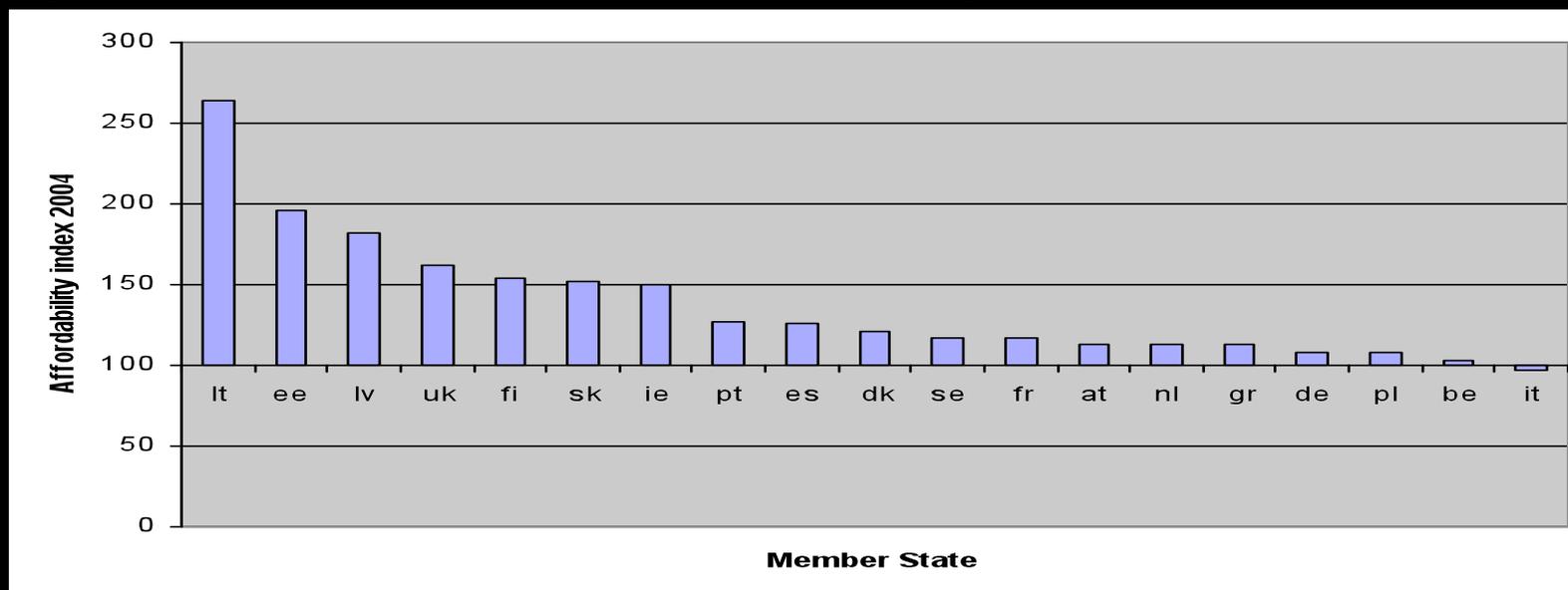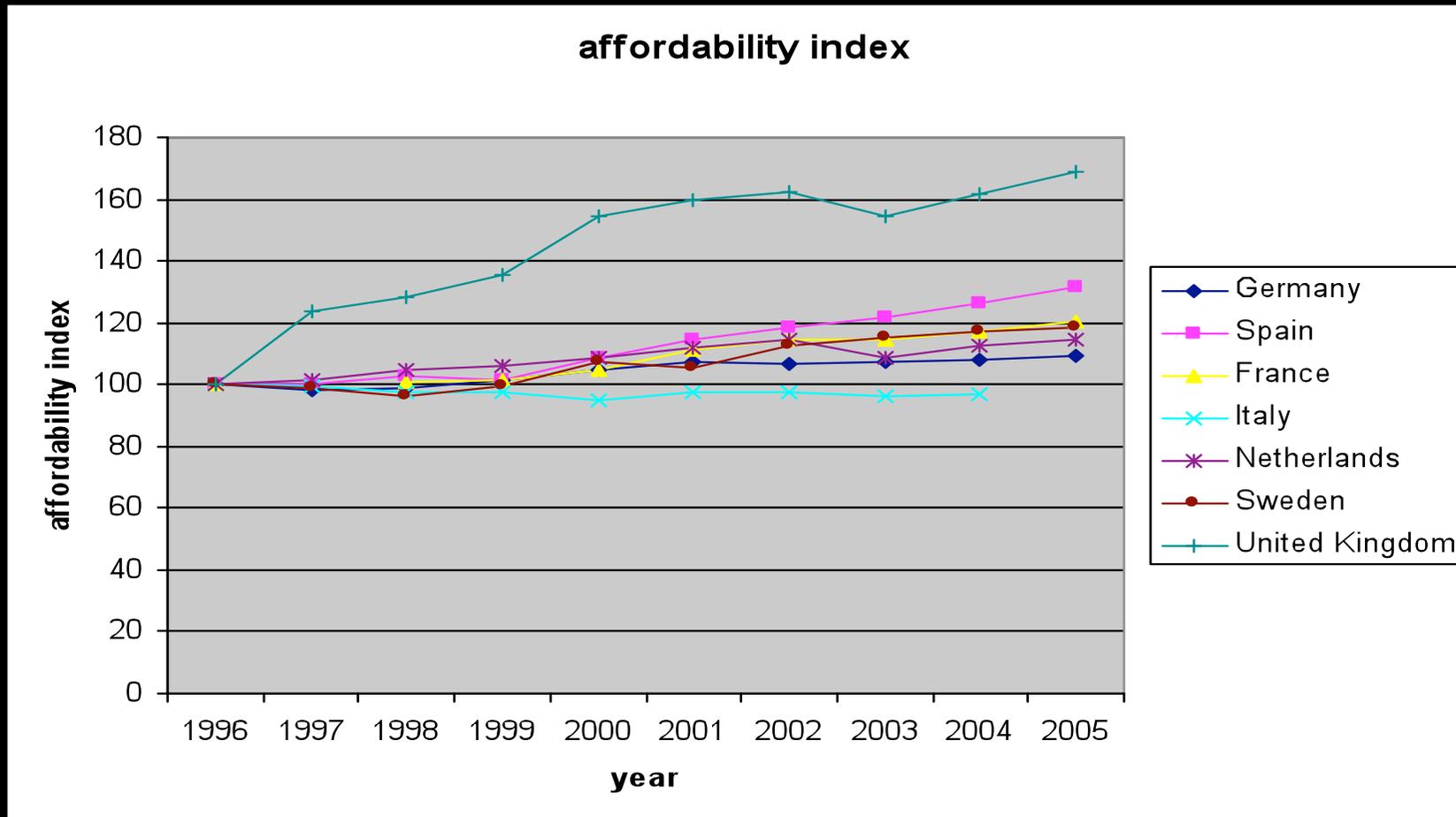
Changes in relative price of alcohol in selected EU MS

relative alcohol index
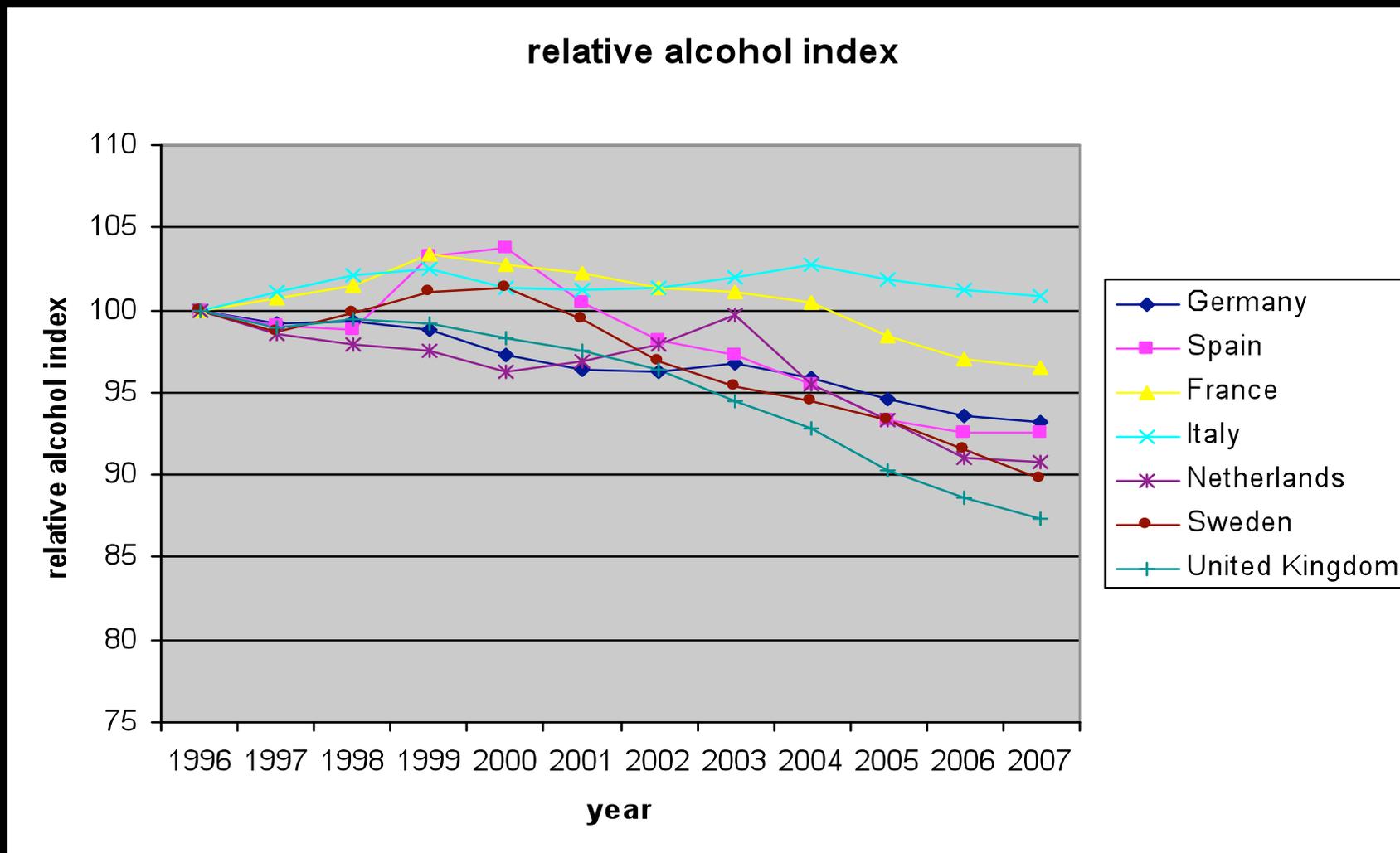
Changes in disposable income in selected EU MS

real disposable income

Changes in affordability in selected EU countries

We find a positive relationship between alcohol affordability and consumption

- We find a a positive, statistically significant, association between affordability and consumption
  - 1% increase in affordability is associated with a 0.22% increase in consumption in the short term
- The long run elasticity is even higher: 0.32%
- Consistent with large number of studies demonstrate a positive association between income and alcohol price on the one hand and consumption on the other
  - But variations among countries, population groups and type of beverage

We find a positive relationship between alcohol consumption and three measures of harm

- We find a statistically significant, positive relationship between consumption and three measures of harm: liver cirrhosis, fatal traffic accidents and traffic injuries

- A 1% increase in consumption is associated with:
  - 0.37% increase in chronic liver cirrhosis
  - 0.86% increase in fatal traffic accidents
  - 0.61% increase in traffic injuries.

- This is consistent with existing research

Cross border alcohol consumption

- Looked at selected borders with significant tax differentials
  - UK-France
  - Finland-Estonia
  - Sweden-Denmark-Germany
- Current regulation on cross-border alcohol purchases infringe on fiscal basis and autonomy of importing country
  - Tax decreases
  - Revenue loss
- Evidence of link between cross-border alcohol consumption and harms most robust for Finland; less so for Sweden and very limited for the UK
- Only three case studies but nearly 30 land borders across the EU!

Final remarks

- First study looking at alcohol affordability across the EU
  - Many goods became more affordable – but alcohol is no ordinary commodity
  - Gives additional impetus to debate on alcohol pricing policy

- Still need to better understand effects of different policy options
  - Minimum pricing
  - Tax changes
  - On- versus off-trade consumption

Data

- Price index, disposable income (Eurostat)
- Alcohol consumption (WHO Global Information System on Alcohol and Health):
    - Total recorded adult (15+) alcohol consumption in litres
- Harms (WHO European Mortality Database):
    - Fatal traffic accidents
    - Non-fatal traffic incidents
    - Liver cirrhosis incidence
    - Homicide / intentional injuries
- 20 EU member states, 8 years (1996-2003)

Method

- Basic form of the models: First-differences

$$\Delta\log(\text{Consumption}_{it}) = \text{year}_t + \beta_1\Delta\log(\text{Affordability}_{it}) + \Delta\varepsilon_{it}$$

$$\Delta\log(\text{Traffic accidents}_{it}) = \text{year}_t + \beta_2\Delta\log(\text{Consumption}_{it}) + \beta_3\Delta\log(\text{Traffic density}_{it}) + \Delta\varepsilon_{it}$$

- Main advantage compared to ordinary least squares (OLS): eliminates any bias from unobserved time-invariant characteristics at the country level

- Parameters of interest (β_1, β_2) can be interpreted as elasticity

- We report heteroskedasticity and autocorrelation consistent (HAC) standard errors

- Model extensions: dynamic effects (one year lagged consumption added as independent variable)

Results Affordability ⇔ Consumption

Dependent variable: Consumption

Variable	Model 1			Model 2		
	Coefficient	Robust SE		Coefficient	Robust SE	
Affordability	**0.245**	**0.070**	*******	**0.222**	**0.094**	******
Consumption lagged				0.322	0.085	***
Time dummy 1997	-0.200	0.013		-0.026	0.012	**
Time dummy 1998	0.010	0.010		0.017	0.011	*
Time dummy 1999	-0.020	0.010		-0.004	0.011	
Time dummy 2000	-0.018	0.009	*	-0.023	0.011	**
Time dummy 2001	0.009	0.011		0.012	0.012	
Time dummy 2002	-0.007	0.009		-0.012	0.009	
Adj. R^2	0.17			0.27		
N	132			112		

*** means statistically significant at the 1% level, ** at the 5% level and * at the 10% level.

RAND

Results Consumption ⇔ Harms

Dependent variable: Traffic deaths (model 1) and Traffic injuries (model 2)

Variable	Model 1			Model 2		
	Coefficient	Robust SE		Coefficient	Robust SE	
Consumption	**0.855**	**0.305**	*******	**0.610**	**0 291**	******
Traffic Density	-0.143	0 416		1.525	0.694	**
Time dummy 2000	-0.033	0.014	**	-0.035	0.017	**
Time dummy 2001	-0.036	0.016	**	-0.027	0.017	
Time dummy 2002	-0.049	0.012	***	-0.017	0.017	
Adj. R^2	0.46			0.24		
N	112			112		

*** means statistically significant at the 1% level, ** at the 5% level and * at the 10% level.