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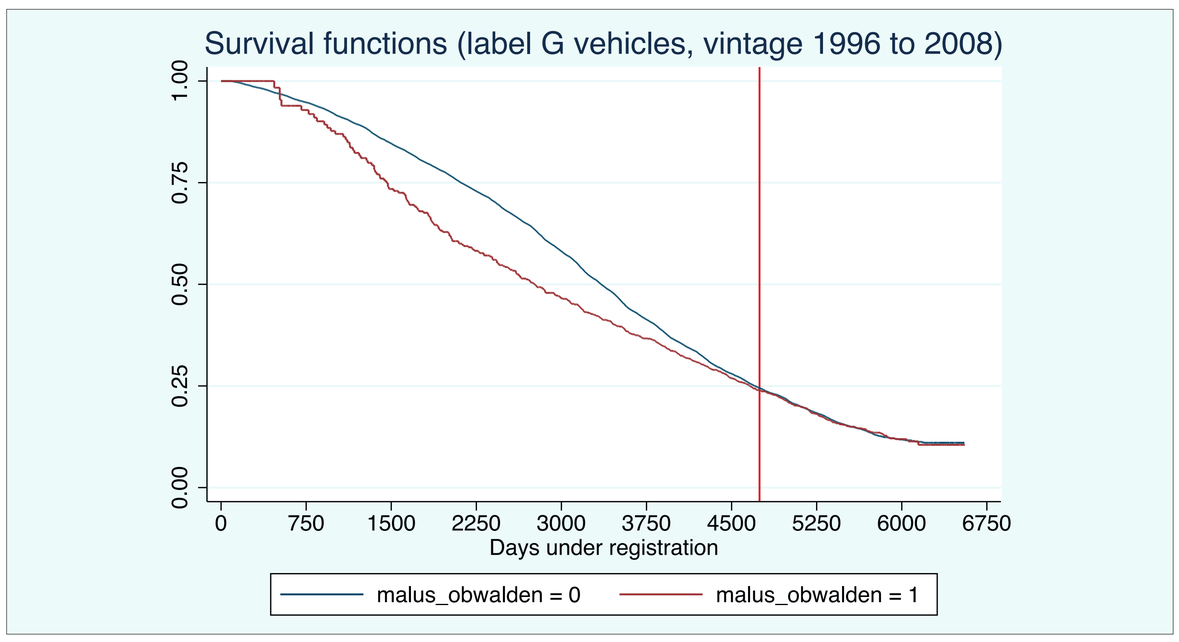
Decreasing used vehicle's survival rate with green taxation: The case of Obwalden, Switzerland

This project estimates the impact of a malus on the survival rate of used inefficient vehicles. A malus is a tax punishing use of inefficient vehicles. The identification strategy relies on comparing retirement rate of vehicles subject to a malus and retirement rate of contemporaneous control vehicles circulating in cantons where no malus is in place. Vehicles subject to a malus circulate in the Canton of Obwalden. This canton launched a bonus/malus system in 2009. Control vehicles circulate in the cantons of Schwyz and Zug. These cantons have not launched a green taxation policy sofar. Impacts from malus are estimated through survival analysis specifications at vehicle level. Comparisons are carried out across trims. A trim is a unique make-model, body type, engine size, horsepower, transmission, fuel type and number of doors. Results show that the malus decreases survival rate of used inefficient vehicles. The impact is around 10% which represents a sizable effect considering that malus is 60 CHF –around 12% of the average circulation tax.

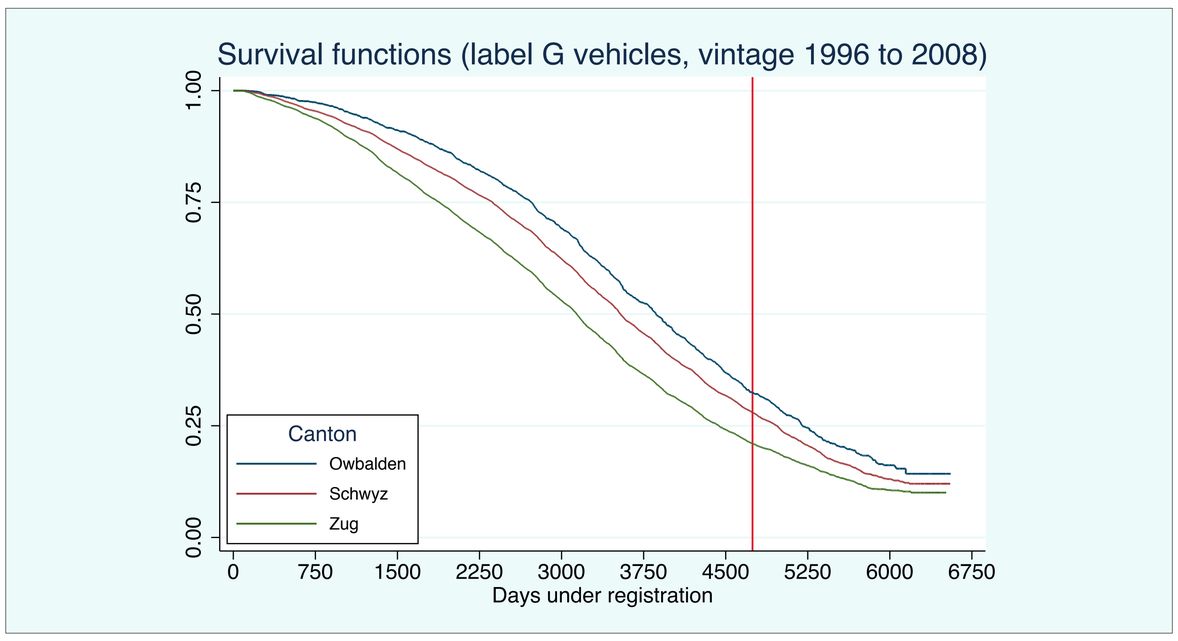
Motivation

Carbon dioxide (CO2) emissions have been identified as a main driver of climate change. In developed countries, one third of CO2 emissions is generated by the transportation sector. Switzerland is not an exception to this figure. As a consequence, 16 cantons have tied their vehicle circulation tax to vehicles' energy performance which is convenient for impact evaluation purposes because contemporaneous potential control vehicles are observed in the 10 cantons where no malus is in place. Out of 8 cantonal bonus/malus systems, only Obwalden targets used vehicles with energy label G –the worst energy efficiency performance. The vehicles pay a malus of 60 CHF each time they are registered for circulation. This project estimates the impact of this malus on the survival rate of used vehicles circulating in Obwalden.

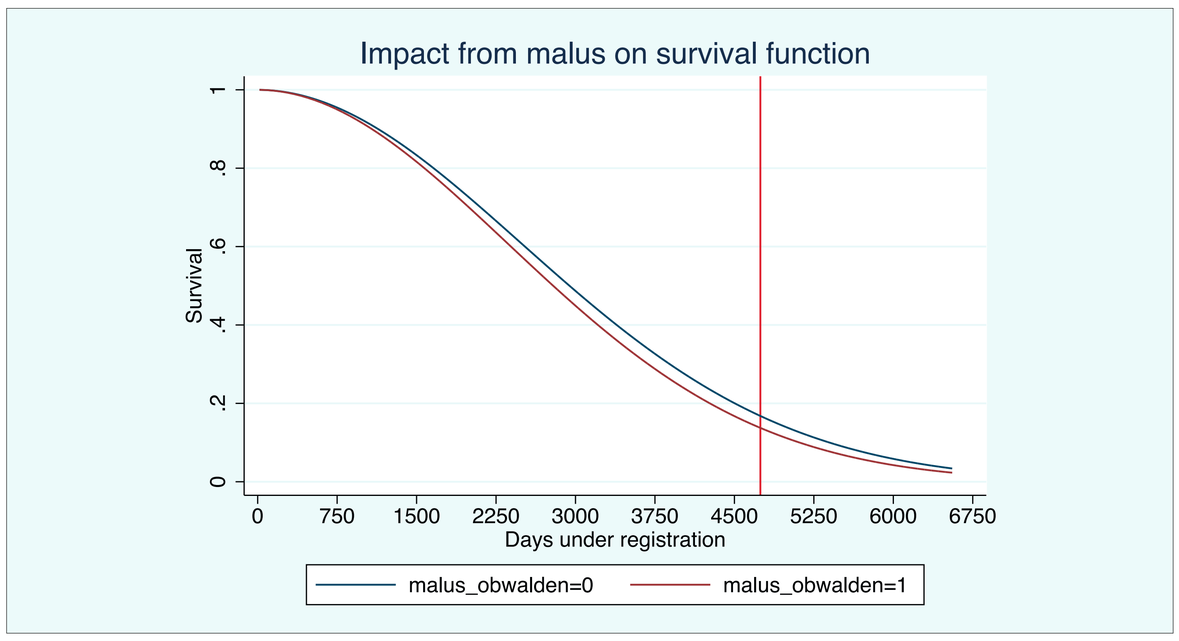
Exploratory evidence: survival rate of label G vehicles in Obwalden versus Schwyz and Zug



Exploratory evidence: label G vehicles in Obwalden have better survival rate



Results: malus decreases rate of survival



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