Analysing benefit-in-kind taxation for Germany's super polluters

Methodology note

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1. Research scope

The purpose of this research was to explore the benefit-in-kind taxation for salary cars in Germany through an analysis of high-emission vehicles – the so-called 'super polluters'. Using vehicle characteristics of the most common super polluters, the annual tax paid through benefit-in-kind was calculated using both the current tax rate and a higher tax rate that would end the favourable tax treatment. The difference between these two totals is considered as the favourable tax treatment.

2. Identifying the super polluter models

For the purpose of this research, 'super polluters' are defined as vehicles emitting more than 180g CO_2/km. This is significantly higher than the 110g CO_2/km for the average new car in Germany and constitutes the top 10% of salary cars by CO_2 emissions.[1]

2.1. Registration and emission data

The registration and emissions data used to identify the super polluters comes from Dataforce and covers 2021 new registrations. Each data point details a car model, the channel it was registered to (true fleet, dealer & manufacturer, rent-a-car, or private households), fuel type, emissions of the average model in this channel, and the number of registrations. For example, in the 2021 German registrations the 1,688 registrations of diesel VW Touareg passenger cars in the true fleet channel had average emissions of 200g CO_2/km.

2.1.1. Estimating salary car registrations

New registrations are not recorded by purpose of use and therefore the number of salary cars cannot be directly determined from the data source of new registrations. However, it is estimated by Dataforce that 64% of the true fleet channel is used as salary cars.[2] This estimate is applied to the true fleet registrations to arrive at an estimate of the number of salary cars for each model.

[1] Dataforce (2022). New passenger car registrations 2021.
[2] Dataforce (2020). Company cars report. Transport & Environment. Retrieved from: https://www.transportenvironment.org/discover/company-cars-how-european-governments-are-subsidising-pollution-and-climate-change/

2.2. The identification of top super polluters

Some car models are extremely popular in Germany while others are rare. As such, to identify the top super polluters a popularity threshold of at least 1,000 salary car registrations was added to the 180g CO_2/km threshold for super polluters (Figure 1). The result is a subset of ten models that meet both thresholds: Mercedes GLC (GLK Class), Audi Q5, BMW X5, Porsche 911, Mercedes S Class, Mercedes G Glass, Mercedes GLE (M Class), VW Touareg, Audi Q8, Cupra Formentor.[3]

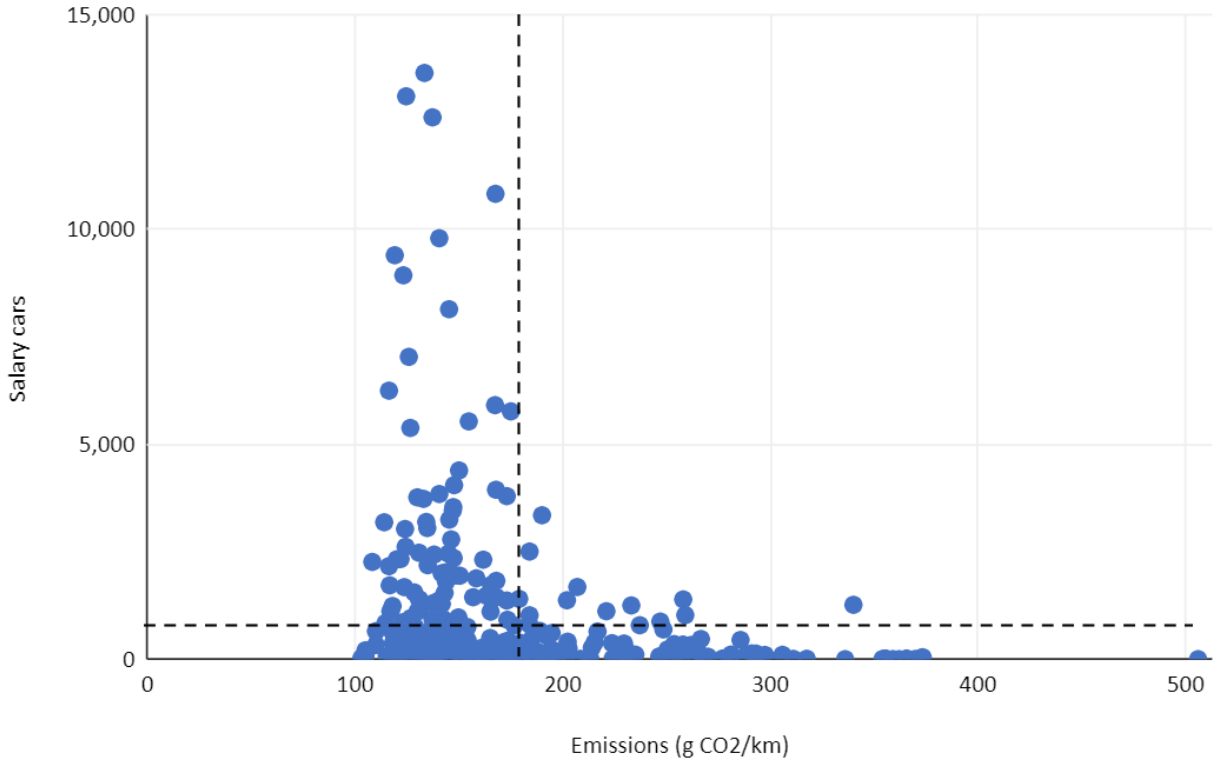

Figure 1: Identifying common super polluters using popularity and emission thresholds

These ten models constitute a combined 52% of all registrations above 180g CO_2/km.[4]

2.1.1. Top super polluters as a sample for the analysis

These top ten super polluter models form the basis of the analysis, serving as individual examples to highlight and providing typical vehicle characteristics that can be applied to the rest of the super polluter models. These characteristics – car price, CO_2 emissions, engine power, and engine capacity – are used to calculate benefit-in-kind taxation for Germany and other European countries (sections 3 and 4).

[3] Dataforce (2022). Model names as they appear in the registration data.
[4] Dataforce (2022).

3. Calculating benefit-in-kind

The monthly benefit-in-kind taxation applied to a salary car in Germany is relatively low at 1% of the gross list price of a car (1-Prozent-Regelung). This rate is reduced by 50% for PHEVs and 75% for BEVs (see info box 1), leading to a differentiation by fuel type but not by CO_2 emissions (i.e. as all petrol and diesel cars are taxed at the same rate regardless of their emissions). There is also a commuting charge incorporated into the monthly benefit-in-kind taxation that is levied at 0.03% of the gross list price of a car multiplied by the one-way commuting distance between the employee's place of residence and place of work.

The current benefit-in-kind calculation can be represented as:

$$BiKc,v = (CD * CC + BRc) * RPv$$

Where

BiKc,v is the benefit-in-kind (current) for a vehicle

CD is the commuting distance

CC is the commuting charge (0.03%)

BRc is the base rate (current - 1%)

RPv is the retail price for a vehicle

INFO BOX 1: Super polluters with plug-in hybrids

Some of the super polluters are also available as a plug-in-hybrid (PHEV) version. Employees who receive a PHEV version pay only half the base rate of benefit-in-kind taxation compared to a conventional combustion engine car (i.e. 0.5% instead of 1%). While PHEVs have low test-cycle emissions, their real-world emissions rival those of conventional combustion engine cars as they are heavier vehicles that are typically driven in combustion mode. This is particularly the case for salary cars as fuel costs are often covered by the employer and thus little incentive to charge the battery. The most recent analysis revealed that the real-world emissions of German PHEV salary cars are five times higher than their test-cycle emissions.[5] T&E analysis has revealed that the reduced benefit-in-kind taxation for PHEVs reduces income to the German state by €1.2 billion over four years to produce little, if any, emission saving.[6] PHEV cars were not accounted for in this analysis as their test-cycle emissions are below the 180g CO_2/km super polluter threshold. Yet their high real-world emissions and reduced tax burden make them even more egregious examples of favourable benefit-in-kind taxation.

[5] Plötz, P. et al. (2022). Real-world usage of plug-in hybrid electric vehicles in Europeas: A 2022 update on fuel consumption, electric driving, and CO2 emissions. International Council on Clean Transportation (ICCT). Retrieved from: https://theicct.org/publication/real-world-phev-use-jun22/

[6] Transport & Environment (2022). Dienstwagenprivileg für Plug-in-Hybride kostet den Fiskus 1,2 Milliarden Euro. Retrieved from: https://www.transportenvironment.org/discover/dienstwagenprivileg-fur-plug-in-hybride-kostet-den-fiskus-12-milliarden-euro/

3.1. Car prices

Car prices are not recorded in the data on new registrations and must be sourced elsewhere. As car manufacturers provide price lists for their models, these price lists were consulted for the top super polluters. The manufacturer's suggested retail price (MSRP) was selected for the model variant (whether diesel or petrol) with the closest emissions to the average of new registrations.

While cars have typically been sold at a discounted rate compared to their MSRP, this practice is no longer commonplace due to vehicle shortages. As such, the listed MSRP was used in this analysis.

3.3. Commuting distance

An average commuting distance of 16.9km was sourced from Dataforce.[7]

3.3. Marginal tax rate

An average marginal tax rate of 44.3% was applied. This is sourced from the OECD *Taxing Wages* report and refers to a single person with children and income 67% higher than the average wage.[8] This methodological approach aligns with international comparisons of benefit-in-kind taxation.[9] However, as super polluter models are much more expensive than the average salary car, it is very likely that this marginal tax rate is a significant underestimate for the individuals receiving these high end salary cars.

4. Calculating the favourable tax treatment

To end the favourable tax treatment for the super polluters, a 3% rule was applied in place of the 1% rule. A 3% rule aligns with 'best in class' policy among European countries (see info box 2). An alternative methodology is to attempt to estimate the financial gain that is received for employees receiving salary cars compared to a counterfactual where the car is purchased privately. While intuitive, this can be both conceptually difficult (e.g. how salaries, car prices, and other factors would adjust in such a counterfactual) as well as technically difficult (e.g. there are a lot of inputs and assumptions to source). Previous calculations following this methodology provide a wide range of estimates.[10]

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[7] Dataforce (2020).

[8] OECD (2020). Taxing wages 2020: How tax systems influence choice of employment form. Organisation for Economic Co-operation and Development (OECD). Retrieved from: https://www.oecd.org/tax/taxing-wages-20725124.htm

[9] Harding, M. (2014). Personal tax treatment of company cars and commuting expenses. Organisation for Economic Co-operation and Development (OECD). Retrieved from: https://doi.org/10.1787/5jz14cg1s7vl-en

[10] Fiedler, S. et al. (2016). Reform und Abbau umweltschädlicher Subventionen: Ansätze für eine ökologische Fortentwicklung der öffentlichen Finanzen. Forum Ökologisch-Soziale Marktwirtschaft (FÖS). Retrieved from: https://foes.de/de-de/publikationen/publikation?tx_foespublications_listpublications%5Baction%5D=show&tx_foespublications_listpublications%5Bcontroller%5D=Publication&tx_foespublications_listpublications%5Bpublication%5D=249&cHash=31c4b60ba00d5405baa0f8d8cb9a8c98

INFO BOX 2: International comparison of benefit-in-kind taxation

The taxation of benefit-in-kind in Germany is lower than most other European countries. For the super polluters, the 1% rule equates to an annual benefit-in-kind tax of €9,466 compared to an average of €18,800 in the other top ten car markets in Europe – over twice as high.[11] Of the top ten European car markets, only Poland levies a lower benefit-in-kind tax on super polluters than Germany. The top ten European car markets with the most environmental benefit-in-kind taxation – Italy, the UK, Denmark, the Netherlands – levy an average benefit-in-kind tax on super polluters of €33,000 – over three times as high as Germany. Ending the favourable tax treatment of super polluters in Germany with a 3% rule roughly aligns with the 'best in class' examples among European countries.

To analyse the change in revenue associated with the favourable tax treatment of super polluters, a change in the base rate from 1% to 3% was calculated for each of the top super polluter models using their respective vehicle characteristics. This was then replicated for all remaining super polluter models using the average vehicle characteristics of the top models.

This benefit-in-kind calculation using potential rates can be represented as:

$$BiKp,v = (CD * CC + BRp) * RPv$$

Where

BiKp,v is the benefit-in-kind (potential) for a vehicle

BRp is the base rate (potential - 3%)

As the commuting component of the benefit-in-kind calculation remains the same in both current and potential forms, the difference in benefit-in-kind can be simplified as:

$$BiKd,v = (BRp,v - BRc,v) * RPv$$

Where

BiKd,v is benefit-in-kind (difference) for a vehicle

This benefit-in-kind difference was then taxed at the average marginal tax rate on income to determine the difference in tax contribution. Because the data is available at the model-level, the total revenue was determined using model characteristics and the number of registrations for each model. This can be represented as:

$$Td = \sum_{m} ((BRp - BRc) * Rm * RPm * MTR * M * O)$$

[11] All figures from the international comparison come from T&E's forthcoming international tax comparison report. Note that the commuting component is not included in the international comparison, nor is the commuting allowance. Both policies, which roughly cancel out in aggregate, are unique to Germany and therefore either both should be included in the comparison or neither should be included.

Where
Td is the difference in tax contribution
BRp is the base rate (potential - 3%)
BRc is the base rate (current - 1%)
Rm is the number of registrations for each model
VPm is the vehicle price for each model
MTR is the marginal tax rate (44.3%)
M is the number of months (12)
O is the ownership period in years (4)

4.1. From new registrations to the whole salary car fleet

The analysis was only conducted on salary cars from new registrations (using the year 2021). However, benefit-in-kind taxation applies not just to new registrations but to the whole fleet of salary cars. This is accounted for by incorporating a four-year turnover of salary cars.[12]

4.2. Calculation result

Applying this calculation to the super polluters produces an estimate of €1.6 billion for the favourable tax treatment received by super polluter salary cars. This is an annual figure when the new base rate is applied to the whole salary car fleet.

Table 1: Monthly tax levied under the 1% and 3% rule for the top super polluters

Super polluter model	Tax levied with 1% rule and commuting charge (€)	Tax levied with 3% rule and commuting charge (€)	Change in tax levied from a 1% to 3% rule (€)
Mercedes GLC, GLK Class	364	846	483
Audi Q5	330	767	438
BMW X5	489	1,137	649
Porsche 911	977	2,273	1,297
Mercedes S Class	790	1,837	1,048
Mercedes G Class	841	1,957	1,116
Mercedes GLE, M Class	555	1,293	737
VW Touareg	460	1,070	610
Audi Q8	543	1,265	721
Cupra Formentor	271	631	360

[12] Dataforce (2020).

5. Comparison to the €365 ticket

To put the cost of the favourable tax treatment into perspective, a comparison to a possible version of a €365-a-year ticket was additionally made. Similar to other analyses,[13] it was assumed that 83% of the 31 million people that bought the €9-ticket each month would buy a 365 €-ticket. For train service providers, a €365-a-year ticket would reduce income through ticket sales by €4.0 billion compared to 2019.

Further information

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[13] Greenpeace (2022). Klimaticket, Wie ein Anschluss an das 9-Euro-Ticket für mehr Klimaschutz und soziale Gerechtigkeit sorgen kann. Retrieved from: https://www.greenpeace.de/publikationen/220718_Klimaticket_Kostenvergleich_0.pdf