

Financing the Global Shift to Electric Mobility

Jan Bena, Bo Bian, and Huan Tang

Discussant: Moritz Wiedemann

Rotterdam School of Management

European Finance Association

August 22, 2024

Is there a difference in financing terms between EVs and conventional cars? And if so, why?

Change model

156 g/km

BMW X3 20 xDrive xLine

Models. Engines. Exterior. Interior. Packages & Optional Equipment. Services. Next Step

Models.



Show rate

£48,375

Request for Offer

Change model

22 g/km

BMW X3 30e xDrive xLine

Models. Engines. Exterior. Interior. Packages & Optional Equipment. Charging. Service

Models.



Show rate

£57,245

Request for Offer

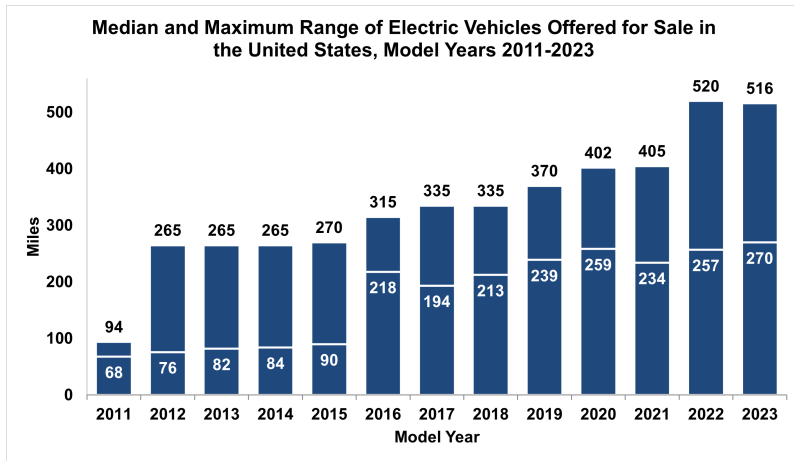
Result 1: EVs are financed with higher interest rates, lower loan-to-value ratios, and shorter loan durations.

Table 2: Financing Terms of Hybrid vs. ICE Vehicles

Panel A. within-make-model comparison

	(1) interest rate	(2) LTV	(3) maturity
Hybrid	0.294*** (0.06)	-4.704*** (0.87)	-2.480*** (0.50)
lender FE	Y	Y	Y
deal FE	Y	Y	Y
make-model FE	Y	Y	Y
nuts3 $\times$ year FE	Y	Y	Y
borrower controls	Y	Y	Y
Observations	7,906,809	7,458,371	7,906,823
R-sq	0.720	0.327	0.327

Result 2: Technological risk associated with EVs is the primary driver



Source: US Department of Energy/ EPA; Range is based on EPA estimates and excludes plug-in hybrid vehicles.

Result 2: Technological risk associated with EVs is the primary driver

Supporting evidence for technological risk:

- ➊ Higher level of the intensity and dispersion of innovations in EV-related technologies is associated with a larger EV spread
- ➋ Lenders attribute lower residual value estimates to EVs at the commencement of the lease and revise estimates more frequently downward
- ➌ EV spread widens when the ex-ante default risk is higher or when lenders own the vehicles before maturity via a leasing agreement

Other stories tested:

- ➊ Different demand elasticities for EVs
- ➋ Weaker market competition in the EV loan segment

This discussion in three parts

- ① Is financing hindering or facilitating the shift to EVs?
- ② What is the role of insurance costs?
- ③ Can you account for dealers subventing loans?

1. Is financing hindering or facilitating the shift to EVs?

- ▶ *"While most policy discussions of the global shift to electric mobility focus on the affordability of EVs in terms of their purchase price, less attention is paid to the role of consumer financing of EVs. Our research fills this gap and can inform public policies that aim at making EV financing more accessible."*
- ▶ Are consumers willing to take up the technological risk associated with EVs?
- ▶ How do individuals finance their EV?
- ▶ Would the same magnitude of EVs be sold without the option to lease?

Used EVs are a tough-sell...

Electric vehicles much harder to sell, say dealers

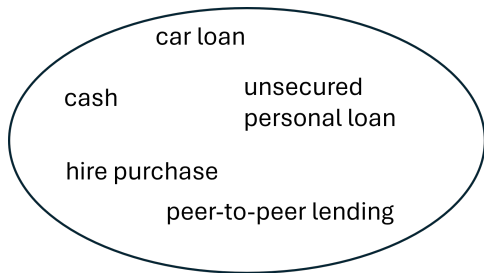
Survey finds the second-hand market for EVs is limited as their value has fallen over the past year

Gareth Corfield, TRANSPORT CORRESPONDENT

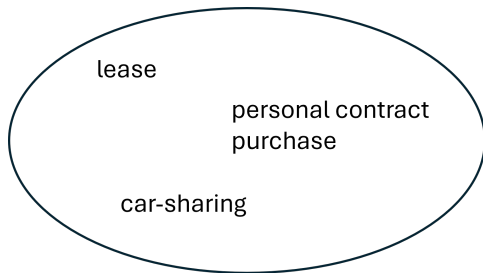
12 March 2024 • 11:14pm

What options do I have to drive a (EV) car?

Options to *own* a car



Options to *borrow* a car



- ▶ What kind of financing options do you capture in your sample?
- ▶ Can you also inform us on how EVs are financed?
- ▶ Thereby contribute to the broader question you point to:
Is financing hindering or facilitating the shift to EVs?

2. What is the role of insurance costs?

EV Insurance Premiums in the UK Cost Twice as Much as Those for Gasoline Vehicles

BY IER

JANUARY 30, 2024

1

On average, EV insurance premiums increased 50 percent in the UK—about double that of gasoline vehicles.

2

In the United States, EV insurance premiums are \$44 more a month than premiums for gas vehicles—about 20 percent higher.

3

Insurance premiums are based on the cost and age of the vehicle and the cost of repair, both of which are higher for electric vehicles.

Higher insurance (maintenance) costs $\Rightarrow$ Higher probability of default
 $\Rightarrow$ Higher interest rates

3. Can you account for dealers subventing loans?

- Car dealers may subvent loans on certain models to push these

2025 MAZDA CX-90 | Inline 6 Turbo

▼

SHOP

▼

UTILITY

DESIGN

SAFETY

PERFORMANCE

TECHNOLOGY

TRIM SELECTOR

FAQS

Starting At ¹

\$37,845

As shown

\$57,045

EPA-Estimated ²

25 MPG

Combined

city/hwy

Available

Nappa

Leather

SPECIAL OFFER ³

4.9% APR

60 months

2025 MAZDA CX-90 | Plug-In Hybrid

▼

SHOP

▼

UTILITY

DESIGN

SAFETY

PERFORMANCE

TECHNOLOGY

TRIM SELECTOR

FAQS

Starting at ¹

\$49,945

As shown

\$58,545

Electric Only

Range

26 Miles ²

EPA-Estimated

Total Range

490

Miles ³

EPA-Estimated

2024 CX-90

PHEV ⁴

1.9% APR

For 72 months

3. Can you account for dealers subventing loans?

- ▶ Car dealers may subvent loans on certain models to push these
- ▶ Dealer financing mixes pure cost of loan & product discounts to create demand
- ▶ Banks should only be concerned about the loan and loanee terms
- ▶ Can you differentiate between dealer-arranged financing and bank- (self-) arranged financing?
- ▶ Can you "control for" interest rate discounts from dealers to create demand?
- ▶ See also Klee, Morse, Shin (2024) on this practice

Good luck with the paper

- ▶ Rich paper with fantastic data background work that points out financial implications of the "technological risk" of EVs
- ▶ Can you speak more to the broader question of "is financing hindering or facilitating the shift to EVs"?
- ▶ Can you filter out the technological risk dimension even more by accounting for insurance costs and dealer subvented loans?