

Redistribution effects of water tariffs

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1 Introduction

1.1 Rational:

- Water tariff objectives:
 - self-sufficiency for service providers
 - equity among customers
 - conservation/economic efficiency for society
- Current tariff in Wallonia:
 - 2 parts: fixed + volumetric
 - fixed: 20CVD + 20CVA, differences among distributors are negligible
 - volumetric: 2 increasing blocks at connection level — IBT-con (actually 3 blocks, but household rarely reach block 3)
 - * 0-30 m³: 0.5*CVD
 - * 30-500 m³: CVD + CVA
- Arguments for IBT:
 - incentive to save water (higher price for larger consumption)
 - pro-poor (supposedly)
- Arguments against IBT:

- pro-poor often not true due to low correlation between water consumption and income. That value of Wallonia is 0.3735144 for household consumption and -0.0462846 for consumption per inhabitant.
- difficult to understand hence not clear signal for customer to use water wisely

1.2 Objectives

- Assess social aspects of current price tariffs
- Compare social equity of different hypothesized tariff schemes

2 Data and method

2.1 Data

- Utility survey data provided by Aquawal and CEHD
 - year: 2014
 - 1534 households
 - 3 main distributors: SWDE (1143), CILE (265), inBW (126)
 - information include: water consumption, household size, income, rainwater tank ...
- built-up density
 - year: 2011
 - at 100x100m scale
 - 3 categories: low, medium, high

2.2 Method

- assess social aspects of current tariff
 - divide households into 4 groups using household income quartiles
 - pairwise analyses of household income and other factors: income per equivalent adults, water use, water bill, TEH ...
- compare different tariff scheme
 - current format with different changing fixed part
 - * assumptions: keep same total bill in 2014 for all households within the same distributor & keep CVA of 2014 not changing
 - * changing fixed part: EUR 0, 40, ..., 200
 - * recalculate CVD for each distributor at each value of fixed part
 - * recalculate household water bill in 2014 and compare with the actual one
 - current format with potential tax on rainwater tank
 - * assumptions: keep same total bill in 2014 for all households within the same distributor & keep CVA of 2014 not changing
 - * changing watertank tax: EUR 0, 40, ..., 200
 - * recalculate CVD for each distributor at each value of fixed part
 - * recalculate household water bill in 2014 and compare with the actual one
 - compare IBT-con, IBT-cap, linear

Table 1: Household income quartile characteristics

Quartile	Number of households	Number of people	Min income (EUR/month)	Max income (EUR/month)
1	384	615	125	1750
2	384	840	1750	2250
3	383	993	2250	3250
4	383	1224	3250	5250

3 Results

3.1 Social aspects of water tariff in Wallonia

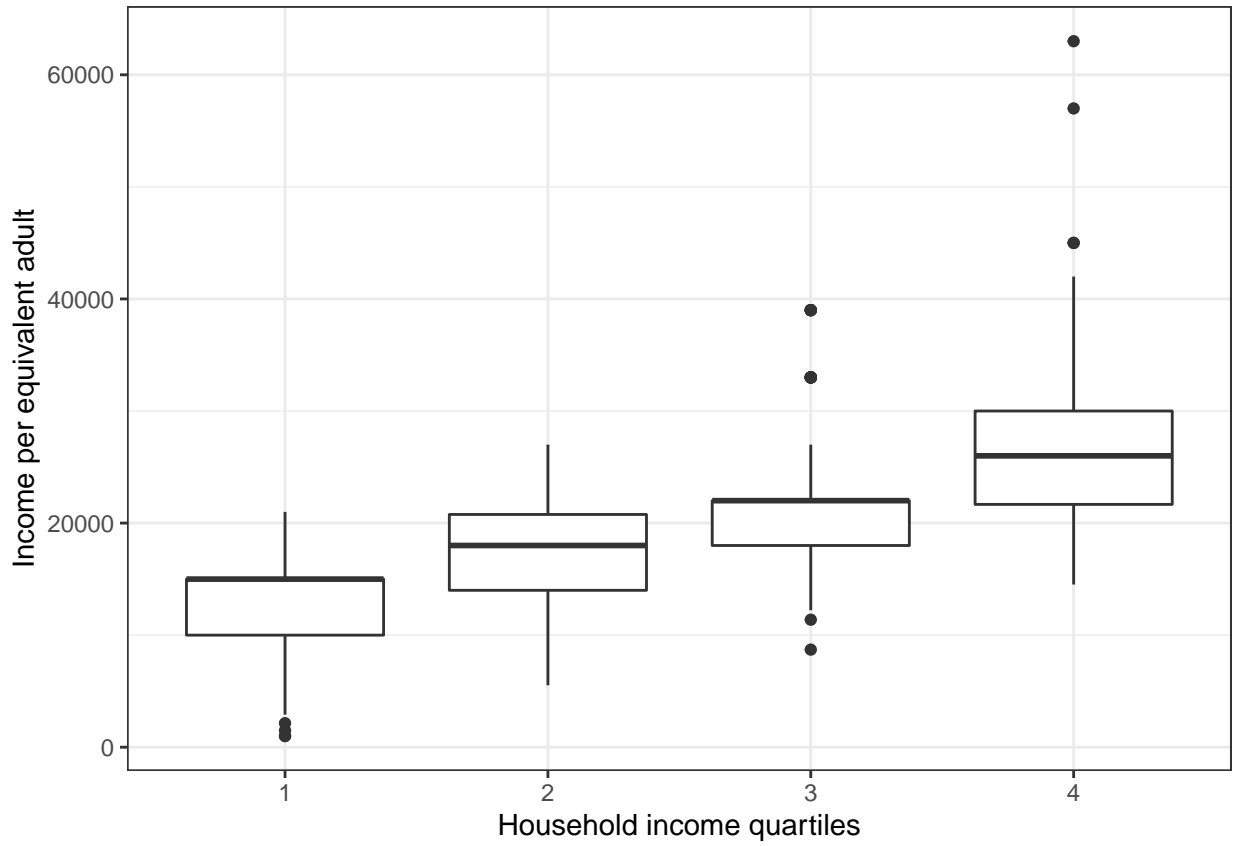


Figure 1: Income per equivalent adults for different household income group