

4th European Conference on Health Economics
Paris, July 2002

**Youth tobacco initiation
and the effect of tobacco price
Evidence from France**

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Motivation

➤ Context

- ✓ In France, as in many rich countries, people apparently start smoking at a younger age
- ✓ It may provoke health hazards, as well as more adult addicted smokers
- ✓ It is believed that teenagers are not able to take the right decision about smoking, since their valuation of future is too low

⇒ ***Should higher prices help the young to take the right decision (of not starting smoking) ?***

⇒ ***Could it have an impact on adult smoking rates ?***

- **In this paper, we aim at answering to the first of these two questions : is there an impact of tobacco prices on youth tobacco initiation ?**

Definition and literature

- Initiation means : to start smoking on a regular basis
- Occasional smokers are not considered “initiated”
- Participation means : to be a current smoker
- Literature : estimated elasticity of participation to tobacco price is usually higher when measured on students or the 20-29 years old than on adults
- But measures on teenagers don’t confirm this superior elasticity of the young result. Studies even find zero elasticity.
- A possible rejoinder : heterogeneity among the teenagers.
- Under 15 are price insensitive, maybe because they don’t buy cigarettes on their own money, over 18 are highly price sensitive (Emery et al., 2001, Glied, 2002)

Data and estimation

- **Initiation factors not assessed on French data**

- **Data used :**
 - ✓ General Population Survey, Santé et Protection Sociale (SPS), 2000, respondents aged 20 and over (to avoid biased answer problem from children), France métropolitaine only (neither Corsica nor Overseas territories)
 - ✓ Retrospective questions : how long have you been a regular smoker (current smokers) or when did you quit and how long were you a regular smoker before quitting (former smokers) allow to know an age at initiation
 - ✓ INSEE provides a series on relative price of the average cigarettes pack (20 cigarettes) from 1968 on. In France, tobacco prices are homogenous on the whole territory (except Corsica)
 - ✓ SPS provides “cultural” factors to control the relation estimated between price and initiation

Data

2. Control factors

- **Our problem: interviewees are 20 and over, but the decision of interest (starting smoking) was taken when they were teenagers.**
- **We have to find controls that describe the situation of the individual when teen, even if measured many years after**
- **Main variables used :**
 - *Height (in cm.) as an indicator of health state when teen*
 - *Education level*
 - *Non French nationality*
 - *Number of hours worked per week (proxy for addictive attitude)*
 - *Gender (male)*
 - *Measure of health hazards other than smoking : number of accidents of everyday life and a dummy for any hospital stay*
 - *Income (even if loosely related with income when teen)*

Estimation

- **Logistic model of probability of starting smoking before the age of 15**
- **Easy to run, but :**
 - Test “start before 15” versus “Never smoke or start after 15th birthday”
 - Arbitrary choice of threshold (15 is of special interest, but so is 18 or 13)
- **Duration model explaining age of initiation on price and control factors**
- Duration model : the normal state is “non smoker” and failure is “start smoking”; duration is “age at initiation”; data are right-censored by age at the interview
- Need to cope with the fact that 50% of the population never start smoking : they are not censored observations, they are true non participants
- **Solution : Split population duration model** (Schmidt and Witte), used by Douglas and Hariharan, 1994

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Results

- **9 997 observations, 4 856 ever smokers**
- **Among ever smokers, initiation age distribution is highly concentrated :**
- **9% started before 15,**
- **34% before 18**
- **52% before 20**
- **And 79% before 25**
- **Varies according to birth cohort : younger cohorts are more concentrated (73% started before 25 among those born between 1935 and 1960, versus 49% among those born before 1935)**

Results

2. Baseline

- Average height is 168 cm (+/-9), 49% are male, 66% with any hospital stay, 4% are non French and 30% are in the category labeled “educated” (more than baccalauréat). Category labeled “rich” is composed of those living in households with income above median household income
- Six sub samples are used in logistic regressions : whole population, ever smokers, current smokers, all ages or 46 and younger (prices are known from 1968 only, therefore price when aged 15 is known for people born after 1953 only)

Results

3. Logistic regressions : Prob(Age of initiation < 16)

➤ Whole population

- ✓ Male more often smoke before 15, non French less often, as well as rich and educated; price when aged 15 not significant, neither height nor “at least one hospital stay”.

➤ Ever smokers

- ✓ Same effects of “cultural factors”, but price when age 15 is now significant. Surprisingly, **a higher price raises the probability of starting before 15** among ever smokers.

➤ Current smokers

- ✓ Same effects, price is even more positively related with the probability to start smoking before 15

Results

4. Split Population Duration Model

- Price when aged 15 not significant, but price when aged 18 is, and has the intuitively expected impact :
 - On the duration part (age at initiation) of the model, the coefficient is +0.36 ($p = 0.02$), meaning that raising the price per pack by 1F would delay initiation by 0.4 years (Weibull model)
 - On the split part (ever smoke), the coefficient is -0.92 , meaning that raising the price per pack by 1F would decrease the participation rate by 3 percentage point (at an initial level of 50%).
- Cultural factors still hold : male participate more often, non French less often, as well as the educated; taller people start younger (gender has no impact on age at initiation), non French start older, but income and education have no impact on age

Conclusion

- **Duration model shows that the price when aged 18 is the variable of interest**
- **Confirms results obtained by Emery (2001) : under 15 are less sensitive to price than over 18**
- **Being non French explains both a lower level of participation and a delay in initiation for those who start**
- **Education and income are linked with participation only, but don't protect against early initiation**
- **Healthier people (according to height) don't indulge more often, but sooner**

Discussion

- **Retrospective data are subject to discrepancies (recall bias) : people don't remember, or tell a story rather than the truth**
- **Use of retrospective data limits the number of control factors : we don't know what the situation was when aged 15 to 20**
- **Price is the only variable used to describe "anti-tobacco policies"; information and prohibition should be added to the model**