THE VALUE OF FUEL EFFICIENT CARS TO SECOND HAND OWNERS

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Transport & Mobility Leuven

• Impact of transport policies.
• European/National/local level
• Multidisciplinary Team:
  – Civil Engineers, Computer Scientist, Psychologist
  – Economists
  – Environmentalists
• SME: 18 highly-qualified people.
• General Manager: Griet De Ceuster
Transport & Mobility Leuven

Research in Transport & Mobility Leuven:

• Quantitative & Ex-Ante
• Our topics: traffic management, urban mobility, sustainable mobility policy, emissions, traffic safety, freight transport, rail, shipping, transport economics, spatial and social economics
• Our tools: TREMOVE, EMMOSS, CAR, WCM, NODUS, EDIP, TIGER, RHOMOLO, SUSTRUS, Fleet prediction tool, CBA, data enrichment

The road to efficiency - T&E Event - 9th June
Outline

• Background
• The issue
• Findings
Outline

- **Background**
- The issue
- Findings
Context

• Project for the EC – DG CLIMA completed May 2016
• Considering CO2 & cars legislation, what is the relevance of used car market
  – Multiple owners
  – Social profile of owners of used cars
  – West → East EU flows of used cars
• Limited consistent data on the EU used car market
CO2 & cars

• CO2 targets for new vehicles (130g in 2015 & 95g in 2021)
• CBA is straight-forward:
  – Cost: additional initial purchase cost for technology (10€/gCO2?, 100€/gCO2?)
  – Benefit: lifetime fuel savings

  – General conclusion of most impact assessments: Positive for fuel efficiency over vehicle lifetime

(depending on assumptions on technology cost, fuel cost, discount rates,...)
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What happens to the CBA when we include used cars?
CO2 & used cars

• Is fuel efficiency priced in the used car market i.e. are fuel efficient vehicles more expensive?
• How are benefits distributed among different owners during the vehicle’s lifetime?
• Different owners in terms of
  – Socio-economic profile
  – Member state
The used car market in EU at a glance

Used: new volume ratios, 2013

Source: ACEA/National Trade Bodies
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CO2 & *used* cars: pricing

Is fuel efficiency priced in the used car market?:  **YES**

- Regression model controlling for age, brand, mileage, horsepower, weight, fuel type,...
- On average: 22€ price increase per g CO2 (!)
- Progressive with increasing age:
  - <5y: 5€/g
  - 5-10y: 30€/g
  - >10y: 42€/g
CO2 & used cars: social profile of the owner

- Used car market is more important for lower income groups.
- Used cars more prevalent in lower income groups also tend to be older.
CO2 & used cars: MS-distribution

Large flow of used cars from W-EU to E-EU:

Baltic countries IMPORTS (LV-LT-EE):

German EXPORTS

[Graph showing trends over years]
What does this mean for the distribution of costs and benefits of fuel efficiency?
CO2 & used cars: distribution effects

- Assumptions:
  - 3 owners – 15y lifetime
  - High-Low Fuel cost & price premium
  - 8% discount rate

Example case:
- Petrol
- 1.5€/l
- 50€/gCO2
CO2 & **used** cars: distribution effects

- Taking into account fleet composition per household income group

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<th>net cost (-benefit)</th>
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<td>NEW</td>
<td>3%</td>
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<td>19%</td>
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<td>young used (4-9)</td>
<td>26%</td>
<td>28%</td>
<td>35%</td>
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<td>old used (9-15)</td>
<td>72%</td>
<td>62%</td>
<td>47%</td>
<td>46%</td>
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<td><strong>TOTAL</strong></td>
<td>100%</td>
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<tr>
<td>NEW</td>
<td>€ 4</td>
<td>€ 14</td>
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<td>€ 30</td>
<td>€ 43</td>
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<tr>
<td>5 - 10y</td>
<td>-€ 164</td>
<td>-€ 180</td>
<td>-€ 222</td>
<td>-€ 205</td>
<td>-€ 183</td>
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<td>&gt;10y</td>
<td>€ 77</td>
<td>€ 67</td>
<td>€ 50</td>
<td>€ 50</td>
<td>€ 44</td>
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<td><strong>TOTAL</strong></td>
<td>-€ 83</td>
<td>-€ 99</td>
<td>-€ 146</td>
<td>-€ 125</td>
<td>-€ 96</td>
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<td>% annual income</td>
<td>-2.76%</td>
<td>-1.42%</td>
<td>-0.86%</td>
<td>-0.38%</td>
<td>-0.16%</td>
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CO2 & used cars: Conclusions

• Second owner benefits the most.
• Fuel efficiency is favourable for all income groups.
• The initial price premium paid by the first owner mainly determines the distribution effects.
• Proportional to the household income, the lowest income group benefits the most.

...BUT...

Progressive pricing with increasing age of the used car is counter-intuitive. Confirmation needed!
THANK YOU!

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