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Collusion and technological innovation – the case of algorithms

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Developing an analytical framework for the digital economy

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- AdC Issues Paper on Digital Ecosystems, Big Data and Algorithms published in July 2019 (in PT and EN).
- Addresses key issues in digital markets that may impact competition:
  - Network effects and multi-sided markets;
  - Digital ecosystems;
  - Data access and data portability
  - Implications for merger evaluation
  - Monitoring and pricing algorithms, and their possible role as facilitators of collusion
- Builds on **recent reports in digital markets**, e.g., Crémer et al. (2019), the Furman Report (2019), Stigler Center (2019).

<u>Aims</u>

- **Added focus on Algorithms and implications for undertakings**
- **Advocacy for the PT competition community** as to how AdC views challenges regarding the digital developments for competition policy and enforcement

Algorithms and collusion

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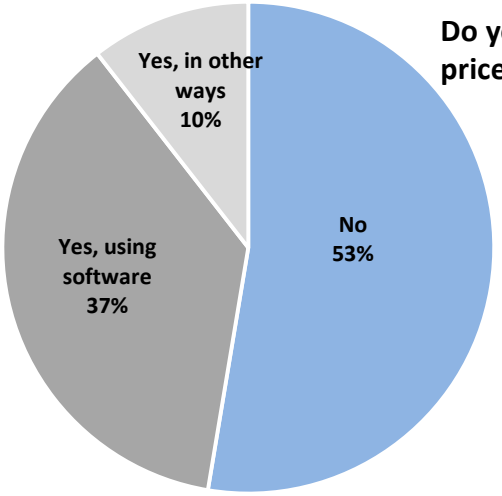
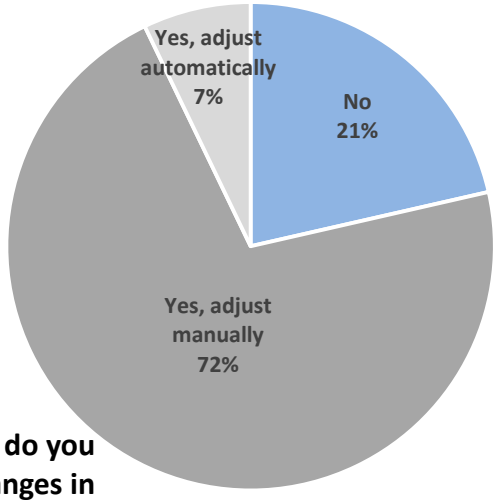
- Algorithms may change the way competition takes place in the market:
  - Firms may adopt new strategies (e.g., personalised pricing)
  - Firms can do what they already did faster and/or with more information (e.g., monitoring prices)
  - The way firms interact may change (e.g., easier to detect deviations from collusive equilibria)
- The risks introduced by algorithms are especially relevant in markets that are already concentrated.
- The AdC assessed how widespread are monitoring and pricing algorithms among firms operating in Portugal and how they are used through an RFI that allowed collecting info on about 40 firms.

Do you systematically track the online prices of your competitors?



If you use software to track online prices, do you adjust your own prices in response to changes in the online prices of your competitors?



Algorithms as facilitators of collusion

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Four ways algorithms may promote collusion:

- Making explicit collusion easier to enforce (e.g. Trod and Topkins)
- Introducing predictability and market transparency (tacit collusion)
- Creating “hub-and-spoke”-like scenarios
- Reaching collusive equilibria on their own

Pricing algorithms in practice

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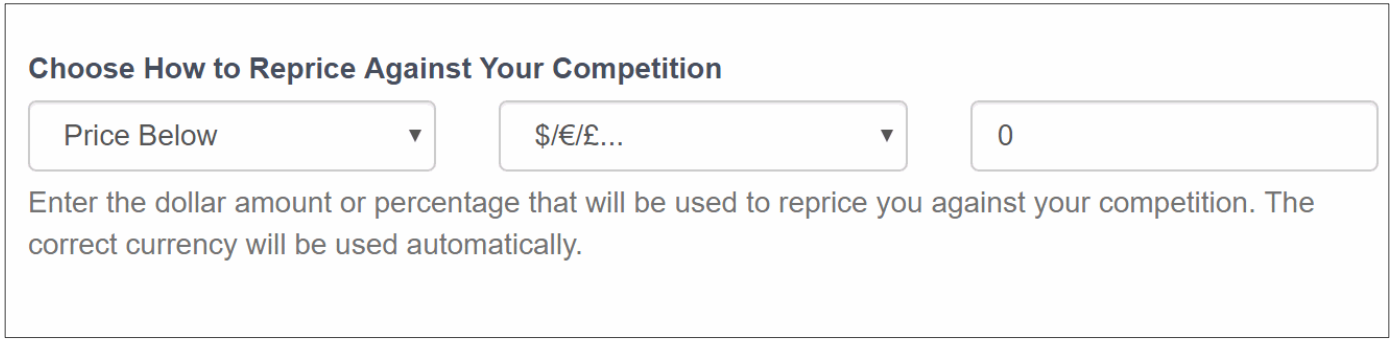
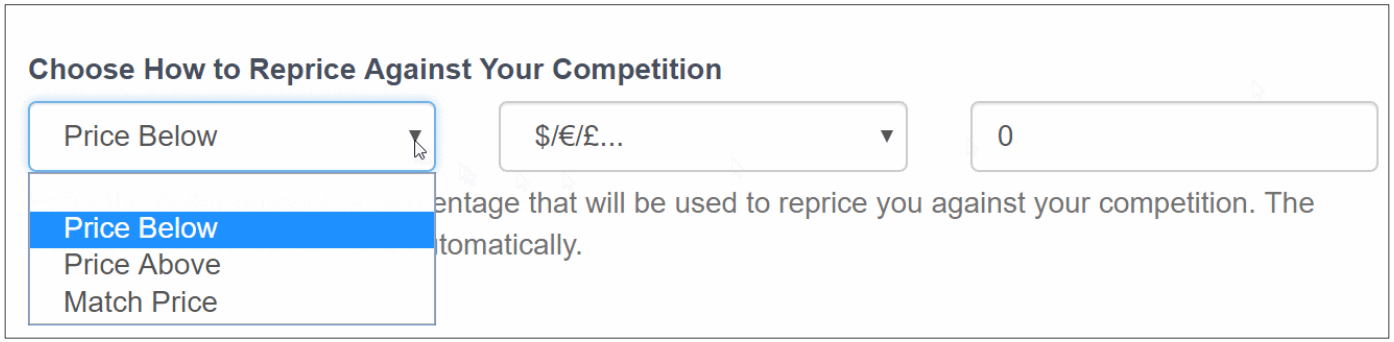
- Examples of what **simple-rule pricing algorithms may provide to vendors in marketplaces**;
- Third-party vendors can set pricing rules *vis-à-vis* other vendors' prices (e.g., undercut; match);
- The algorithm will **monitor other prices and adjust its own prices accordingly**.





Source: https://help.informed.co/strategies/strategy-types/compete-with-lowest-price

Pricing algorithms in practice

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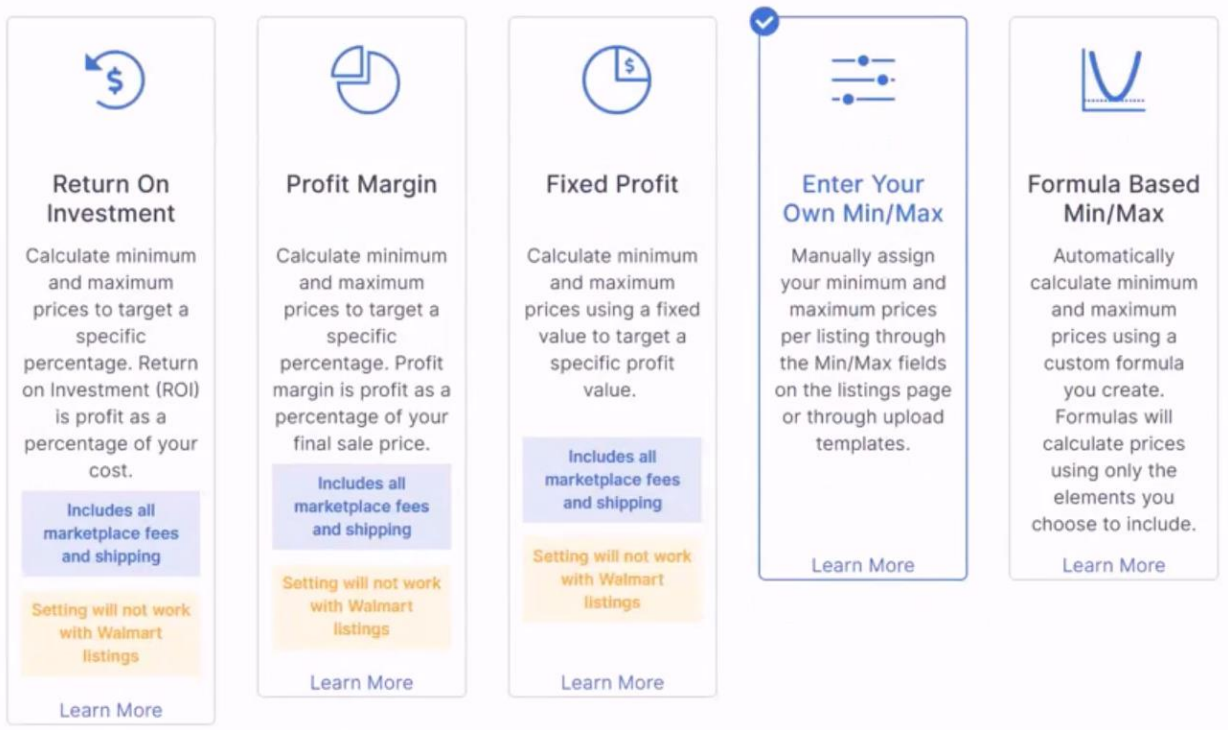
- Third-party vendors can set **minimum prices** and **maximum prices** automatically or manually.



Source: https://help.informed.co/strategies/strategy-types/build-your-own

Pricing algorithms in practice

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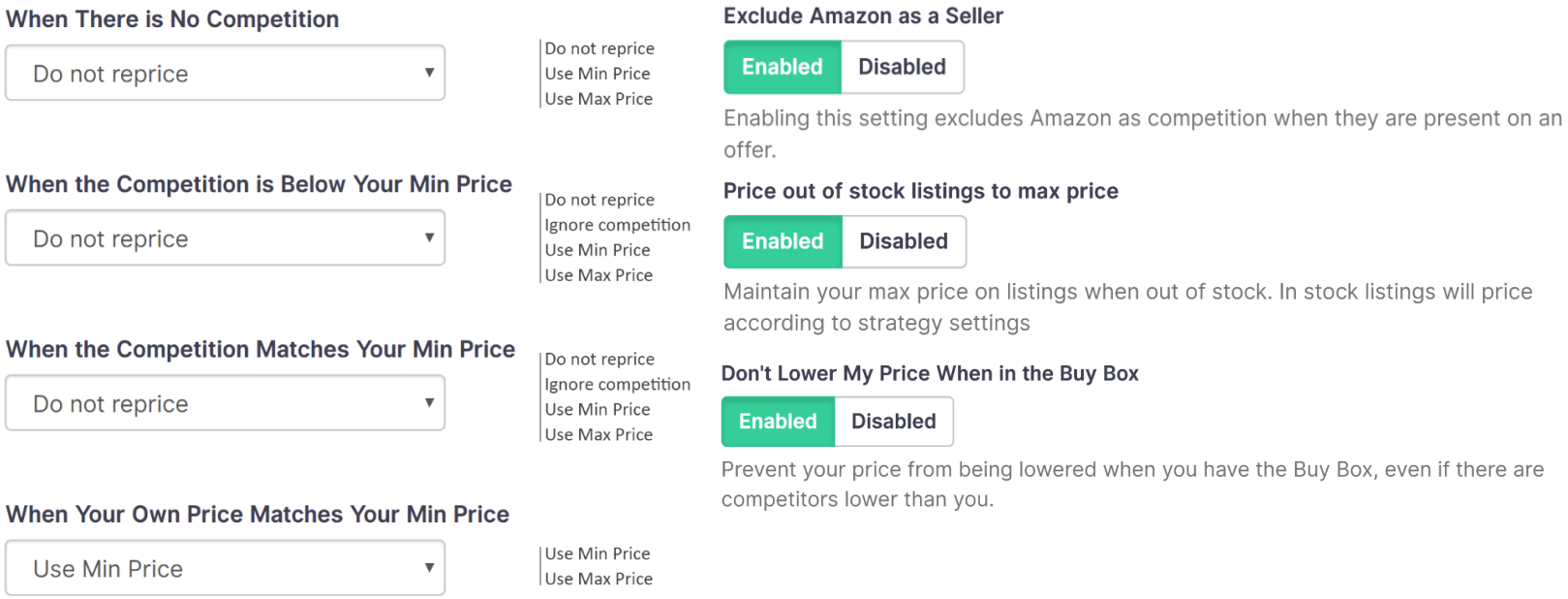
- Additional options available in this pricing algorithm.

  E.g., **incorporating the degree of competition** and **your rivals' strategies** in your choice of price, **targeting the price of your closest competitor**, or considering the **type of competitor.**



Source: https://help.informed.co/strategies/strategy-types/build-your-own

Detecting and avoiding price wars

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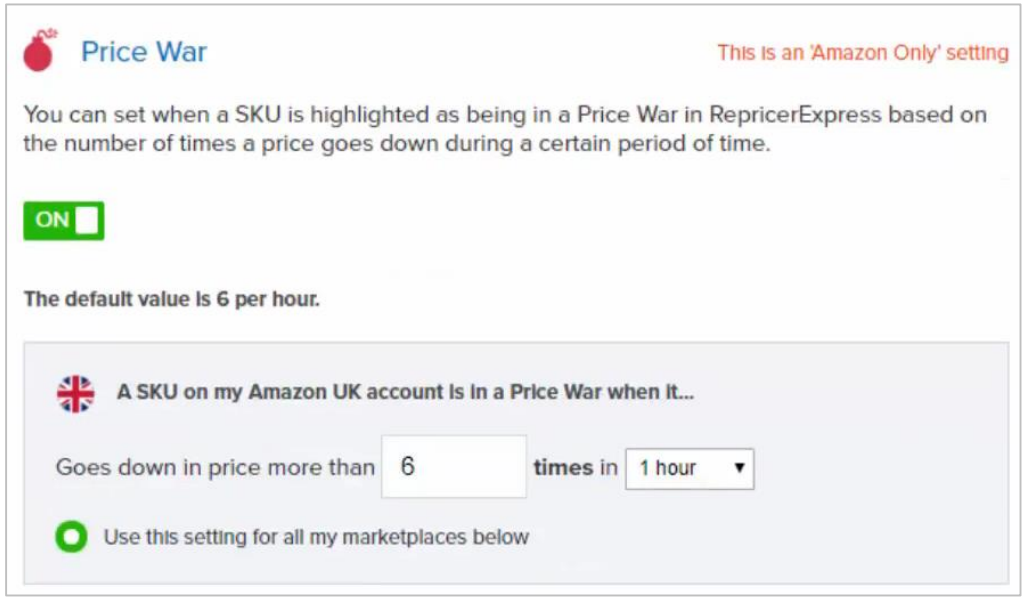
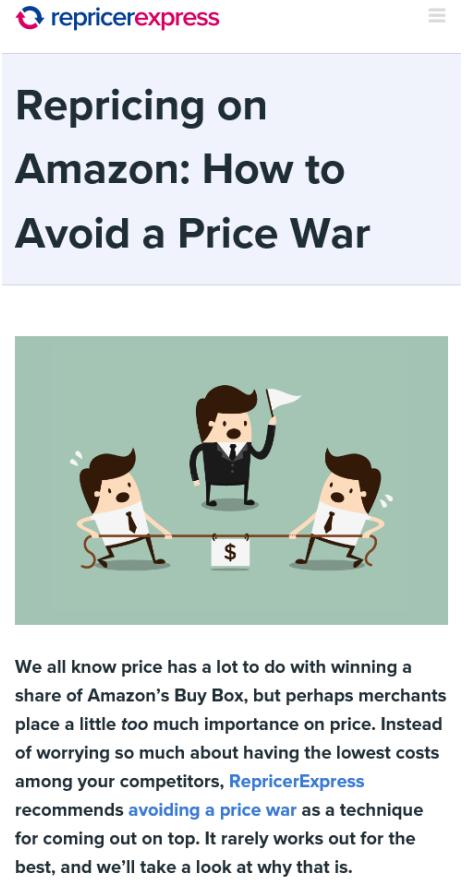
- Vendors can set their definition of price war, which will be monitored by the pricing algorithm:



Source: https://www.youtube.com/watch?v=DkmuUZ2Lvds



Source: https://www.repricerexpress.com/avoiding-price-war-on-amazon/

Detecting and avoiding price wars

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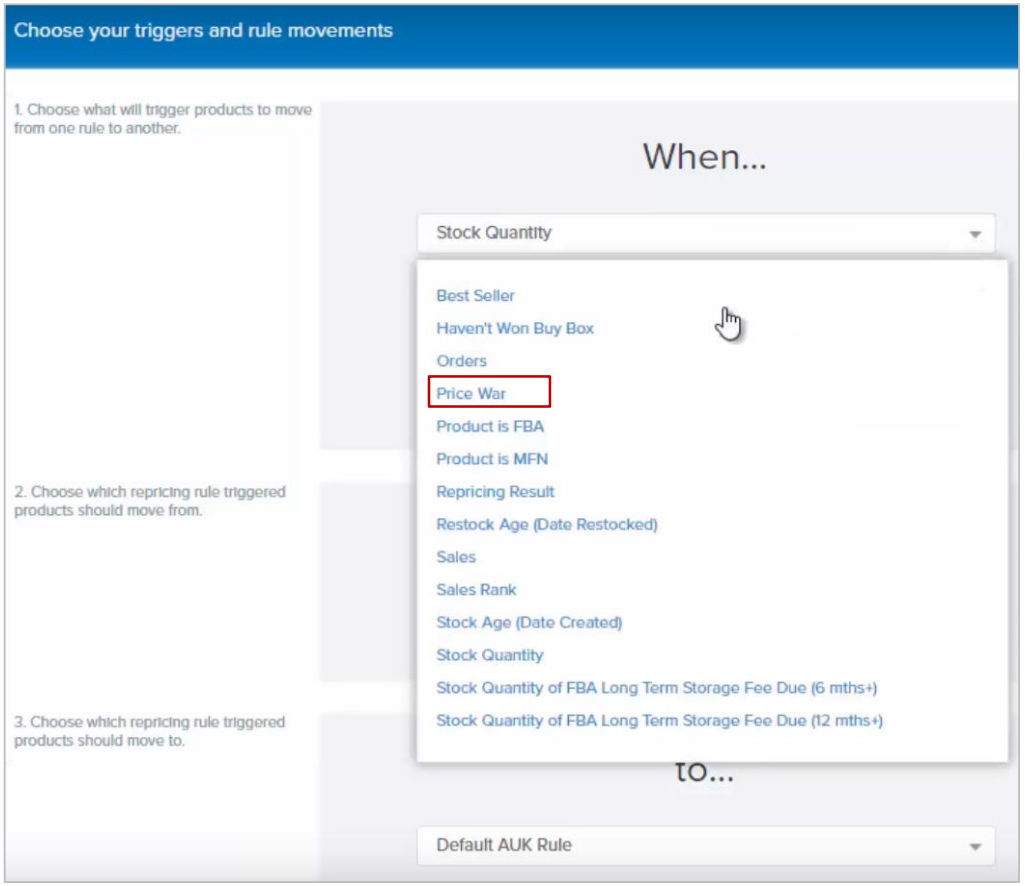
- If the algorithm detects a price war, several strategies and rules may be triggered (pricing regimes), namely less aggressive ones:



Source: https://www.youtube.com/watch?v=DkmuUZ2Lvds

“Putting the algorithm to sleep”

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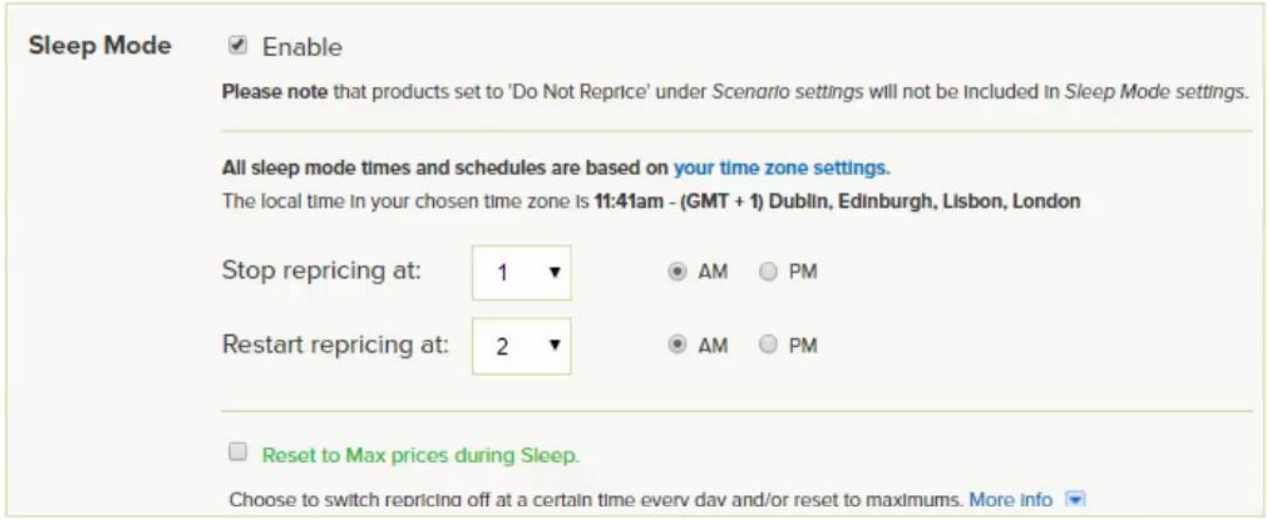
- Pricing algorithms can be **put in sleep mode** during certain periods, and even be reset to max price, to **prevent unexpected price fluctuations (e.g., price wars):**



Source: https://www.youtube.com/watch?v=DkmuUZ2Lvds

- The developers claim this feature may be used “***if you want to force your competitors’ prices to increase by increasing your own price overnight***”.

Pricing algorithms and communication in public fora

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"***The race to the bottom - EVERYONE LOSES. Please read***

I am here to teach you all some things. (…)

The race to the bottom is a race that EVERYONE loses. ***STOP REPRICING YOUR STUFF INTO OBLIVION****.*
What do I mean? I mean when you reprice your product to a penny below the next person. Then that person reprices his price to a penny below you. Then the next 5 guys all do the same thing, then you log in one day and see that you're 10 cents above everyone else, so you drop your price 11 cents and the cycle begins all over again…

This happens until SOMEONE realizes they're pointlessly losing $1 per unit and stops, then the next guy realizes he's losing $1.01. Then the next guy realizes he's losing $1.10… But guess what. NONE of you will reprice UPWARDS to recover that lost dollar because you worry the next guy won't do the same - which he probably won't because he's fearing the same thing as you.

So ***why the repricing? It's because these novice sellers*** *(…) think that by repricing a penny below the lowest person will magically make your sales sky rocket. I have news for you. It WON'T. (…)*

So please people, remember these two points when you do competitive repricing. Consider these following alternatives to ***penny wars****:*

MATCH the lowest person's price rather than attempting to undercut them. Undercutting is a win for no one other than the buyer*, who will save a few pennies on your price, but you'll lose hundreds because you have 800 of them in stock*". (emphasis added).

Source: noober0x, March 2015; https://sellercentral.amazon.com/forums/t/the-race-to-the-bottom-everyone-loses-please-read/32676, accessed on 3 June 2019.

"**Repricers and their perils**

This is just a rant.

So there is a new seller on some of my best selling listings and he is FBA and has the repricer set to undercut. Other's have set to match. So this guys undercuts and others match. Result: ***very fast march to bottom!*** *I know very well their price points and* ***am shocked to see sellers being so irresponsible****. This seller is new, I get it but the other more experienced sellers also seem to have no bottom price. On listings where there are good number of FBA sellers, now it is going to take months for it all to clear out. I can set 10% lower and they will come down fast, but I do not want to keep doing it as I do not want to risk any policy violation! I have heard of how repricers are dangerous and can set ur price to a penny, but I feel the most dangerous aspect of repricers is their use by people who do not know their margins!*

I know that talking pricing is illegal and will not do so. But can I contact this crazy seller and just tell him this*:*

«Hello,
I see u have a repricer on that undercuts the lowest FBA offer. ***When u undercut, the others match, and then u again undercut and so on. The result is loss of profitability for everyone. Now your price is your choice and this message is in no way an attempt to fix pricing****. You set your price to whatever you like but* ***I just wanted to send you a message on what I observed on the listings you are on and share my thoughts with you.****»*

Please advise me if it will be OK to send such a message or is it considered an attempt at price fixing. (…)". (emphasis added).

Source: sellsome, March 2016;
https://sellercentral.amazon.com/forums/t/repricers-and-their-perils/158542, accessed on 3 June 2019.

Who is responsible?

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The AdC has **warned that firms are responsible for the algorithms they use** and that using them to coordinate strategies in the market is **not compatible** with Portuguese competition law.

PSD2 – Data access and data portability

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- AdC Issues Paper develops on the **pioneering example of data portability: PSD2** (Second Payment Services Directive)
- **PSD2 requires that banks grant access to client data to Third Party Providers (e.g., FinTech start-ups)**, upon client consent, according to Regulatory Technical Standards approved by the EC.
- Setting up regulation and standards for data portability encompasses challenges
- The AdC has published in 2018 a **FinTech Issues Paper**, identifying a risk of foreclosure of access to data to FinTech newcomers, by incumbent banks.
- E.g., **incumbents could exploit consumer inertia** by creating unnecessary hurdles in the customer journey for giving consent; curtailing coverage of data provided; among others
- AdC recommended that secondary regulation (to follow PSD2) should account for these aspects, as these strategies may hamper competition by newcomers
- E.g., Guiabolso investigation in Brazil (https://bit.ly/2mDm4Gc)

Behavioural considerations

- The AdC emphasises the role of behavioural considerations
- **Consumer behavioural biases** may play in curtailing competition in digital markets.
- It is often said that "**competition is a click away**" (e.g., Eric Schmidt from Google).
- But it may rather be that "**exclusion is a click away**":
  - Adding extra steps to access a product
  - Deranking results in search results pages
  - Default options

Heatmap of where people look in search results pages "F pattern"

Source: https://www.nngroup.com/articles/f-shaped-pattern-reading-web-content/

FAIR PLAY.

With competition,
everybody wins.

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