



## POLICY BRIEF

# The impact of policy awareness: Evidence from vehicle choice response to fiscal incentives

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## Executive Summary

- Adoption of energy-efficient cars is crucial to decarbonizing the private passenger transport sector and mitigating its negative impact on air quality.
- Several cantons introduced discounts on the vehicle circulation tax for energy-efficient and/or low-emission vehicles (also known as “Bonus/Malus” system)
- Several cantons adopted monetary incentives to promote the adoption of BEVs.
- We document that only a low percentage of Swiss drivers (~40%) were correctly informed about these fiscal incentives in their canton of residence when purchasing a car. We refer to this knowledge as “policy awareness”.
- The present study investigates 1) if policy awareness influences the purchase of energy-efficient cars and 2) if a simple information treatment on the presence of these incentives can increase awareness and the propensity to buy more energy-efficient cars.
- The empirical evidence shows that:
  1. In cantons with a Bonus/Malus incentive in place, the level of policy awareness influences consumer vehicle purchase.
  2. A simple information intervention, sent by email, in-

creases awareness about the presence of a Bonus/Malus system and induces individuals to buy more energy-efficient cars.

- Without considering the role of low policy awareness, policy-makers might conclude that the low effectiveness of a measure is related to limitations in its design or to some consumers’ behavioral factors, while instead, the cause might be due to the low level of awareness of the policy measure.
- From a policy point of view, the results of this study suggest that, in some cases, the introduction of public policies should be accompanied by information campaigns on these measures.

## Outline

Adoption of energy-efficient cars is crucial to decarbonizing the private passenger transport sector and mitigating its negative impact on air quality. One way to accelerate this process is promoting the adoption of energy efficient and low carbon emission cars. To do so, several central and local governments around the world introduced a series of monetary incentives for the purchase of energy efficient vehicles.

One policy prevalent in Europe and in other parts of the world is a discount on the annual tax every car owner must pay to use

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the vehicle for cars that are particularly energy efficient, and sometimes also a surcharge on the tax for very energy inefficient cars. In some cases, such reduction is limited to the first few years after the purchase. This type of policy is also known as “Bonus/Malus” system and has been adopted in several cantons of Switzerland, which set independently their own annual vehicle circulation tax.

### Bonus/Malus policies in Switzerland

The Bonus/Malus incentive has been introduced by some of the Swiss cantons, generally between 2009 and 2014, and they have been, in some cases, subject to changes and adaptations. In 2018, seventeen cantons introduced a Bonus/Malus system that depends either on the level of energy efficiency (energy efficiency label), the level of CO2 emissions per 100 km, or both. Figure 1 provides a graphical illustration of which cantons introduced a Bonus/Malus and of which type.

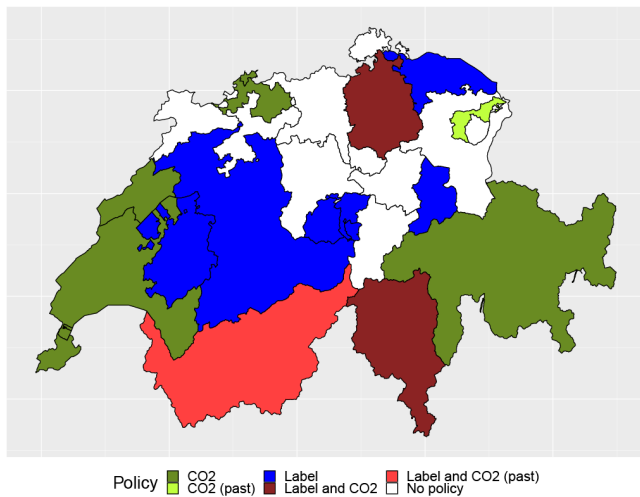


Figure 1: Bonus/Malus policies in place in 2018 in the Swiss cantons

For the population of vehicles registered in Switzerland during the period of our study (2015–2021), the average incentive amount to around 25 percent of the annual vehicle fuel cost. Importantly, any discount or penalty to the circulation tax is applied automatically by the canton, and it is generally not advertised at the point of sale.

Previous analysis on the effectiveness of the Bonus/Malus system on vehicle choice in selected Swiss cantons show modest results of this policy in mitigating vehicle carbon emissions (Alberini and Bareit, 2019). However, there are studies made with similar policies in other countries showing larger effects on vehicle choice. To improve the outcome of these measures, it is important to understand the possible reasons of limited effectiveness: one reason can be that the incentives are inadequate or that the incentives are not taken into account by consumers due

to various behavioral or psychological factors (such as the inability to calculate and compare the actual amount of the discount).

Another reason might be that the target population is not informed about the existence of incentives for energy-efficient vehicles, and thus, they do not consider them when choosing a car. We call “policy awareness” the knowledge about the presence of an incentive for energy-efficient cars.

### The role of policy awareness for the effectiveness of the Bonus/Malus system

To analyze the level of policy awareness on the presence of the Bonus/Malus system, we included a specific question in the questionnaire used in the annual Swiss Household Energy Demand Survey (SHEDS). We asked the participants if, at the time they purchased their primary vehicle, they knew whether the annual cantonal circulation tax depended on the fuel efficiency and/or the carbon emissions of the car. Based on the possible answers (“yes,” “no,” “I do not know”), we found that only 42% of the respondents were correctly informed about the presence of these types of incentives in their canton of residence. This survey also contains information on the fuel consumption (liters per 100 km) of the respondents’ primary car, the year of purchase and other sociodemographic and vehicle characteristics.

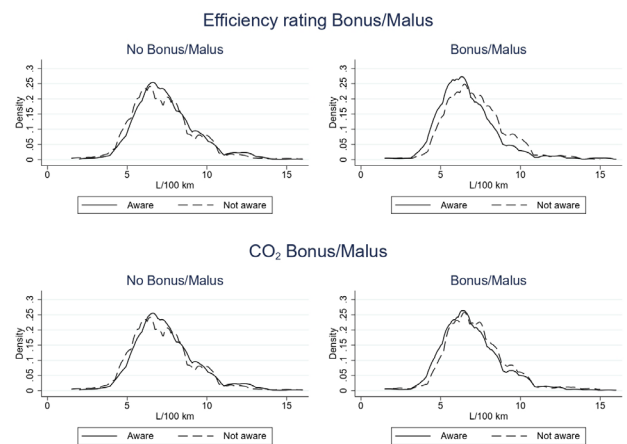


Figure 2: Distribution of the vehicle fuel consumption for aware and not aware individuals in cantons with and without a Bonus/Malus system

Additionally, in 2019 we organized a randomized control trial with the participants of the annual Swiss Household Energy Demand Survey (SHEDS). Within this experiment, some participants (treated group) received an email containing a table with information about the presence or absence of a Bonus/Malus system across the 26 Swiss cantons. The rest of participants (control group) did not receive this information. In the subsequent survey waves, we compare the fuel economy of the new cars of the two groups and their level of policy awareness.

Our main findings are the following:

- Individuals aware about the presence of the Bonus/Malus system buy new cars that are on average more energy efficient.
- The information intervention improved significantly the level of policy awareness.
- The information intervention induces individuals in cantons with the Bonus/Malus system to buy cars that consume around 10% less fuel per km.

### Policy recommendations

- Fiscal incentives for energy efficient cars and similar policies that are not visible at the time of purchase are likely to be ignored by a large share of consumers.
- Failing to adequately inform consumers might lead to a low average impact of the policy measure, which could be wrongly blamed on flaws of the policy design or other behavioral factors that would need different interventions to be corrected.
- Whenever possible, environmental incentives should be communicated at the moment of the buying decision (for instance, when looking for a new car at a dealer or on a website).
- Policy makers should complement the design and introduction of public policies with simple informational campaigns about their existence. These interventions can be less expensive than an increase of the monetary incentives.

### References

Anna Alberini and Markus Bareit. «The effect of registration taxes on new car sales and emissions: Evidence from Switzerland.» *Resource and Energy Economics* 56 (2019).

Link: <https://doi.org/10.1016/j.reseneeco.2017.03.005>

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