War, Oil, and the Demand for Electric Cars

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Abstract

We study whether the sharp rise in petrol prices following the bombing of Iran on 28 February 2026 affected the short-run demand for battery electric vehicles in EU-27 countries. Using monthly vehicle-registration data and fixed-effects panel regressions, we show that the petrol-price shock increased battery electric-vehicle adoption, in particular in countries with better charging infrastructure and lower charging costs. Our findings suggest that higher fossil-fuel prices can accelerate the transition towards electric mobility.

Keywords: War, oil price shock, fossil fuel prices, electric cars, mobility transition, EU 27.
JEL Classification: D12, Q42, L91, R40.

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1 Introduction

On 28 February 2026, joint US-Israeli forces launched a surprise military attack on Iran, which responded with a naval blockade of the Strait of Hormuz, a maritime chokepoint carrying about a quarter of global seaborne oil trade. The blockade caused daily oil prices to jump by 27% within a week's time (UNCTAD, 2026). In EU 27 countries, petrol prices (Super 95) too spiked sharply, rising by 15.4% until the end of March (see Figure 1). This price hike, the largest on record for the EU since the attack of Russia on Ukraine in 2022, varied greatly in size across EU member states, ranging from less than 10% in Slovakia, Ireland, or Italy to more than 20% in Austria, Belgium, or Sweden.

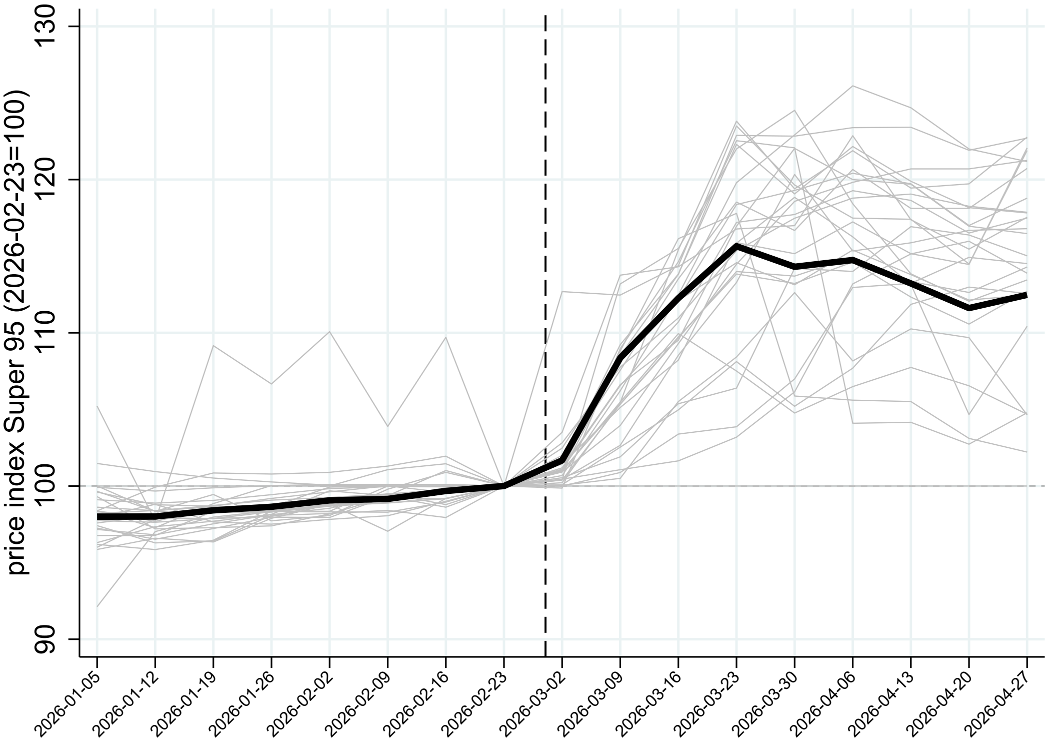
We study how this war shock and the dramatic petrol price increases affected the short-run demand for battery electric vehicles (BEVs) in EU 27 countries. Using data for the months January to April in 2026 and 2025 (to control for season effects), we estimate fixed-effects panel regressions with country, year and month fixed effects. Our results show that the petrol-price shock increased both BEV registrations and their share in total new car registrations. We also find evidence that these effects proved stronger in countries with more developed charging infrastructure and lower charging costs for BEVs.

Our findings contribute to a small but growing literature on vehicle running costs and their importance for the mobility transition, i.e. petrol and electricity prices and their effect on hybrid vehicle (HV) (Beresteanu and Li, 2011; Diamond, 2009; Gallagher and Muehlegger, 2011) and BEV demand (Bushnell et al., 2022; Liu et al., 2023; Fei et al., 2025; Zhang et al., 2026).[1] These studies show that higher petrol prices can boost HV and BEV uptake; there is also evidence that demand for BEVs is more responsive to petrol prices than to electricity prices (Bushnell et al., 2022). None of the existing literature, however, exploits a shock (natural experiment) for identification that causes sharp and sizeable hikes in petrol prices that permit analyses of immediate demand effects, i.e. short-run impacts. From a policy perspective, this is a shortcoming. For short-run impacts

[1] Previous research has also studied financial incentives, such as rebates and charging subsidies (DeShazo et al., 2017; Springel, 2021), charging infrastructure and charger reliability (van Dijk et al., 2022; Asensio et al., 2025), technological improvements (Forsythe et al., 2023), and complementary transport infrastructure, such as high-speed rail connectivity (Fang et al., 2025)

may further or erode public support for the mobility transition, which is well underway but far from completed. Our setting (a war shock) and focus (short-run effects) are also advantageous from a methodological point of view, i.e. for identification, as potentially confounding factors have much less chance, scope, and time to cause bias ('nature doesn't jump', and neither do potential confounders).

Figure 1: Fuel prices in EU 27 countries, January-April 2026



Notes: The figure shows the evolution of weekly national petrol prices for Super 95 (€/*liter*) in EU 27 countries for the period January to April 2026. National prices are normalized to 100 on 23 February 2026, the last weekly recording of prices before the attack on Iran on 28 February 2026. Thin light grey lines document price changes for individual EU 27 countries, the thick black line average price changes for the entire EU 27 group. Data source: European Commission (2026). Own calculations.

2 Data and Empirical Strategy

In our analysis, we use data on monthly new passenger-car registrations from the ACEA – European Automobile Manufacturers' Association (2026), data on weekly retail petrol prices, value-added tax (VAT) rates, excise duties, and other indirect taxes from the *Weekly Oil Bulletin* by the European Commission (2026), data on BEV charging prices from Eleport (2026), an electric vehicle charging station provider, and data on charging infrastructure (number of charging stations) from the European Alternative Fuels Observatory (EAFO) (2026).

Our final estimation sample consists of a balanced panel of 216 country-month observations for the EU-27 countries in the period January–April 2026 and January–April 2025. March and April 2026 constitute the post-treatment period (following the attack on Iran on 28 February 2026); earlier months serve as pre-treatment observations. Considering corresponding months in 2025 allows us to account for recurring seasonal patterns in vehicle registrations and petrol prices.

We estimate variants of the following two-way fixed effects model to analyze the impact of the war-induced oil price shock in EU 27 country i in month t:

$$y_{it} = \beta_0 + \beta_1 March2026_t + \beta_2 April2026_t + \mu_i + \delta_y + \lambda_m + \epsilon_{it}, \tag{1}$$

where y_{it} denotes one of four outcomes, (i) the log of the average monthly petrol price for Super 95, (ii) the log of monthly registrations of new BEVs, (iii) the log of monthly registrations of new petrol cars, and (iv) the percentage share of BEVs in total monthly registrations of new cars. The key regressors are $March2026_t$ and $April2026_t$, indicator variables that take value one in March 2026 and April 2026 respectively (and zero otherwise). The corresponding coefficients β_1 and β_2 therefore capture the short-run effects of the oil-price shock in the first two months after the attack on Iran. μ_i captures country fixed effects, δ_y year fixed effects, and λ_m calendar month fixed effects. We cluster error terms ϵ_{it} at the country level. In effect heterogeneity analysis, we explore how excise tax reductions on petrol after February 2026 in selected countries moderated price rises in March and April 2026, and how predetermined country differences in charging infrastructure (December 2025) and BEV charging prices (February 2026) impacted responses in the BEV share in new car registrations in these months.

3 Results

Table 1 reports fixed-effects regression results for petrol prices, BEV registrations, petrol-car registrations, and the BEV share in total new-car registrations. Column (1) shows significant increases in petrol prices following the Iran war shock. Average petrol prices increased by 12.4% in March 2026 and by 18.8% in April 2026. The petrol-price shock hence intensified over time rather than fading quickly. Column (2) shows that countries which reduced excise taxes on petrol after February 2026 suffered somewhat smaller increases in petrol prices in March and April 2026, which attenuated the oil price shock for consumers.

Columns (3)–(5) document substantial changes in new car registrations in April 2026. In March 2026, registrations of both BEV and petrol cars still rose by 14.3% ($p<0.05$) and 13.5% ($p<0.01$), respectively. In April 2026, however, registrations diverged markedly. For BEVs, registrations rose sharply (+21.7% ($p<0.01$). For petrol cars, in contrast, registrations slowed dramatically. As a consequence, the share of BEVs in total new car registrations increased by around 1.7 percentage points in April 2026 ($p<0.05$), a 9.2% rise on the pre-March monthly average in 2026 and hence a very sizeable shift toward electric mobility.

Figure 2 examines whether treatment effects for the monthly BEV registration share differ by national electric vehicle charging infrastructure in place before the attack (in December 2025). The left panel compares countries below and above median charging station density (100.12 stations/1,000km^2); the right panel considers a higher split, the 75th percentile of the charging density distribution (364.22 stations/1,000km^2).[2] Treatment effects for countries with an above median charging station density are larger both in March and in April 2026, but much more sizeable and only statistically significant in the latter. In these countries, the BEV registration share increased by 2.44 percentage points ($p<0.05$). For countries above the 75th percentile of the charging density distribution, the April effect is even larger. The BEV registration share rose by 4.12 percentage points ($p<0.01$), a 21.9%

[2] Countries with an above median charging station density in December 2025 include Austria, Belgium, Czechia, Denmark, France, Germany, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovenia, and Sweden. Six of these countries had a density larger than the 75th percentile. These are Austria, Belgium, Denmark, Germany, Luxembourg, and the Netherlands.

rise on the 2026 pre-March monthly average for this group.

Table 1: Registrations of new cars in EU 27 countries, petrol prices, and the Iran war shock (FE regression results)

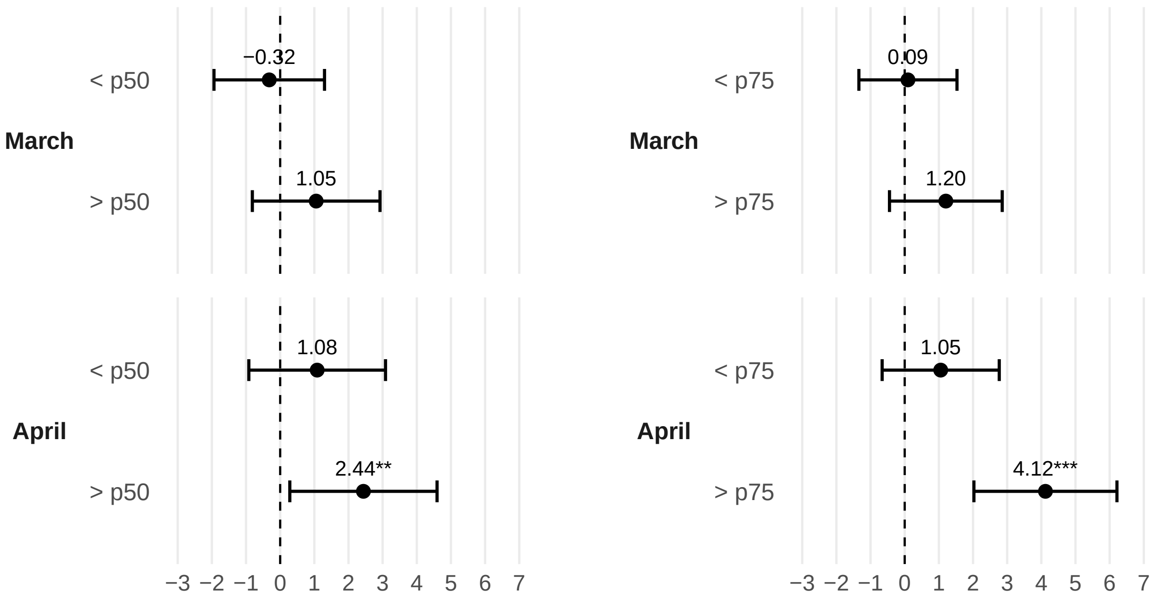
Dep. var.:	Petrol prices		Electric cars	Petrol cars	Electric cars
	log	log	total (log)	total (log)	share (%)
	(1)	(2)	(3)	(4)	(5)
March 2026	0.124***	0.137***	0.143**	0.135***	0.342
	(0.009)	(0.010)	(0.053)	(0.049)	(0.621)
April 2026	0.188***	0.212***	0.217***	0.031	1.735**
	(0.012)	(0.013)	(0.072)	(0.062)	(0.804)
March 2026 × tax cut		−0.047***			
		(0.016)			
April 2026 × tax cut		−0.072***			
		(0.019)			
Year 2026	−0.055***	−0.055***	0.235***	−0.208**	2.774**
	(0.008)	(0.008)	(0.053)	(0.076)	(1.018)
February	0.011***	0.011***	−0.085	0.000	−0.910
	(0.001)	(0.001)	(0.054)	(0.050)	(0.537)
March	−0.018***	−0.018***	0.173*	0.177***	0.125
	(0.003)	(0.003)	(0.087)	(0.062)	(0.603)
April	−0.037***	−0.037***	0.021	0.128	−0.586
	(0.003)	(0.003)	(0.097)	(0.085)	(0.650)
Constant	7.380***	7.380***	7.097***	8.074***	16.49***
	(0.004)	(0.004)	(0.060)	(0.061)	(0.690)
R^2 within	0.747	0.797	0.405	0.259	0.266
No. obs.	216	216	216	216	216

Notes: The table reports fixed-effects regression results at the country-month level. Columns (1) and (2) consider average petrol prices for Super 95 (in logs), with column (2) additionally including interactions between the March and April 2026 treatment indicators and excise-tax reductions. Column (3) considers total registrations of new battery electric vehicles (BEVs, in logs), column (4) total registrations of new petrol cars (in logs), and column (5) the BEV share in total new car registrations (in %). All regressions control for country fixed effects as well as year and month indicators. ***, **, * denote statistical significance at the 1%, 5%, and 10% level. Standard errors are clustered at the country level and reported in parentheses.

Figure 3 produces effect heterogeneity results for the March and April 2026 BEV registration shares by national charging costs for BEVs before the attack (in February 2026). As is evident, countries above the median and above the 75th percentile in the charging cost distribution did not see a rise in the BEV registration share in March and April 2026. But countries with charging costs below these cutoffs did experience sizeable increases in

April 2026, a plus of 3.57 percentage points (p<0.01) for countries below the median, and a plus of 2.69 percentage points (p<0.01) for countries below the 75th percentile. These effects represent a 18.9% and 14.2% rise on the 2026 pre-March monthly average BEV share in new car registrations.

Figure 2: Heterogenous treatment effects on BEV share in new car registrations by charging infrastructure (December 2025)



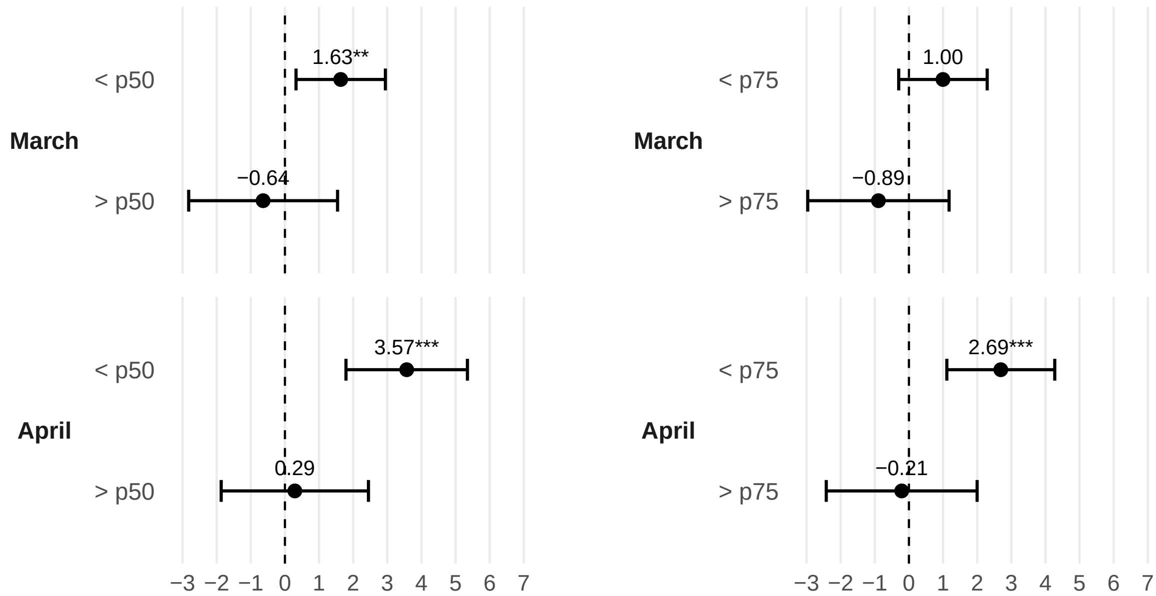
Notes: The figure displays heterogeneous treatment effects (in percentage points) by charging-station density in EU 27 countries in December 2025, i.e. before the Iran war shock. The left panel uses a 50th percentile split, the right panel a 75th percentile split. Estimates are from country fixed-effect regressions that augment specification (5) in Table 1 by appropriate interaction terms for March and April 2026. Error bars indicate 95% confidence intervals based on standard errors clustered at the country level. ***, **, * denote statistical significance at the 1%, 5%, and 10% level.

Additional effect heterogeneity analyses show that the effects on the March and April 2026 BEV registration shares were not attenuated in countries that reduced excise tax on petrol after February 2026 (see Figure A-1 in appendix).[3] The reasons for this may be severalfold. Tax cuts were probably seen as temporary and the magnitude of cuts was also

[3] Nine countries reduced their excise taxes in March or April 2026: Austria, Croatia, Hungary, Ireland, Italy, Poland, Portugal, Slovenia and Spain. Two of these countries reduced also the petrol VAT (Poland and Spain), and one country also indirect petrol taxes (Slovenia).

modest. As a result, petrol prices still rose in countries which cut taxes, by 7.5% in March and 10.9% in April compared to February 2026.

Figure 3: Heterogeneous treatment effects on BEV share in new car registrations by charging prices (February 2026)



Notes: The figure displays heterogeneous treatment effects (in percentage points) by ppp-adjusted charging prices in EU 27 countries in February 2026 (data on Cyprus and Malta are missing), i.e. before the Iran war shock. The left panel uses a 50th percentile split, the right panel a 75th percentile split. Estimates are from country fixed-effect regressions that augment specification (5) in Table 1 by appropriate interaction terms for March and April 2026. Error bars indicate 95% confidence intervals based on standard errors clustered at the country level. ***, **, * denote statistical significance at the 1%, 5%, and 10% level.

4 Conclusion

Based on monthly registration data for new cars and weekly petrol prices for EU 27 countries, this paper examined whether the unexpected attack on Iran in February 2026 and the oil price shock it caused stimulated the short-run demand for BEVs. Our findings from two-way fixed effects regression show that these events caused a sizeable increase in the share of BEVs in total new car registrations in April 2026. Cuts in excise taxes in selected EU 27 countries dampened petrol price rises somewhat but did not affect the short-run demand for BEVs.

Effect heterogeneity analyses reveal that this shift to electric mobility was particularly strong in countries with better charging infrastructure and lower charging costs. This indicates that both BEV infrastructure and BEV running costs are crucial for BEV uptake even in the short run. The former determines to what extent BEVs are good substitutes to fossil-fuel cars, the latter impacts the relative operating costs of BEVs to petrol cars. Our findings suggest that policy should always recognise these factors and constraints to be most effective.

It remains to be seen if the short-run boost to electric mobility we found is merely temporary or possibly marks the start of a more dynamic phase in the mobility transition that is underway. Longer-run effects are not implausible, as the war may have caused consumers to reassess the long-run running costs of petrol cars because of their vulnerability as durable consumption goods to similar disruptions in the future. We leave this question to future research.

References

ACEA – European Automobile Manufacturers' Association (2026). New Car Registrations. https://www.acea.auto/nav/?search=New%20car%20registrations. Accessed May 24, 2026.

Asensio, O. I., Buckberg, E., Cole, C., Heeney, L., Knittel, C. R., and Stock, J. H. (2025). Charging Uncertainty: Real-time Charging Data and Electric Vehicle Adoption. *NBER Working Papers*, (w33342).

Beresteanu, A. and Li, S. (2011). Gasoline Prices, Government Support, and the Demand for Hybrid Vehicles in the United States. *International Economic Review*, 52(1):161–182.

Bushnell, J. B., Muehlegger, E., and Rapson, D. S. (2022). Energy prices and electric vehicle adoption. *NBER Working Papers*, (w29842).

DeShazo, J., Sheldon, T. L., and Carson, R. T. (2017). Designing Policy Incentives for Cleaner Technologies: Lessons from California's Plug-in Electric Vehicle Rebate Program. *Journal of Environmental Economics and Management*, 84:18–43.

Diamond, D. (2009). The Impact of Government Incentives for Hybrid-electric Vehicles: Evidence from US States. *Energy Policy*, 37(3):972–983.

Eleport (2026). Fast Charging Prices across Europe Analyzed. https://eleport.com/price-report/#fastcharging. Accessed May 28, 2026.

European Alternative Fuels Observatory (EAFO) (2026). Transport mode: Road. https://alternative-fuels-observatory.ec.europa.eu/transport-mode/road/. Accessed May 13, 2026.

European Commission (2026). Weekly Oil Bulletin. https://energy.ec.europa.eu/data-and-analysis/weekly-oil-bulletin_en. Accessed May 7, 2026.

Fang, H., Li, M., Wang, L., and Yang, Z. (2025). High-speed Rail and China's Electric Vehicle Adoption Miracle. *NBER Working Papers*, (s33489).

Fei, Y., Qin, P., Chu, Y., Zheng, H., Tan-Soo, J.-S., and Zhang, X.-B. (2025). Does high Gasoline Price spur Electric Vehicle Adoption? Evidence from Chinese Cities. *Energy Economics*, 142:108188.

Forsythe, C. R., Gillingham, K. T., Michalek, J. J., and Whitefoot, K. S. (2023). Technology Advancement is driving Electric Vehicle Adoption. *Proceedings of the National Academy of Sciences*, 120(23):e2219396120.

Gallagher, K. S. and Muehlegger, E. (2011). Giving Green to get Green? Incentives and Consumer Adoption of Hybrid Vehicle Technology. *Journal of Environmental Economics and Management*, 61(1):1–15.

Liu, W., Chen, X., and Zhang, J. (2023). The Russia-Ukraine Conflict and the Automotive Energy Transition: Empirical Evidence from China. *Energy*, 284:128562.

Springel, K. (2021). Network Externality and Subsidy Structure in Two-sided markets: Evidence from Electric Vehicle Incentives. *American Economic Journal: Economic Policy*, 13(4):393–432.

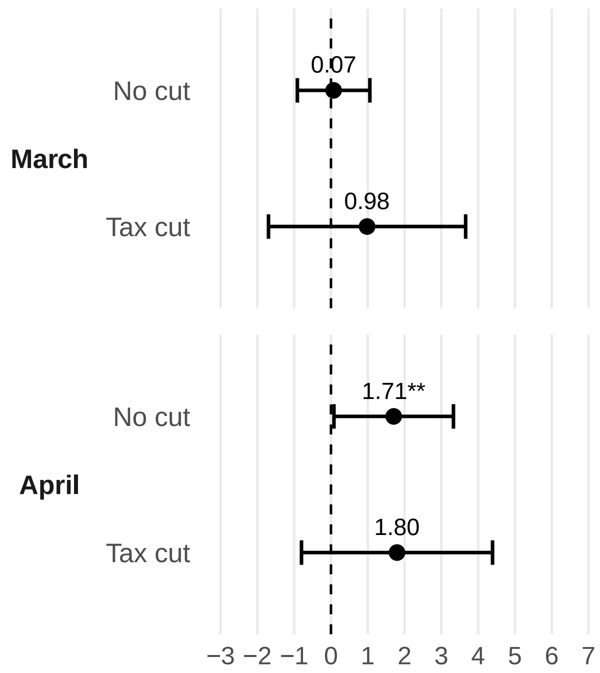
UNCTAD (2026). Strait of Hormuz Disruptions: Implications for Global Trade and Development. *UNCTAD Rapid Assessment*, 2026/1(10 Mar 2026).

van Dijk, J., Delacrétaz, N., and Lanz, B. (2022). Technology Adoption and Early Network Infrastructure Provision in the Market for Electric Vehicles. *Environmental and Resource Economics*, 83(3):631–679.

Zhang, X.-B., Xu, J., Zheng, Y., Sari, R., and Chu, Y. (2026). Electric Vehicle Adoption and Energy Prices: Empirical Evidence from four Nordic Countries. *Energy Economics*, page 109148.

A Appendix

Figure A-1: Heterogeneous treatment effects on BEV share in new car registrations by excise-tax reductions (February to March or April 2026)



Notes: The figure displays heterogeneous treatment effects (in percentage points) by excise-tax responses in EU 27 countries after the Iran war shock, i.e. whether countries reduced Super 95 excise taxes between February and March 2026, respectively February and April 2026. Estimates are from a country fixed-effect regression that augments specification (5) in Table 1 by appropriate interaction terms for March and April 2026. Error bars indicate 95% confidence intervals based on standard errors clustered at the country level. ***, **, * denote statistical significance at the 1%, 5%, and 10% level.