



# Shrinking Shelf: The Effects of Digital Regulation on Amazon

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# Research question

- We study how product offerings on Amazon have changed with DMA & DSA
  - DMA limits self-preferencing and requires data sharing
  - DSA imposes liability, traceability, and product safety obligations
- Broader focus than competition policy
  - Interaction between competition policy, IP and concerns about product safety
- Large-scale scrape of Amazon stores inside and outside of EU, Diff-in-Diff leveraging implementation timing of DMA and DSA

Understanding the setup

# Amazon and Digital Market Regulation

## DMA (competition focus)

- bans self-preferencing, restricts data use, and forces fair access to ad and business-user data

## DSA (safety & liability focus)

- seller traceability (KYBC), product safety checks, stronger IP enforcement, and systemic risk duties.

## Implication for Amazon

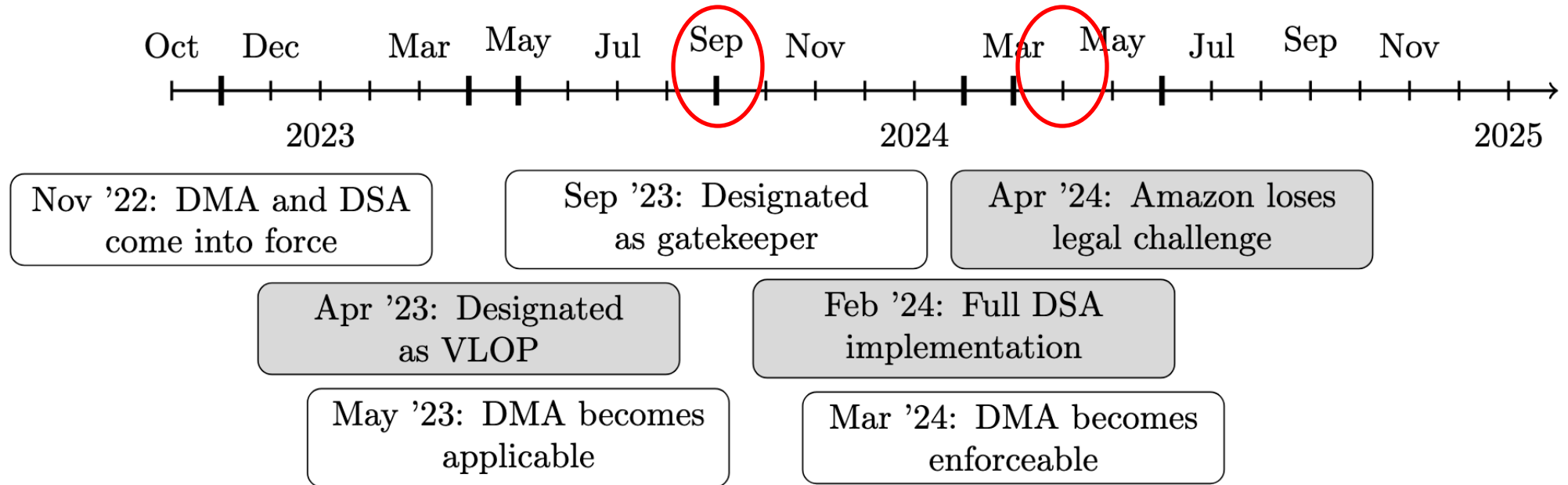
- regulations target both how Amazon ranks its own offers and which products/sellers can appear at all.

# Literature review

- A lot of empirical research (14 papers and counting) on impact of the DMA  
Chen & Tsai (2023); Crawford et al. (2022); Farronato et al. (2023); Gutierrez (2023); Hunold et al. (2023); Jürgensmeier & Skiera (2023); Lee & Musolff (2023); Raval (2023); Waldfogel & Reimers (2023); Dash et al. (2024), Waldfogel (2024), Farronato et al. (2025); Püplichhuisen and Sirries (2025), Pape and Rossi (2025)
- Kaushal et al. (2024) study the DSA transparency database and document many actions taken by VLOPs, but, so far, no DSA impact assessments (that we know of)

EU Store  
Transparency Report

# Timeline of events impacting Amazon



Fines in 2019 & 2022 over abusive clauses with 3<sup>rd</sup> party-sellers



No PPCs in 2013; commitments in 2019; paramount significance since Jul 2022\*, lost legal challenge in Apr 2024




Investigation by CMA in July 2022, commitments by Nov 2023 on buy box, marketplace data and delivery rates



FTC (& 17 state AGs) sued Amazon in Sep 2023 (Amazon announced in Aug 2023 to reduce private labels)

Data

# Data

- Scrapes: bi-weekly from April 2023 to the present day
  - Amazon Germany, France, UK and US
- 1,643 queries, in 38 distinct categories (avg. 59 queries per category)
  - search term (e.g., Gucci in Luxury Handbag)
- 2.4m distinct products 
- Because of variation in the search results, we also study a “balanced panel” of the same products across all countries over time





# Empirical strategy

Difference-in-difference (DID): Compare queries (or products) in EU with non-EU around the DSA/DMA policy change

$$Y_{i,c,t} = \beta_0 + \beta_1 EU_{i,c} \times Post_{i,c,t} + X_{i,c,t} + \mu_{cat} + \mu_t + \varepsilon_{i,c,t}$$

Y = # products or # sellers, EU = EU Dummy, Post = Post-Period Dummy, X = control variables, mu\_cat = category FE, mu\_t = month FE, i = query, c = country, t = time

# Product categories with special DSA relevance



Child Car Seats

UNECE Reg. 129 (“i-Size”),  
UNECE Reg. 44.04

Defines crash test, size/weight classes, and installation standards. Mandatory use of approved child seats across EU.

Life Jackets

Reg. (EU) 2016/425 (PPE),  
EN ISO 12402 series

Defines buoyancy categories (100 N/150 N/275 N) and test methods for leisure and professional use.

Luxury Watches

Trademark

Rolex v. eBay – Rolex successfully pushed for stricter anti-counterfeit measures.

Toys (Brick Toys)

Trademark / Design

Lego v. OHIM – ECJ refused trademark for functional brick shape, but minifigure protected.



# Preliminary results

>>> Search results

1-48 of over 10,000 results for "mens perfume"

Sort by: Featured

Eligible for free delivery

- Free Delivery by Amazon
- Free Shipping by Amazon to eligible destinations

Price

€0 - €760+



- Up to €10
- €10 to €15
- €15 to €25
- €25 to €35
- €35 & above

Deals & Savings

- All Savings
- Today's Deals

Brands

- Versace
- Azzaro
- HUGO BOSS
- Diesel
- JEAN PAUL GAULTIER
- DAVIDOFF
- paco rabanne
- See more

Customer Review

★★★★☆ & Up

Volume

- 120 to 199 ml
- 200 ml & above
- 30 to 59 ml
- 60 to 89 ml
- 90 to 119 ml
- Up to 29 ml

Scent

- Fresh
- Wood
- Fruity
- Aloe Vera
- Amber

Results

Learn about these results. Check each product page for other buying options. Price and other details may vary based on product size and colour.



Sponsored

**Diesel Only the Brave Herren Parfum | Eau de Toilette Spray | Langanhaltend | Sportlich-markant...**

Oriental

Options: 7 sizes

★★★★☆ 1,461

500+ bought in past month

€29<sup>93</sup> (€855.14/l) RRP: €45.42  
 €28.43 with Subscribe & Save discount

FREE delivery to Switzerland if you spend €49 on eligible items

Add to basket



Sponsored

**Azzaro The Most Wanted Intense Men's Perfume, Eau de Parfum for Men, Vaporiser/Spray, Long-Lastin...**

cardamom, caramel, amber

Options: 6 sizes

★★★★☆ 10,362

500+ bought in past month

€44<sup>10</sup> (€882.00/l) RRP: €73.58  
 €41.89 with Subscribe & Save discount

FREE delivery to Switzerland if you spend €49 on eligible items

Add to basket



Sponsored

**Azzaro The Most Wanted Men's Perfume, Eau de Parfum for Men, Long-Lasting, Fresh, Spicy Fragranc...**

red ginger

Options: 4 sizes

★★★★☆ 7,414

1K+ bought in past month

€44<sup>61</sup> (€892.20/l) RRP: €73.58  
 €42.38 with Subscribe & Save discount

FREE delivery to Switzerland if you spend €49 on eligible items

Add to basket



Sponsored

**MEXX Black Man Eau de Parfum Seductive Intense Fragrance with Aquatic Woody Notes for Sensual...**

Sandalwood

Options: 3 sizes

★★★★☆ 377

700+ bought in past month

€12<sup>67</sup> (€253.40/l)  
 €12.04 with Subscribe & Save discount

FREE delivery to Switzerland if you spend €49 on eligible items

Add to basket



**Azzaro The Most Wanted Men's Perfume, Eau de Parfum for Men, Long-Lasting, Fresh, Spicy Fragranc...**

red ginger

Options: 4 sizes

★★★★☆ 7,414

1K+ bought in past month

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# Number of products decreases

	Pages	Products	Products/Page
	(1)	(2)	(3)
EU × Post DMA	-0.1422*** (0.01500)	-0.1990*** (0.01593)	-1.9992*** (0.19920)
EU × Post DSA	0.0022 (0.01337)	-0.1059*** (0.01404)	-4.2758*** (0.17930)
Query FE	Yes	Yes	Yes
Category FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Observations	31,953	31,953	31,953

Products:

About 18% decrease after DMA:  
from 6.4 to 5.2 pages

Another 10% decrease after DSA

Products per page:

From 40.4 to 36.1 after DSA

**Note:** The dependent variable in column (1) is the log number of pages per search query, in column (2) it is the log number of products (unique ASIN) per search query, and in column (3) it is the number of products per result page per query. *EU* indicates whether the search was carried out on `amazon.de` or `amazon.fr`, compared to `amazon.co.uk` and `amazon.com`. *Post DMA* indicates months after September 2023, *Post DSA* indicates months after February 2024. All specifications include fixed effects for the search query, product category and country. We report robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$  \*\*\*  $p < 0.01$

# Number of products decreases

	Products	
	(1)	(2)
EU × Post DMA	-0.2542*** (0.04598)	-0.2571*** (0.05243)
EU × Post DMA × Safety	0.1051 (0.08488)	
EU × Post DSA	-0.0703 (0.05226)	-0.0699 (0.05832)
EU × Post DSA × Safety	-0.1500** (0.07530)	
EU × Post DMA × High IP		-0.0030 (0.06633)
EU × Post DSA × High IP		-0.0232 (0.05577)
Query FE	Yes	Yes
Category FE	Yes	Yes
Country FE	Yes	Yes
Observations	18,660	16,344

The DMA decrease is not concentrated in IP and safety related products.

The DSA decrease is driven by safety related products.

>>> Product level





# DOLCE & GABBANA, The One For Men Eau De Toilette 100ml

Brand: [Dolce & Gabbana](#)

4.6 471 ratings

100+ bought in past month

€58<sup>09</sup> (€580.90 / l)

Prices for items sold by Amazon include VAT. Depending on your delivery address, VAT may vary at Checkout. For other items, please see [details](#).

Brand	Dolce & Gabbana
Item form	Liquid
Item volume	3.3 Fluid Ounces
Scent	Wood
Special feature	Travel Size

## About this item

- Intense men's fragrance
- Keeps you cool and comfortable
- Brings you an extra comfort
- Durable
- Flexible design

Top Brand **Dolce & Gabbana**

94% positive ratings from 1K+ customers

10K+ recent orders from this brand

[Report an issue with this product](#)



Sponsored

Nautica Voyage Eau de Toilette 100ml - Apple, Cedar ...

125,683

Save 47% with **Subscribe & Save**

€13<sup>19</sup> ~~€13.88~~

[Shop now](#)

One-time purchase

€58<sup>09</sup> (€580.90 / l)

FREE delivery to Switzerland

[Deliver to Switzerland](#)

Only 18 left in stock.

Quantity: 1

[Add to Basket](#)

[Buy Now](#)

Dispatches from [Amazon](#)

Sold by [OnlineHandel24](#)

Returns [Returnable within 30 days of receipt](#)

Payment [Secure transaction](#)

For further information, company details, terms and conditions, and cancellation rights, please click on the seller's name.

Add gift options

Subscribe & Save:

€58<sup>09</sup> (€580.90 / l)

FREE delivery to Switzerland

Dispatches from [Amazon](#)

Sold by [OnlineHandel24](#)

## Other sellers on Amazon

New (5) from €63<sup>95</sup>



DOLCE & GABBANA, The One For Men Eau De Toilette 100...

471 ratings

New

€58<sup>09</sup>

(€580.90 / l)

[Add to Basket](#)

[See more](#)

4 other options

sorted by price + delivery: low to high [Filter](#)

New

€69<sup>32</sup>

(€693.20 / l)

Dispatches from

Sold by

[Amazon](#)

[Amazon](#)

[Return policy](#)

[Add to Basket](#)

New

€66<sup>89</sup>

€12.99 delivery 4 - 21 October.

[Details](#)

Dispatches from

Sold by

[Glamstore DE](#)

Dispatches from United Kingdom.

[Glamstore DE](#)

(754 ratings)

66% positive over last 12 months

[Return policy](#)

[Add to Basket](#)

New

€64<sup>99</sup>

(€649.90 / l)

Dispatches from

Sold by

€32.63 delivery 29 September - 2 October. [Details](#)

[BF Beauty Farm e.K](#)

Dispatches from Germany.

[BF Beauty Farm e.K](#)

(7092 ratings)

96% positive over last 12 months

[Return policy](#)

[Add to Basket](#)

New

€79<sup>99</sup>

(€799.90 / l)

Dispatches from

Sold by

€32.63 delivery 29 September - 2 October. [Details](#)

[BF Beauty Farm e.K](#)

Dispatches from Germany.

[BF Beauty Farm e.K](#)

(7092 ratings)

96% positive over last 12 months

[Return policy](#)

[Add to Basket](#)

# Number of sellers per product decreases

	Sellers		
	(1)	(2)	(3)
EU × Post DMA	-0.0726*** (0.00517)	-0.0970*** (0.01194)	-0.0842*** (0.01536)
EU × Post DSA	0.0044 (0.00750)	0.0087 (0.01589)	0.0279 (0.02123)
EU × Post DMA × Safety		0.1223*** (0.02855)	
EU × Post DSA × Safety		-0.0230 (0.04228)	
EU × Post DMA × High IP			0.0154 (0.02046)
EU × Post DSA × High IP			-0.0395 (0.03137)
Query FE	Yes	Yes	Yes
Category FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Observations	86,332	68,948	60,044

About 7% decrease after DMA:  
from 5.2 to 4.6 sellers

>>> Buy box



# DOLCE & GABBANA, The One For Men Eau De Toilette 100ml

Brand: [Dolce & Gabbana](#)

4.6 471 ratings

100+ bought in past month

€58<sup>09</sup> (€580.90 / l)

Prices for items sold by Amazon include VAT. Depending on your delivery address, VAT may vary at Checkout. For other items, please see [details](#).

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€58<sup>09</sup> (€580.90 / l)

FREE delivery to Switzerland

[Deliver to Switzerland](#)

**Only 18 left in stock.**

Quantity: 1

Add to Basket

Buy Now

Dispatches from Amazon

Sold by [OnlineHandel24](#)

Returns [Returnable within 30 days of receipt](#)

Payment [Secure transaction](#)

For further information, company details, terms and conditions, and cancellation rights, please click on the seller's name.

Add gift options

# Amazon's presence in the buy box changes

	Amazon in Buybox?	
	(1)	(2)
EU × Post DMA	0.0082*** (0.00064)	0.0261*** (0.00045)
EU × Post DSA	-0.0179*** (0.00093)	-0.0111*** (0.00072)
EU × Post DMA × AMAZON present before		-0.0216*** (0.00087)
EU × Post DSA × AMAZON present before		-0.0001 (0.00133)
Product FE		Yes
Country FE		Yes
Observations	27,331,278	27,321,388

After DMA:

- Likelihood that Amazon appears in the buybox is 4.8% higher (base: 0.182)
- Amazon is in the buybox of 2.5% of products where they previously had never been.

After DSA:

- Likelihood that Amazon appears in the buybox is 9.8% lower (base: 0.182)

Possible interpretation of opposite Buy Box effects:

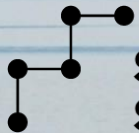
- DMA: Thinner but higher-quality pool + objective criteria where 1P/FBA excels ⇒ Amazon wins Buy Box more often without explicit self-preferencing.
- DSA: Higher exposure when Amazon is seller-of-record in safety categories ⇒ Amazon cedes Buy Box to vetted 3P offers.

# Preliminary conclusions

- Digital regulation seems to affect Amazon
  - Fewer products per search
  - Fewer sellers per product
  - Buy Box: Amazon ↑ after DMA, ↓ after DSA
- Classic “raising rivals’ costs” via compliance frictions (DSA), combined with a shift from search-level advantage (curtailed by DMA) to product-level advantage (Buy Box on objective criteria)
- Next steps: understand mechanisms & heterogeneity, welfare implications

# Thank you!

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[www.digital-markets.eu](http://www.digital-markets.eu)



**Swiss National  
Science Foundation**

**Unil.**

**ETH** zürich

# The data challenges of studying Amazon

## **Amazon is truly gigantic**

- Pre-select samples (product categories and search terms) for which we have clear priors
- 38 categories across all four countries

## **Amazon changes a lot**

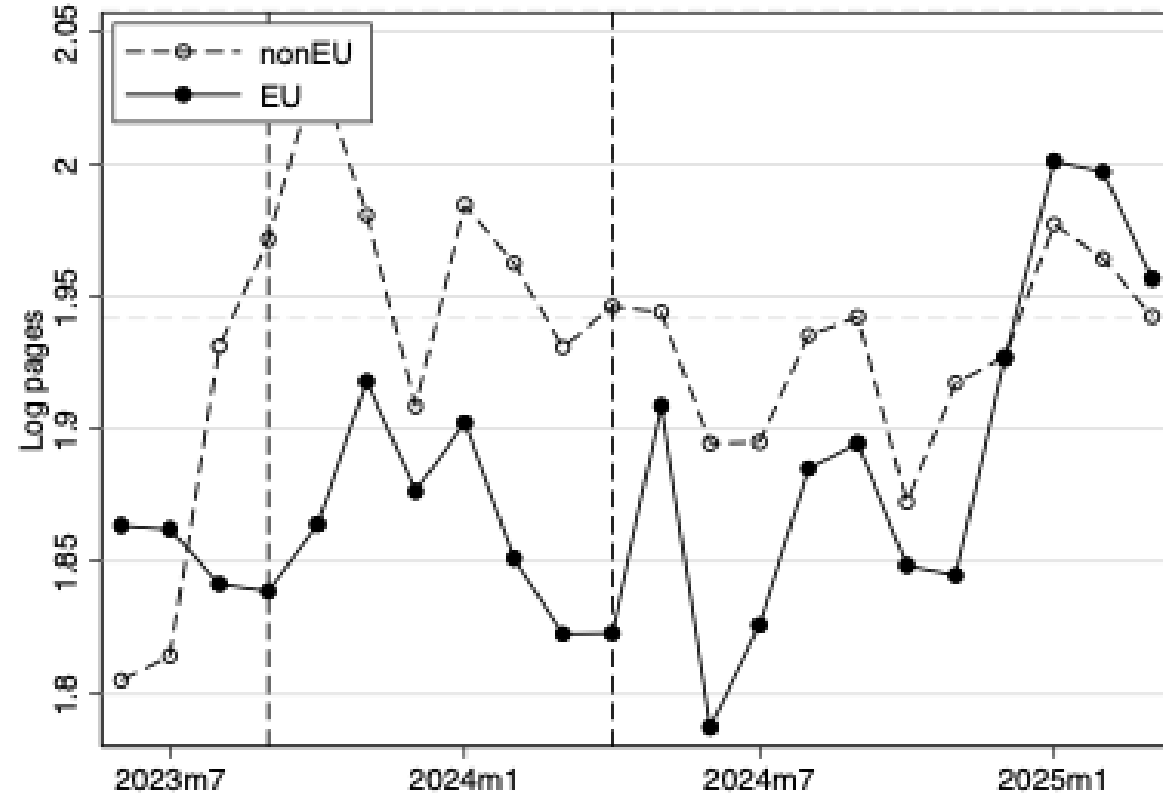
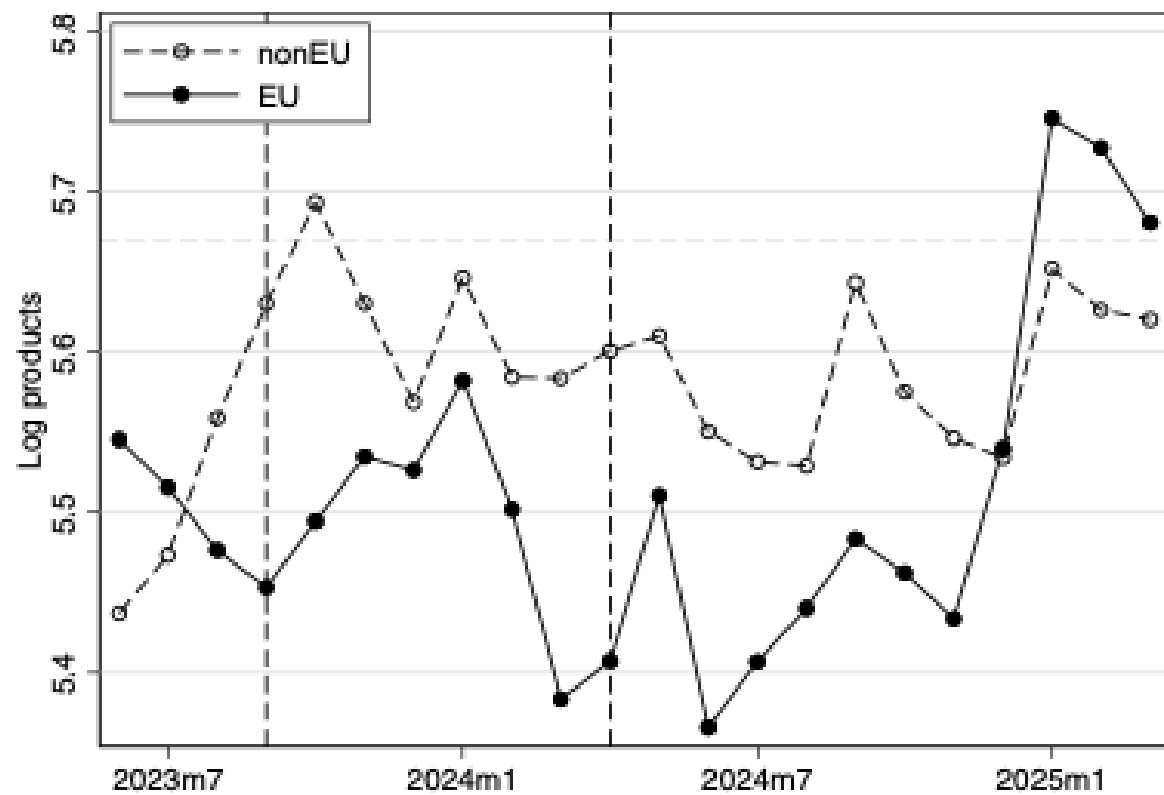
- Put a limit on the number of pages scraped per search to have comparable samples
- Mobile vs. Desktop queries problem -> fixed panel of desktop queries over time

## **Amazon differs across countries**

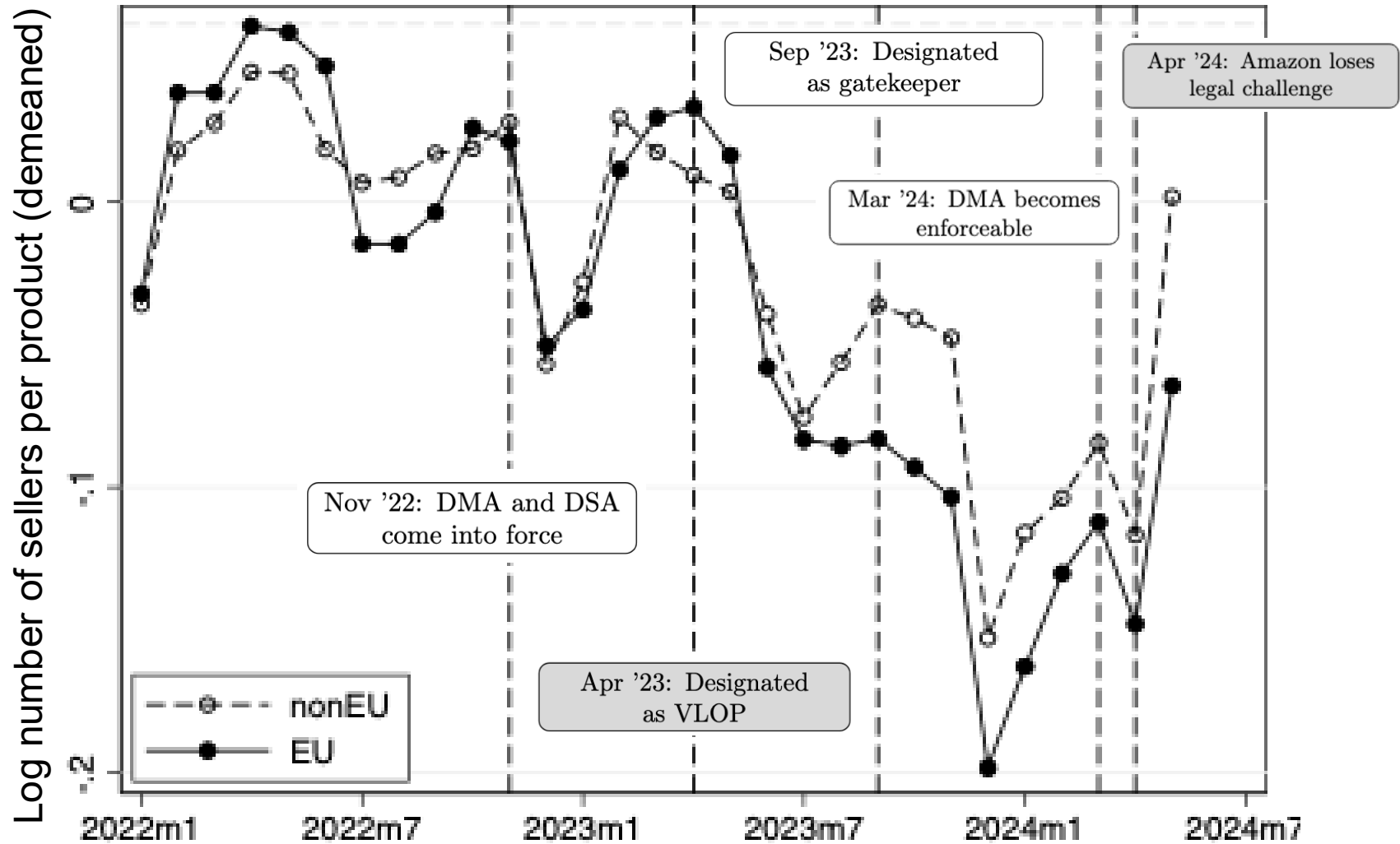
- Select categories and products for which they are comparable
- General robustness: Aggregate Keepa information to identify large trends



# Event plots



# Event plot



# Product categories with safety regulation



## Child Car Seats

UNECE Reg. 129 (“i-Size”),  
UNECE Reg. 44.04

Defines crash test, size/weight classes, and installation standards. Mandatory use of approved child seats across EU.

## Car Tires

Reg. (EU) 2019/2144, 2020/740,  
UNECE Reg. 117

Sets performance & safety requirements (wet grip, noise, rolling resistance) and consumer labelling obligations.

## KN95 / FFP2 Masks

Reg. (EU) 2016/425 (PPE),  
EN 149:2001+A1:2009

Covers respiratory PPE; defines filtration classes (FFP2 ≈ KN95). CE-marking required for EU market.

## High-Visibility Jackets

Reg. (EU) 2016/425 (PPE),  
EN ISO 20471

Specifies minimum reflective area & visibility classes for workwear and road use.

## Life Jackets

Reg. (EU) 2016/425 (PPE),  
EN ISO 12402 series

Defines buoyancy categories (100 N/150 N/275 N) and test methods for leisure and professional use.

# Product categories with strong IP



Category	IP Type	Famous Cases / Examples
Luxury Handbags	Trademark	<b>LVMH v. eBay</b> – counterfeit Louis Vuitton bags online; EU courts confirmed marketplaces can be liable.
Luxury Watches	Trademark	<b>Rolex v. eBay</b> – Rolex successfully pushed for stricter anti-counterfeit measures.
Sports Shoes	Trademark	<b>Adidas v. Fitnessworld</b> – ECJ upheld Adidas’ three-stripes against imitation.
Perfume	Trademark	<b>Davidoff v. Gofkid</b> – ECJ ruled against unauthorized repackaging of perfume.
Toys (Brick Toys)	Trademark / Design	<b>Lego v. OHIM</b> – ECJ refused trademark for functional brick shape, but minifigure protected.
Furniture / Fashion	Copyright	<b>Cofemel v. G-Star</b> – ECJ confirmed that original fashion/furniture designs qualify for copyright.
Ink Cartridges	Patent	<b>HP / Epson cartridge cases</b> – tech firms litigated over refill/reuse of printer cartridges.