

A Misguided Tobacco Policy? Public Policy and Consumption Substitutability between Cigarettes and an Important Smokeless Tobacco Alternative

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Abstract

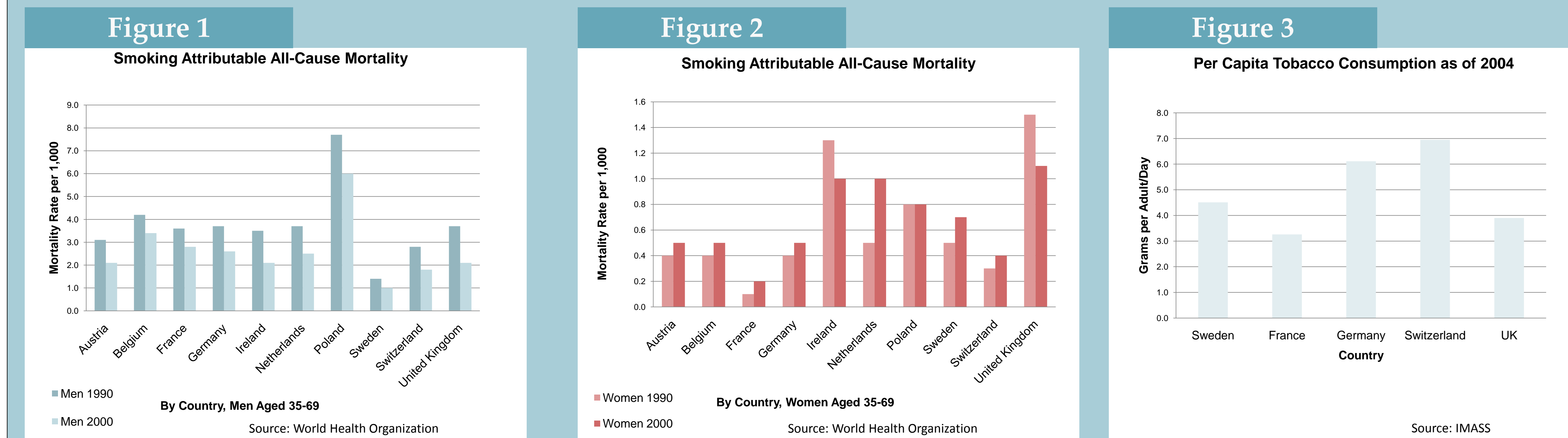
Use of Tobacco products in Sweden is comparable to levels of use within other European Union countries, but Sweden experiences significantly reduced tobacco related mortality. Looking at gender differences, data suggest that the result is driven by the reduced mortality of male tobacco users. This difference in health consequences from tobacco use is due to the widespread use and popularity of a specific tobacco product, snus, which is used primarily among males. This product has recently been introduced in the United States and is a source of debate among public policy, health researchers, and regulatory committees. Advocates claim that the product provides a safer alternative to cigarettes and that due to the relative safety of the product, it has a place as a smoking cessation tool and has the potential to drastically decrease the rate of smoking in the US. Opponents claim that the product will lead to increased cigarette consumption through both dual use and by acting as a gateway to cigarettes. If cigarettes and snus are complements in consumption, we would expect that the availability of snus would lead to stable or increased cigarette consumption. However, if they are substitutes, a nicotine addicted user could replace a product (cigarettes) with a less dangerous alternative (snus). To evaluate the consumption substitutability, I exploit a natural experiment. Finland was forced to ban sales of snus upon joining the European Union in 1995. By employing difference in differences estimation, I show that smoking rates in Finland increased *relative to what it would have been* as a result of removing snus from the market. This approach provides interested parties with meaningful information about the probably effects of snus introduction in the US market.

What is Snus?

- Snus is a form of ground tobacco used orally and does not require spitting.
- The production process for snus is very different than that for North American snuff or chewing tobacco.
 - Chewing tobacco is made from fire cured tobacco and is fermented both before and after packaging. Fermentation allows the development of tobacco-specific nitrosamines, which are carcinogenic (the level of nitrosamines in this type of product is comparable to that found in cigarettes).
- Swedish snus is processed by a steam treatment (similar to pasteurization) and this heat treatment prevents fermentation and, as a result, prevents the formation of nitrosamines.
- Studies show no increased incidence of cancer (including cancers of the mouth) attributable to snus use (Lee and Hamling 2009).
 - In a study by Luo et al. (2007), there was found to be a small correlation between snus users and Pancreatic cancer, but these snus users had used snus prior to the 1980's, before the level of carcinogens in the product was reduced (Royal College of Physicians, 2007)

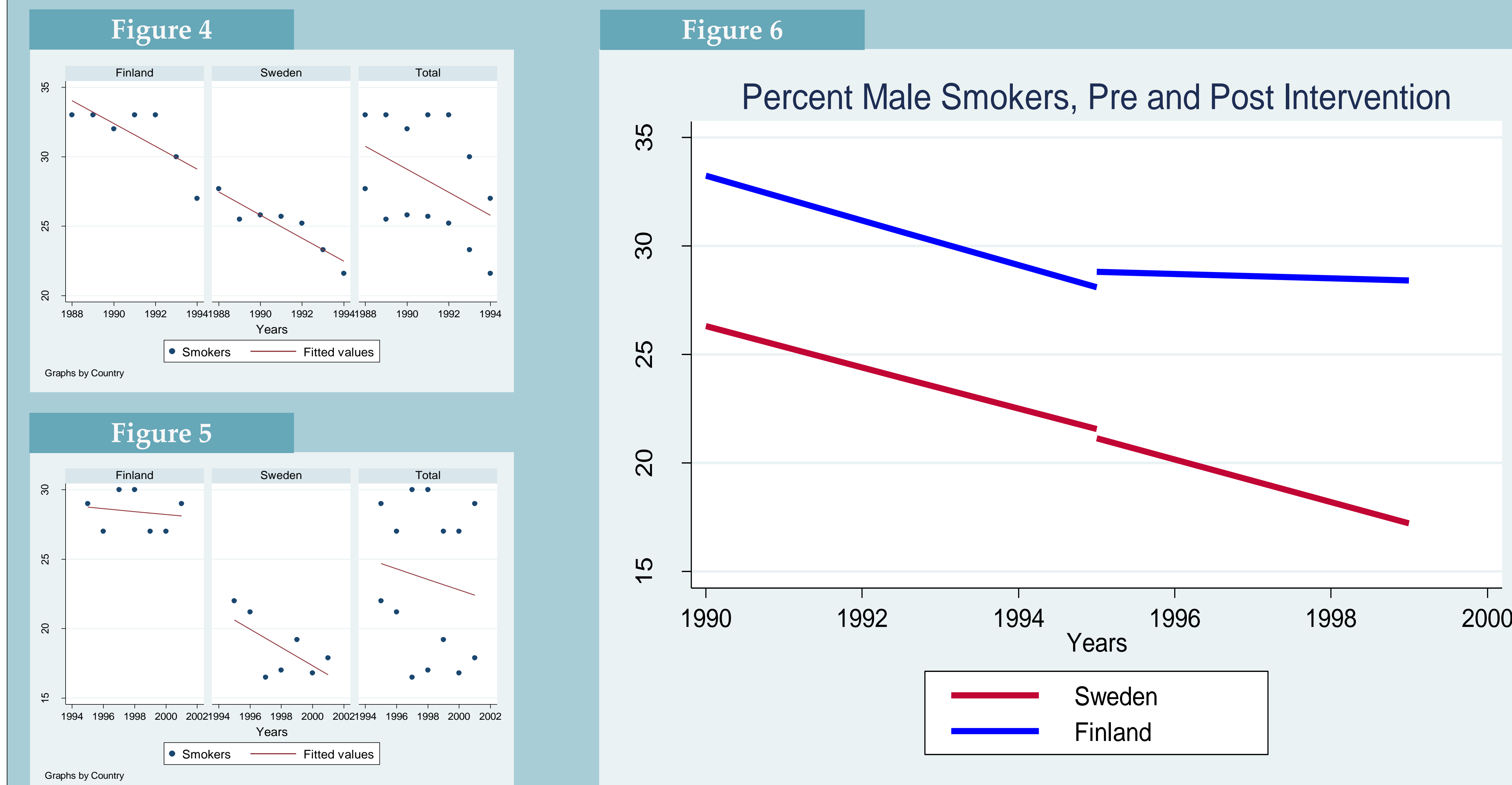
The Swedish Experience

Swedish males suffer from far lower levels of smoking related mortality but consume as much tobacco as do men in other European Union countries. This difference is often attributed to the widespread use of snus among Swedish males (use is uncommon among females). Snus is a smokeless tobacco product that is significantly less harmful than smoking. Swedish females do not exhibit any similar reduction in tobacco related mortality. Figures 1 and 2 show all-cause tobacco related mortality for Sweden and a collection of other European Union countries for males (figure 1) and females (figure 2). Figure 3 shows per capita tobacco consumption for Sweden and other European Union Countries.

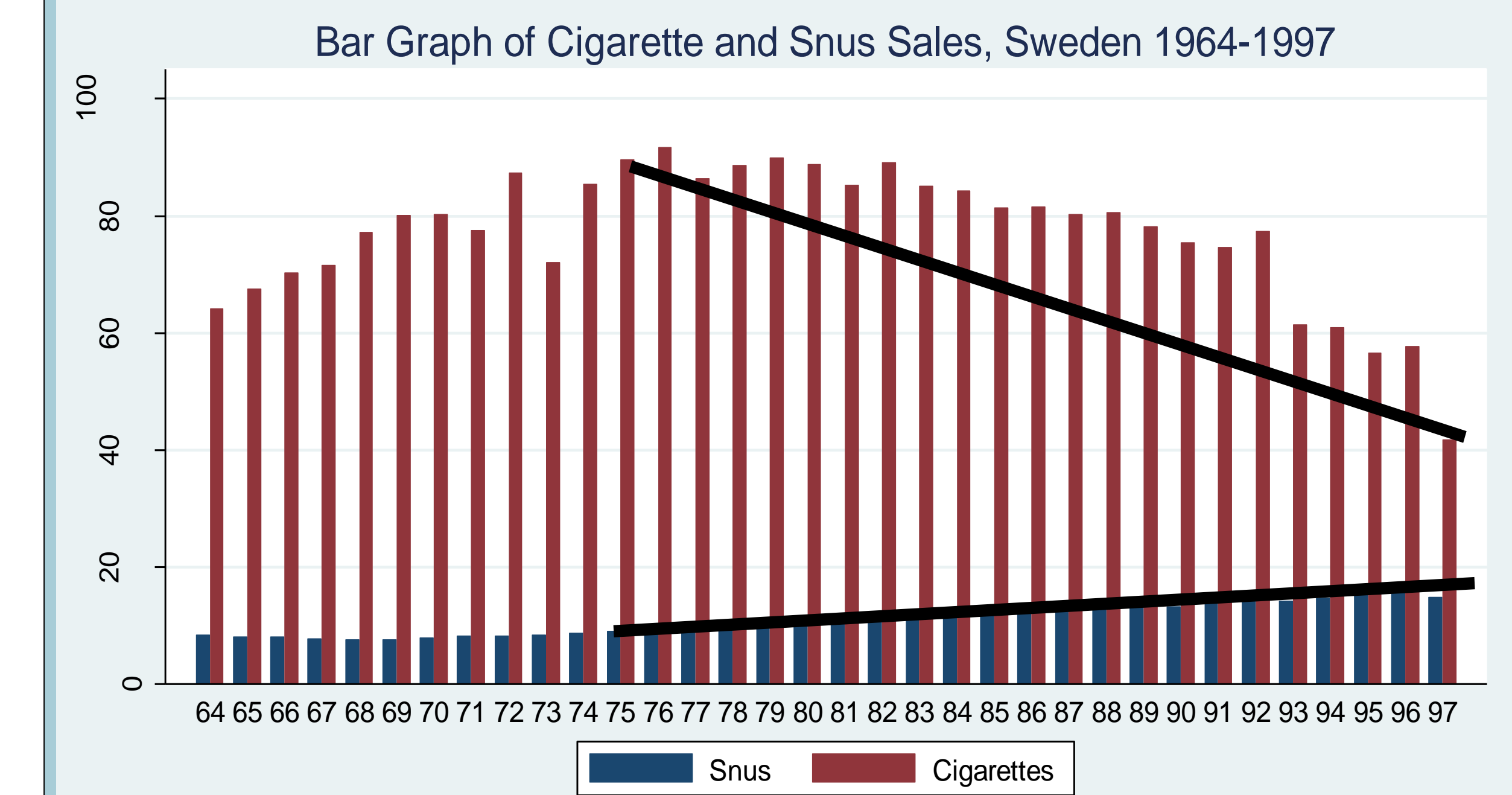


Motivation and Procedure

Is snus a substitute for cigarettes or a compliment? Will smokers switch to this less harmful alternative or will it act as a gateway to smoking? As data are not available on the effects of product introduction, I look instead at the effect on smoking due to the removal of this product from the market. In 1992 the European Union adopted a ban on all oral tobacco products. When Finland and Sweden joined the European Union in 1995, Finland was forced to ban sales of snus while Sweden was granted an exemption from the ban. By comparing the difference in smoking rates between these countries in the pre and post ban time periods, It is possible to determine if removing snus from the market had an effect on the rate of smoking. Figure 4 shows the percent of smokers in each country from 1988-1994, the pre-ban period. Figure 5 shows the percent of smokers in each country from 1995-2001, the post-ban period. Figure 6 presents the pre and post ban periods together.



Tobacco Sales in Sweden



Model

$$Y_{i,t} = \alpha + \beta Treat_t + \gamma Post_t + \delta Treat_t * Post_t + \epsilon_{i,t}$$

i indicates country and t indicates year.
 $Y_{i,t}$ is the smoking rate for country i in year t .
 $Treat_t$ is a binary variable indicating treatment status, 1 if Finland, 0 if Sweden.
 $Post_t$ is a binary variable, 1 if the period is after the change (1995-2001), 0 if not (1988-1994).
 $Treat_t * Post_t$ is the interaction term

Results

Difference in Differences Regression Results

Variable	Parameter Estimate	Standard Errors
Post	-6.314	1.068***
Treat	6.6	1.068***
Post*Treat	3.171	1.511**
Constant	24.971	0.7556***

N=28; Period: 1988-2001

***Significant at 1%, **Significant at 5%

This shows that in the post-ban period, smoking increased in Finland by 3.17 percentage points relative to what it would have been otherwise. This is an 11% increase.

Conclusion

- By investigating the effects of the 1995 ban on Snus in Finland, we see that the smoking rate increases relative to what it would have been if snus had remained available to consumers.
- Removing Snus from the market resulted in an increase in smoking.
- This suggests that the introduction of snus in the US market has the potential to decrease smoking.

Acknowledgements

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