

A technology choice model for TREMOVE

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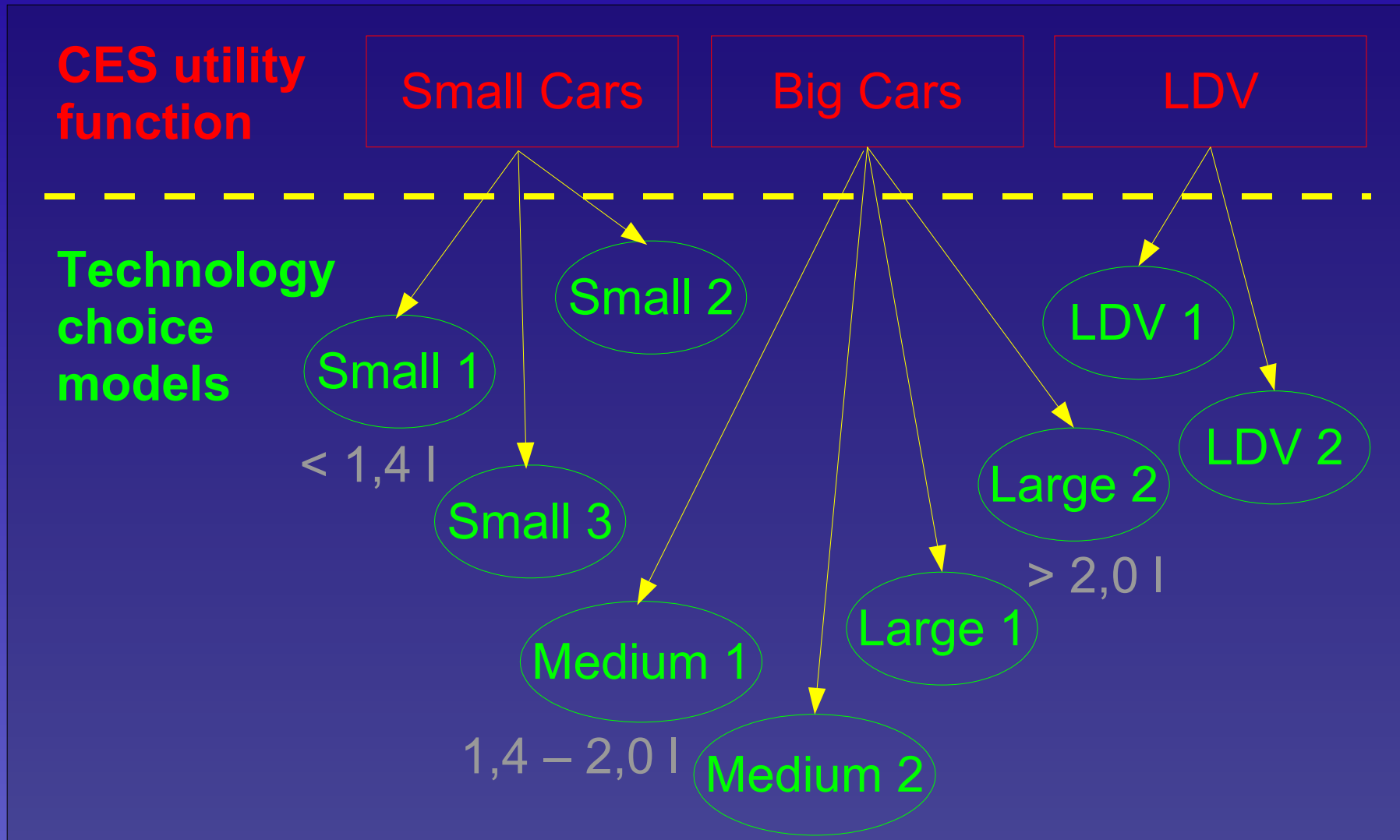
Overview

- Introduction
- Conventional technologies private cars
 - Model specification
 - Estimation dataset
 - Baseline
- Advanced technologies private cars
- LDV

Introduction

- 3 technology choice models:
 - Small Private Cars
 - Medium & Large Private Cars
 - LDV
- Technologies to include:
 - conventional technologies
 - advanced technologies

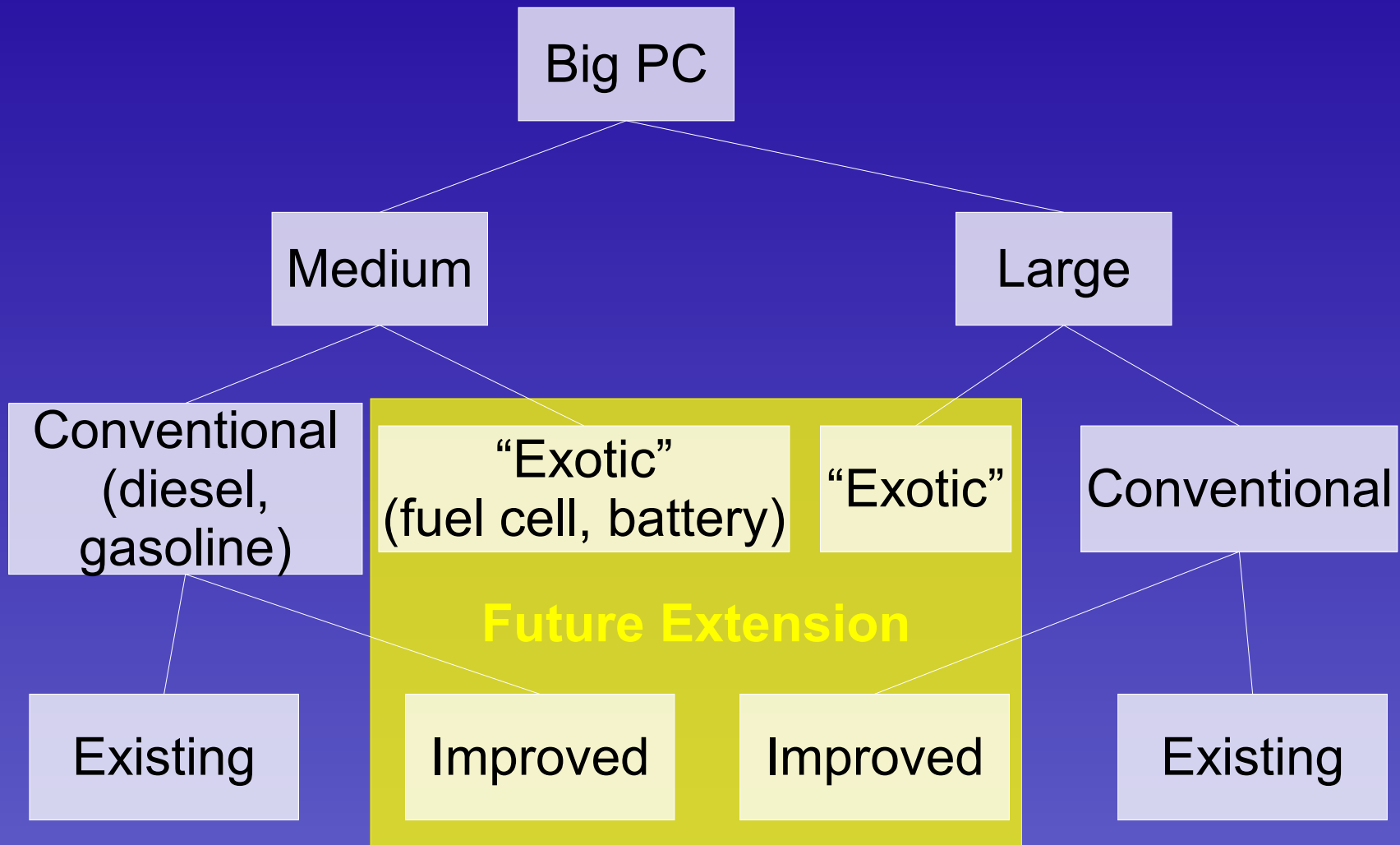
Introduction



Private cars conventional technologies

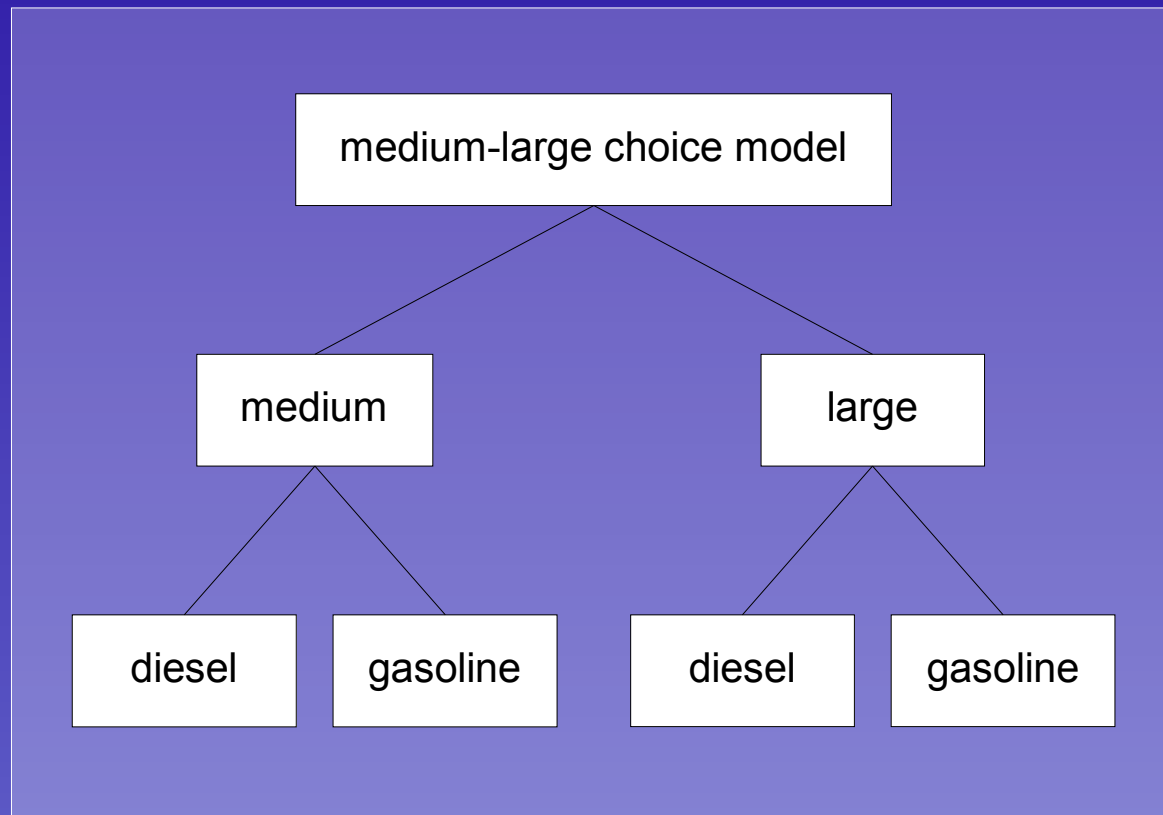
- Medium-large technologies:
 - Model specification
 - Model calibration
 - Baseline evolution
- Small technologies:
 - Model specification
 - Baseline evolution

Private cars conventional technologies



Private cars conventional technologies

- Model specification for medium-large:
 - Nested logit



Private cars conventional technologies

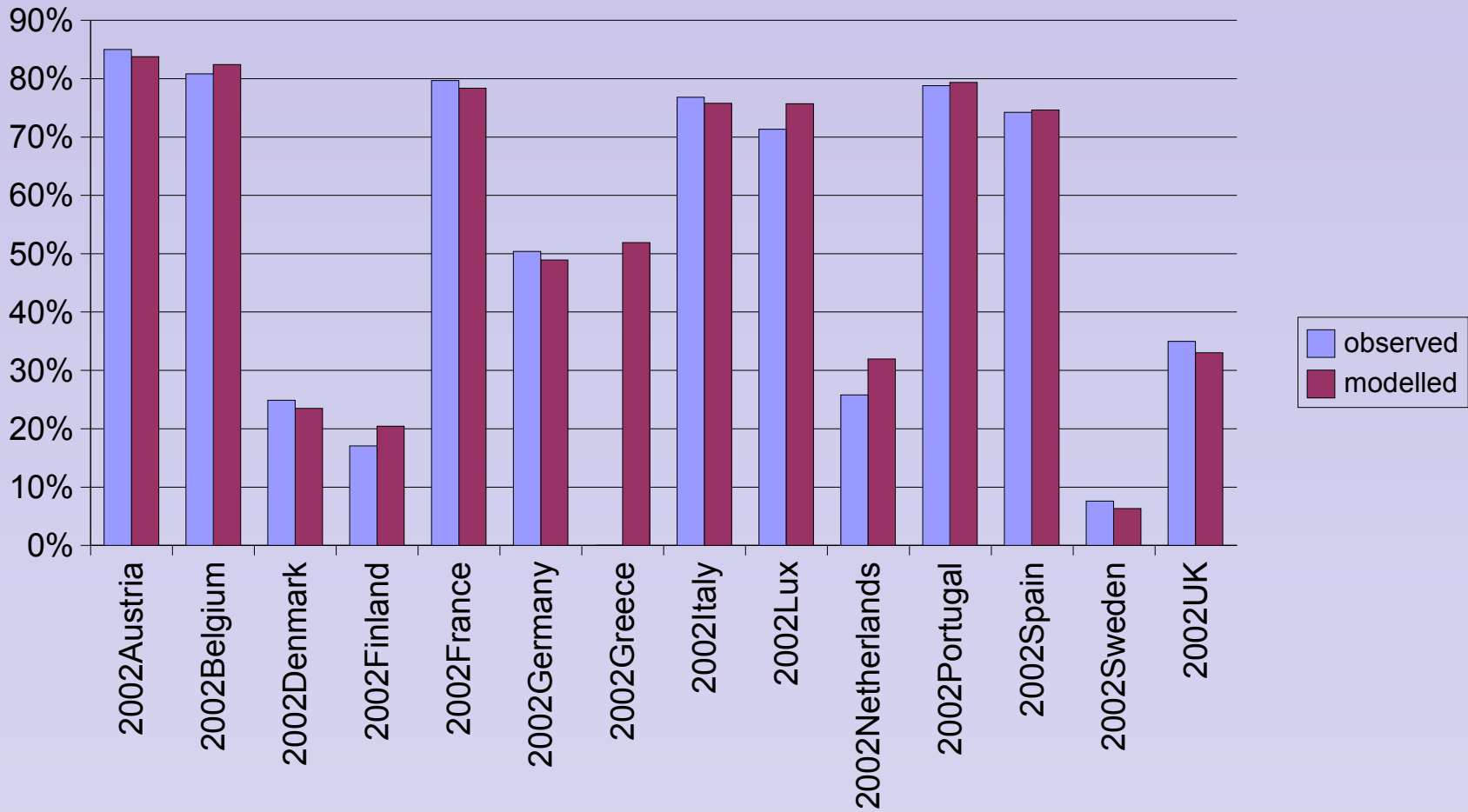
- Technology variables:
 - Expected lifetime cost (per km)
 - Kerbweight
 - Bootvolume
 - Power
- Lifetime cost: all expected resource costs and taxes over the entire lifetime of the vehicle
- Country dummies

Private Cars Conventional Technologies

- Model calibration:
 - revealed preferences (average values)
 - updated May 2004
- Main sources:
 - Databases by COWI
 - CO₂ monitoring database (and reports) by EU Commission
 - TRENDS (expected lifetime and mileage)

Private Cars Conventional Technologies

Share diesel



Private Cars Conventional Technologies

■ Baseline:

- Unless specified otherwise all explanatory variables are kept constant in time at 2002 (or most recent) values
- Only decided measures make it into the baseline (conservative reference scenario)

■ Measures already considered in baseline:

- Agreements EU Comm with manufacturers: fuel efficiency as in AOP II model
- Power: extrapolation of historic trend up to 2005

Private Cars Conventional Technologies

- Still to be included
 - Agreements EU Commission with car manufacturers: review of fuel efficiency & purchase cost
 - Introduction of EURO IV cars: purchase cost
 - Evolution of fuel prices based on PRIMES

Private Cars Conventional Technologies

- Small cars (engine size 1,4 l or less):
 - Multinomial logit model with same coefficients as medium-large model (no dummies)
 - Small diesel car: no statistics available yet (very recent and limited market introduction)
 - Further improvement: market introduction parameter (for small diesel)

Private Cars Conventional Technology

- Small cars baseline evolution:
 - gasoline: cfr. medium-large
 - diesel: defined relative to gasoline cars based on technical specification of available types:
 - Purchase cost (excl. VAT): + € 1180
 - Fuel efficiency: - 1,7 l / 100 km
 - Power: same power (controlled)
 - Weight: + 62 kg

Small PC

Conventional
(diesel,
gasoline)

“Exotic”
(fuel cell, battery)

Future Extension

Existing

Improved

Private Cars Advanced Technologies

- Introduction of advanced technologies
 - “Similar technologies”: small extension of conventional technology choice model
 - e.g. hybrid diesel, DI gasoline
 - “Exotic technologies”: choice model based on literature
 - e.g. fuel cell H₂, battery electric

LDV

- For LDV a multinomial logit model specification is considered
- Based on “intelligent guess” approach
- Only Lifetime Cost as independent parameter (+ market introduction if necessary)