We stand for **competition** and **media diversity**.

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Ex-post analysis of two mobile operator mergers in Austria

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The views are those of the author and do not necessarily represent those of RTR or TKK.

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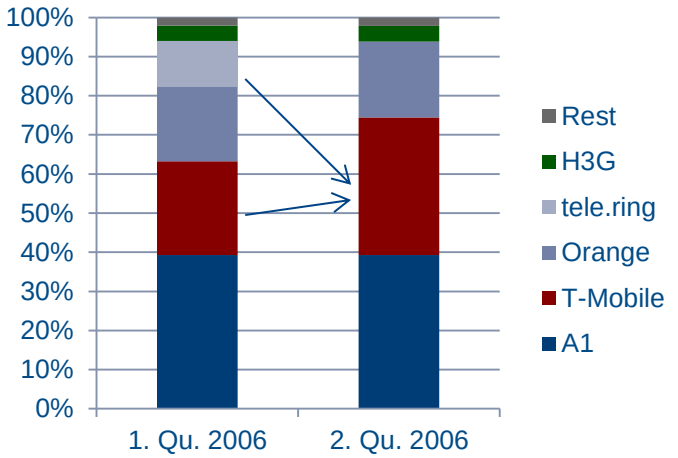
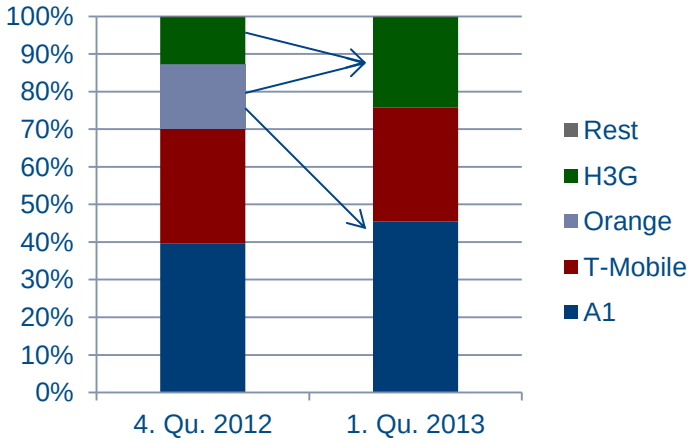
The two mergers

The two mobile operator mergers analysed

- T-Mobile/tele.ring (April 2006)
  - 5 to 4 merger, no. 2 taking over no.4
  - Merger cleared with remedies
    - Transfer of sites and spectrum to smaller competitors (H3G and Orange)



- H3G/Orange (January 2013)
  - 4 to 3 merger, no. 4 taking over no.3
  - Orange owned company Yesss! sold to A1
  - Merger cleared with remedies
    - Facilitate MNO entry (did not occur)
    - Offer MVNO wholesale access: First MVNO entry in late 2014, several followed in 2015/16



Methodology and data

Price data

- We estimate the effects of the (remedied) merger on retail prices
- But what is the price for mobile services?
  - Many price components: Activation fee, fixed fee, different calling/SMS/data fees, allowances, minimum revenues, etc.
- Our approach: Use tariff and usage data to calculate basket prices
  - Usage data: Country specific average consumption, constant over time
    - Minutes to fixed, on-net, off-net, SMS, in the H3G/Orange assessment also data
  - Tariff data: All tariff components of all tariffs of all (the largest two)* MNOs
  - We calculate the bill of all tariffs and take the average of the cheapest 4 per operator (robustness check with the cheapest 2)
  - We use 3 (2) different baskets
    - Low/mid/high in the T-Mobile/tele.ring assessment
    - Traditional user / smartphone user in the H3G/Orange assessment
  - Data sources: Tariff-data: Teligen, Tarifica; Usage data: OECD, BEREC
  - Data is quarterly

* for the control countries in the T-Mobile/tele.ring assessment

Estimation of the merger effect on prices

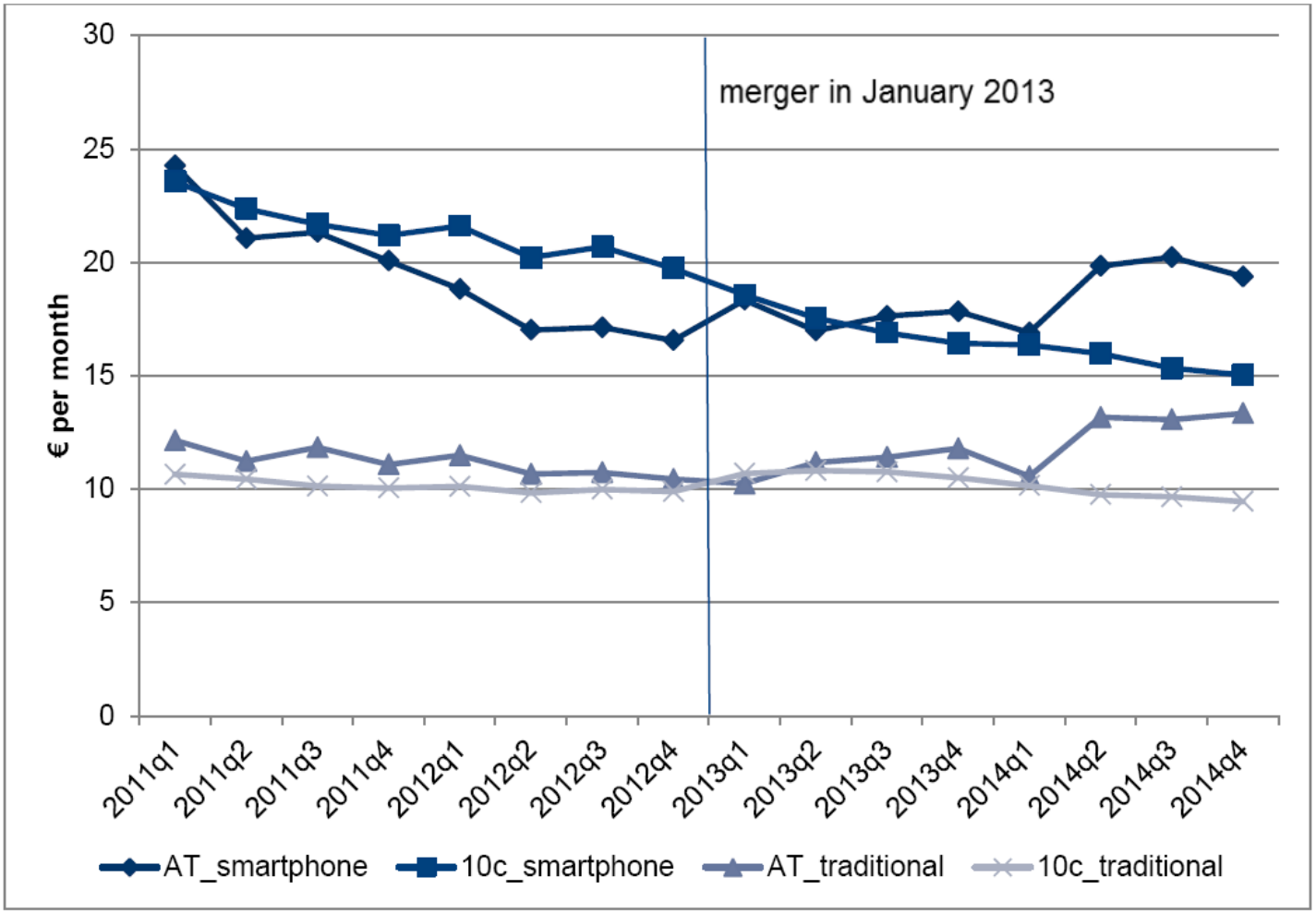
- 3 Methodologies (developed in study joint with ACM and EC)*
  - Basic differences-in-differences (DiD)
  - DiD with linear trends
  - Synthetic control group approach
- 1. Basic DiD
  - Basic idea: $DiD = (p_i^{post} - p_i^{pre}) - (p_{i'}^{post} - p_{i'}^{pre})$
  - We estimate (-2 to +2 years around the merger, merger quarter excluded):

$$\underbrace{\log(p_{j,i,t})}_{\text{price}} = \alpha + \underbrace{\gamma_{short} D_{i,t}^{short} + \gamma_{medium} D_{i,t}^{medium}}_{\text{period dummies for 1st and 2nd year effect}} + \underbrace{\sum_t \tau_t}_{\text{Time fixed effect dummies}} + \underbrace{\sum_i S_i}_{\text{country/MNO fixed effects}} + \underbrace{\delta_1 GDP\ growth_{i,t} + \delta_2 \log(MTR_{i,t})}_{\text{Controls (GDP growth, MTRs)}} + \varepsilon_{j,i,t}$$

  - Control countries: European countries were no merger or entry occurred
    - T-Mobile/tele.ring: BE, CH, CZ, DE, FI, FR, HU, IT, PT, SE, UK (11)
    - H3G/Orange: BE, DK, FI, GR, HU, IT, NL, PT, ES, SE (10)

* https://www.rtr.at/de/inf/Analysis_mobile_mergers

Example: Price trends in the H3G-Orange case



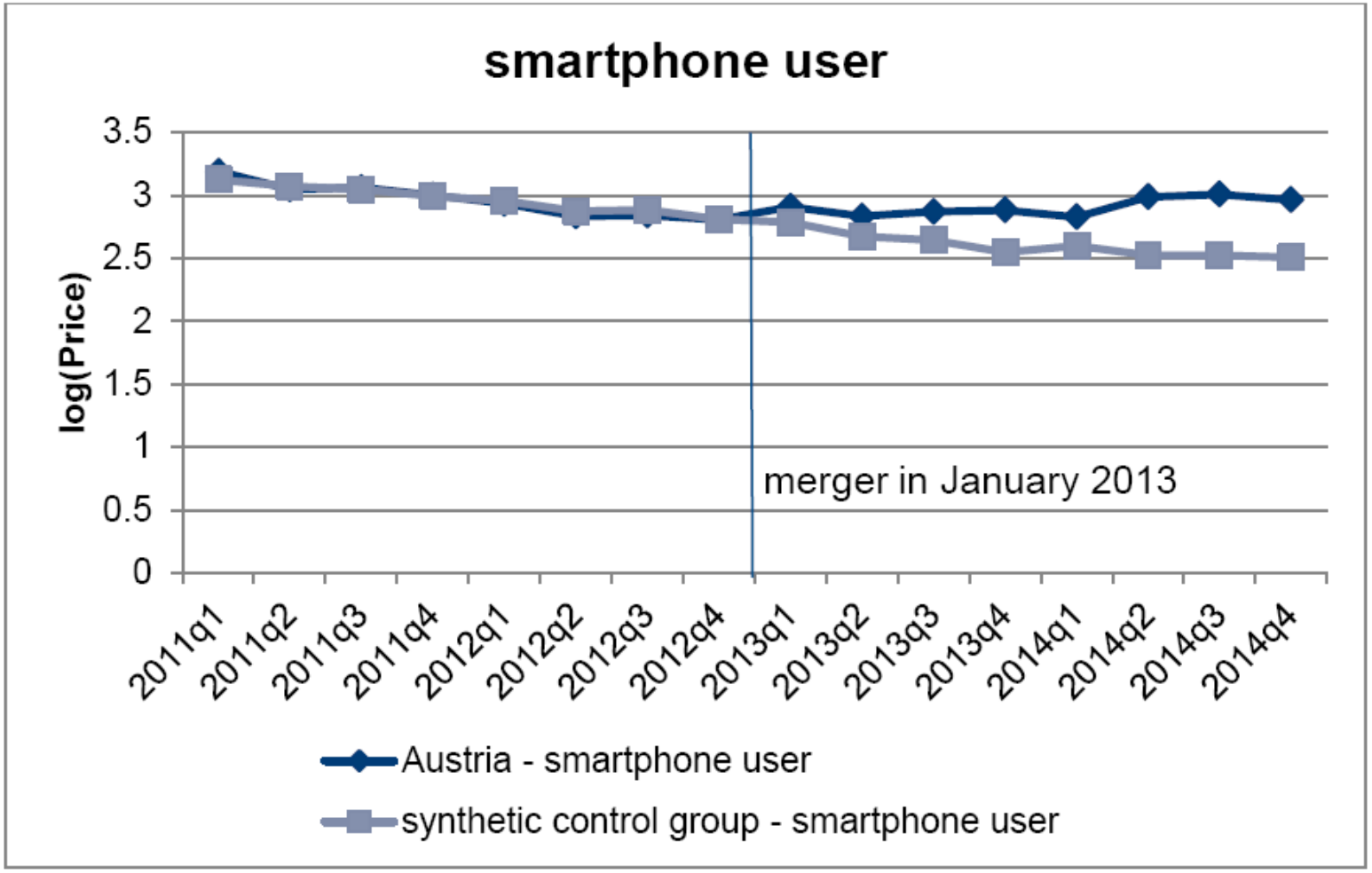
Estimation of the merger effect on prices (cont.)

- 2. DiD with linear trends
  - Basic DiD does not account for differences in pre-merger trends (which cannot be explained by the controls)
  - We therefore make a trend-test for the pre-merger period
  - If it is not fulfilled, we include country-specific linear time trends:

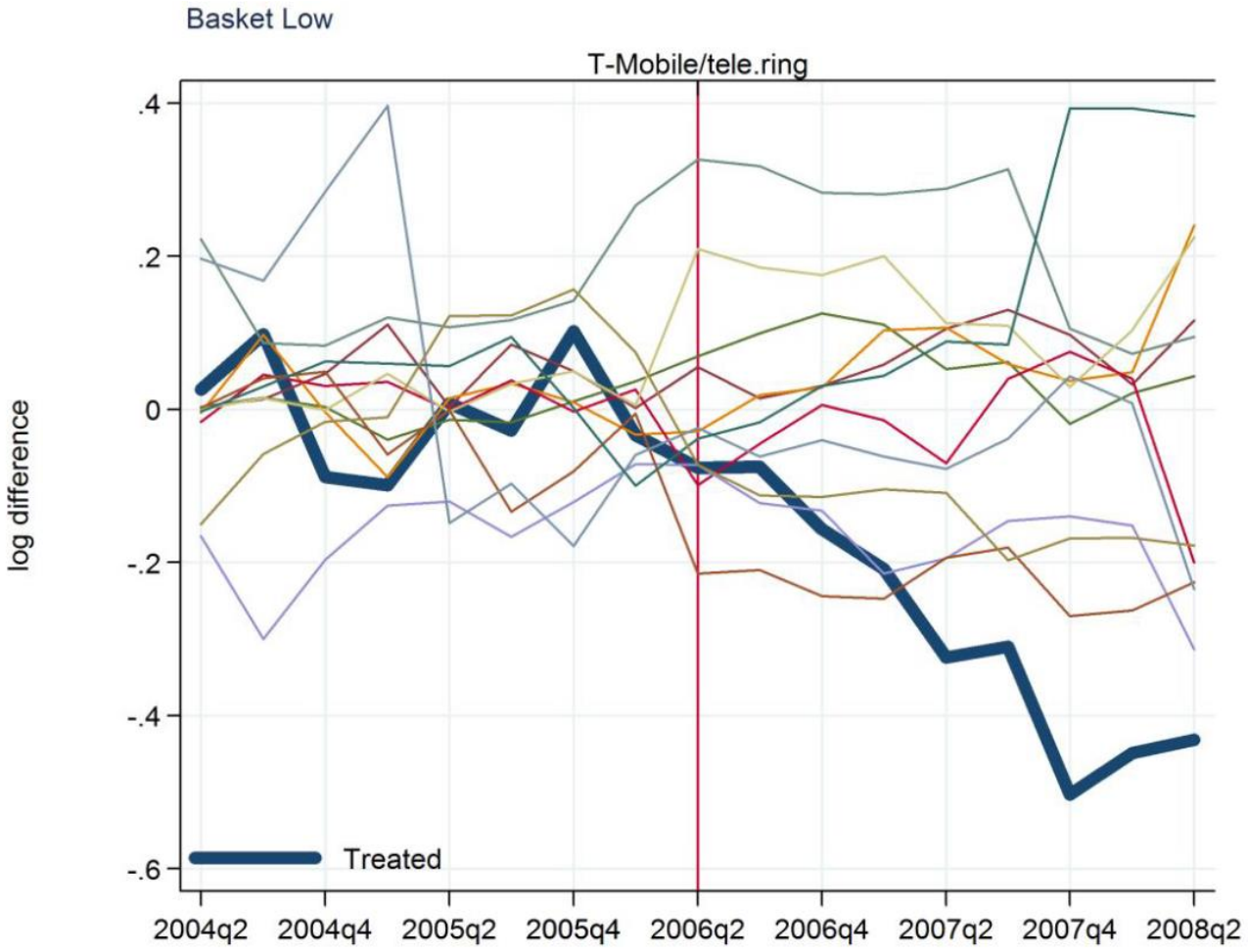
$$\log(p_{j,i,t}) = \alpha + \sum_{t>t^M} \gamma_t D_{i,t} + \sum_i \partial_i t + \sum_t \tau_t + \sum_i S_i + \delta_1 GDP\ growth_{i,t} + \delta_2 \log(MTR_{i,t}) + \varepsilon_{j,i,t}$$

- 3. Synthetic control group approach (e.g. Abadie et al, 2010)
  - Derives weights for control countries such that pre-merger trend is best replicated
  - Also takes into account the level
  - Merger effect = difference between treated and synthetic control group
  - Inference is based on 'placebo-mergers' of control countries

Example: AT and synthetic control group – H3G/Orange case



Example for placebo tests in the synthetic control group approach: Basket ‘low’ in the T-Mobile/tele.ring case



Results

Results for the T-Mobile/tele.ring merger

- Effect after two years (estimated coefficient / difference to synth. contr.)

	low	mid	high
basic	-0.34***	-0.18***	-0.13
trendtest	failed	passed	passed
trend spec.	0.01	-0.06	-0.18*
synth. contr.	-0.40*	-0.15	-0.036

- Estimates suggest negative effect on prices
- But significance varies across specifications (also in further robustness checks)
- Conclusion: The merge had no positive (increasing) effect on prices, effect rather negative, but firm causality cannot be established

Results for the H3G/Orange merger

- Effects after two years (without MVNO entry)

	traditional user	smartphone user
basic	0.24***	0.26***
trendtest	passed	failed
trend spec.	0.27***	0.64***
synth. contr.	0.20*	0.41*

- Estimates suggest positive (increasing) effect on prices
- Estimates are statistically significant and quite robust (even if we account for the spectrum auction in late 2013)
- Conclusion: The merger led to significant price increases – at least until the remedies became effective
- A study of the competition authority also finds significant price increases (for new and existing customers) using a different methodology
  (see http://www.en.bwb.gv.at/News/Seiten/BWB-und-RTR-present-reports-on-the-telecom-sector-enquiry.aspx)

Discussion

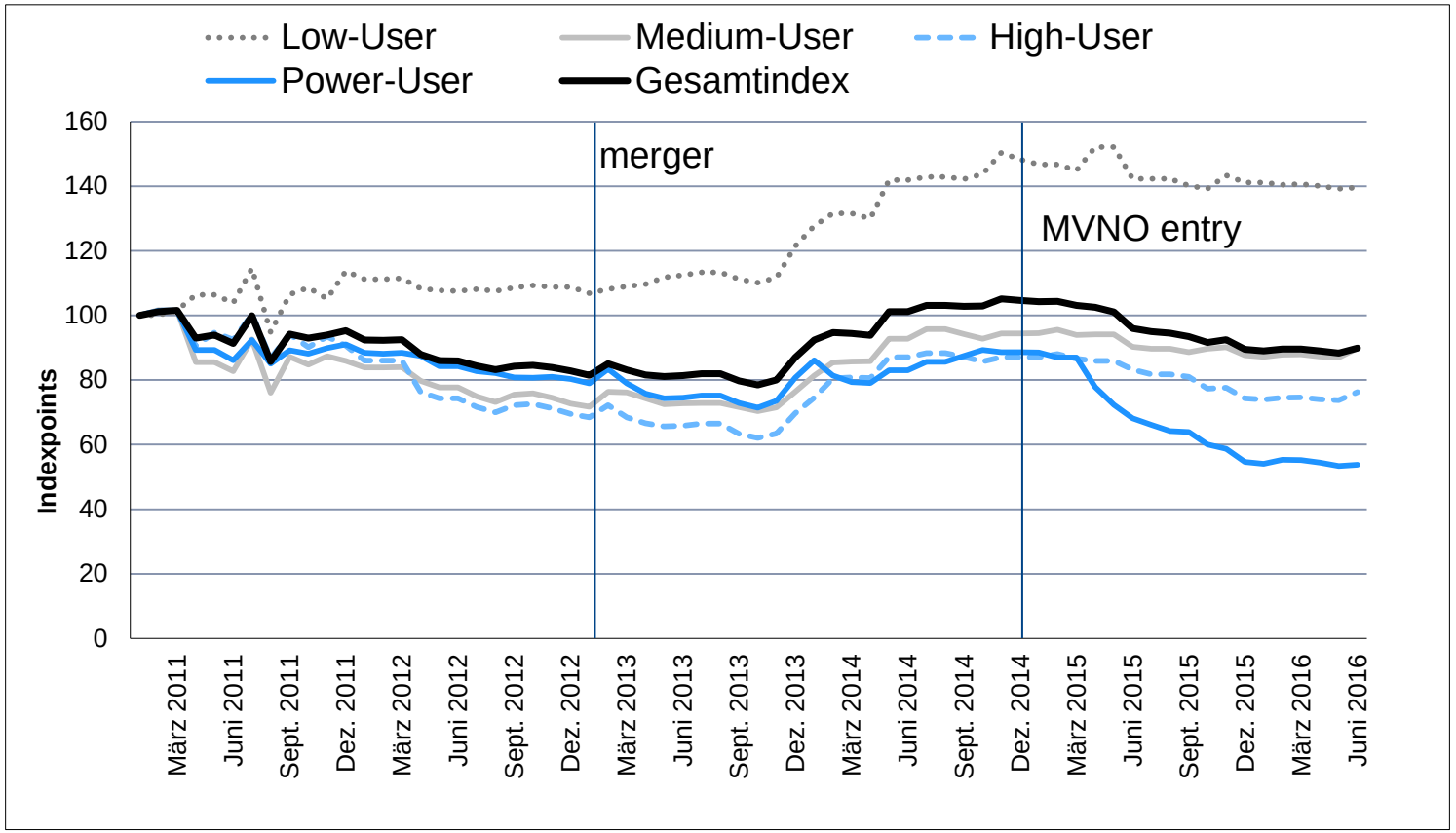
Discussion

- Why were the effects of the two mergers so different?

T-Mobile/tele.ring	H3G/Orange
4 operators left	3 operators left
asymmetric market shares	market shares much more symmetric
H3G as ‘maverick’ left	no small operator left
remedies helped H3G and Orange	remedies became effective only with significant delay

Were the remedies in the H3G/Orange case finally effective?

- At least they led to some price decreases …



RTR mobile price index, see RTR Telekom Monitor 1. Quartal 2016 (Ausgabe 3/2016), p. 15.

Conclusions

- mobile mergers can increase prices …
- … in particular if only 3 MNOs are left and remedies become effective with delay
  - Competition authority estimates loss of consumer surplus of between € 158 Mio. and € 227 Mio. in 2013 and 2014
- Is MVNO competition effective in the long run?
  - Only one MVNO has significant market shares so far
  - Issues linked to roaming
  - New technologies (5G), changing user habits -> may require changes in contracts
- Future analysis
  - BEREC will analyse price effects of the mergers in GER and IRL in 2014
  - Estimation of effects on quality would be interesting but is tricky

References

- T-Mobile/tele.ring in Austria and T-Mobile/Orange in the Netherlnads (ACM, EC, RTR), 2015: https://www.rtr.at/de/inf/Analysis_mobile_mergers
- H3G/Orange (RTR), 2016: https://www.rtr.at/de/inf/Analysis_merger_H3G_Orange
- H3G/Orange (Austrian Competition Authority), 2016: http://www.en.bwb.gv.at/News/Seiten/BWB-und-RTR-present-reports-on-the-telecom-sector-enquiry.aspx