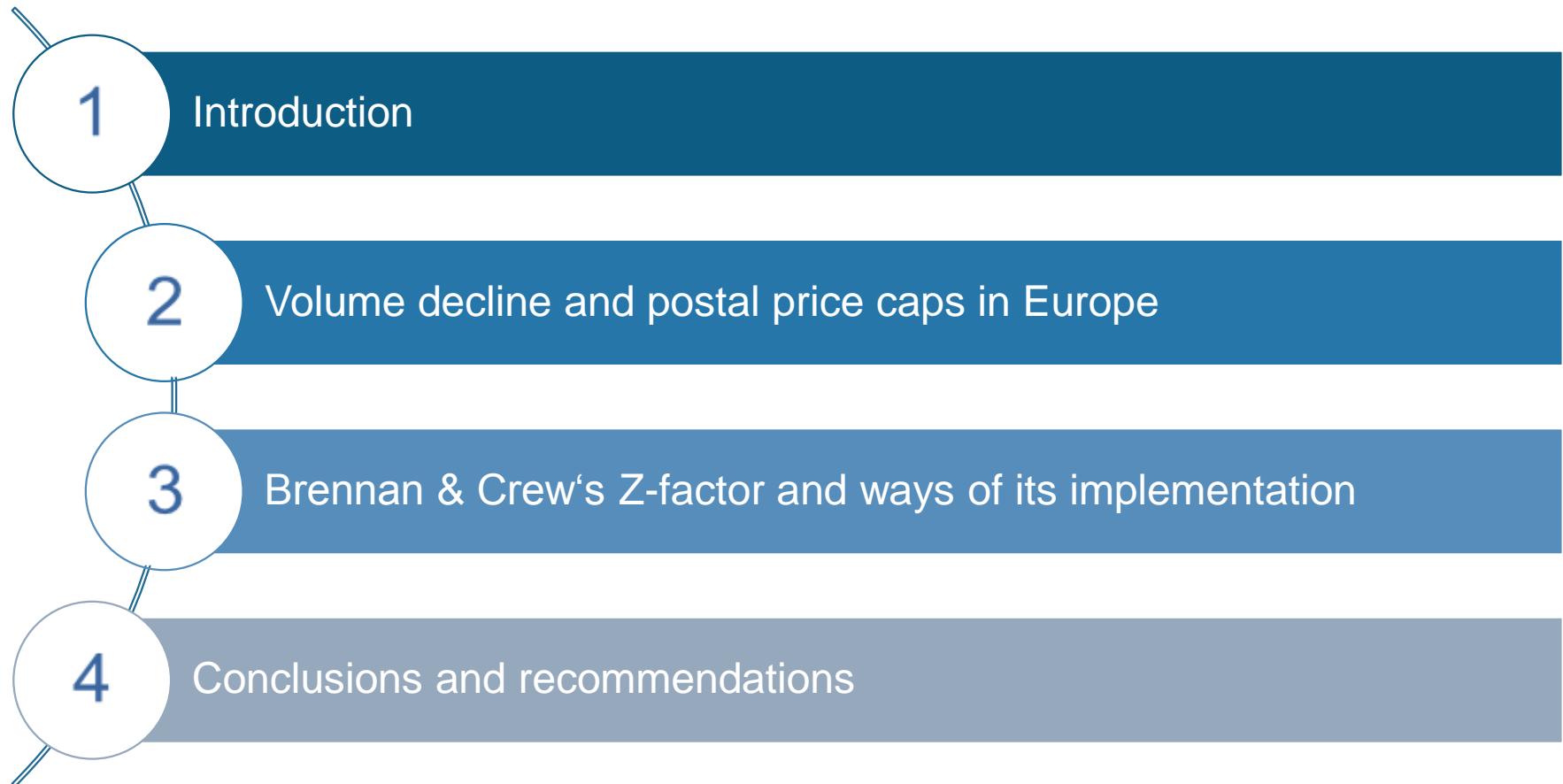


# **How to respond to declining volumes in postal price caps?**

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# Introduction

Some European postal regulators have implemented price cap regulations

Postal markets are changing:  
declining demand for letter services

Regulators review the price cap regulations to incorporate volume decline

Crew & Brennan proposed an adjustment factor (Z-factor) to link price caps to volume decline

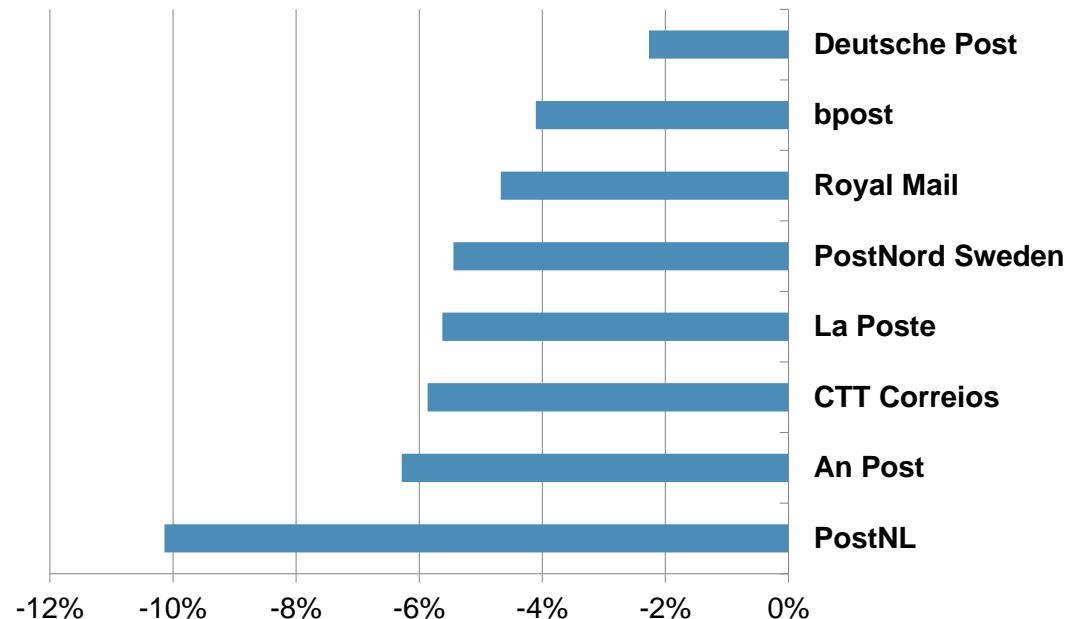
# Universal service providers face declining letter volumes...



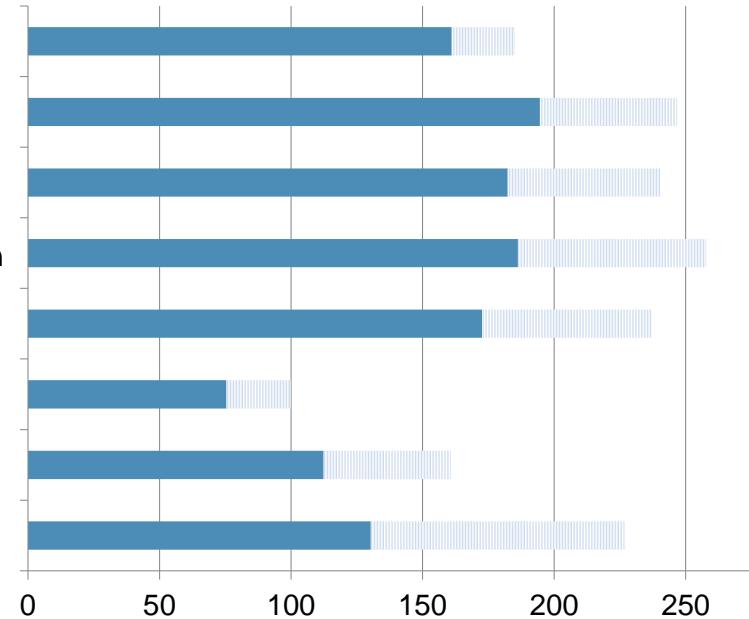
Changes in communication patterns accelerate volume decline



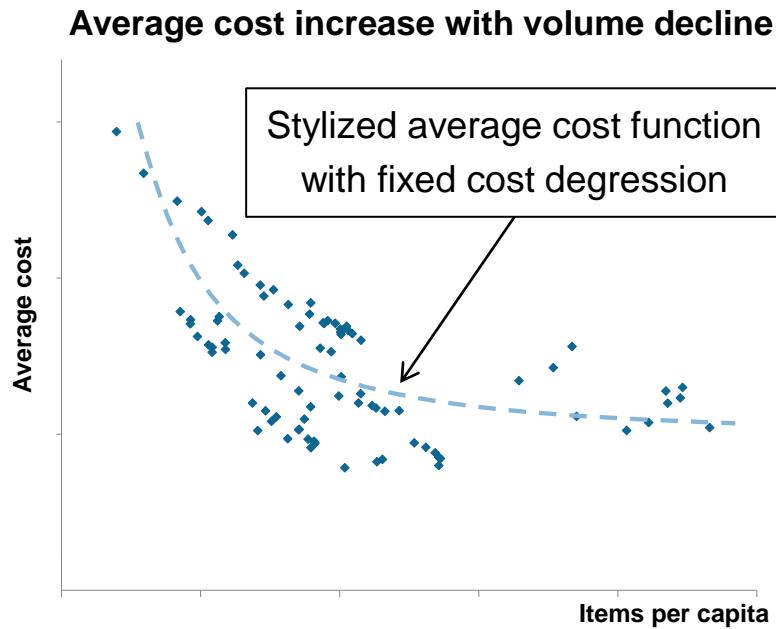
Average annual volume decline (2011-2016)



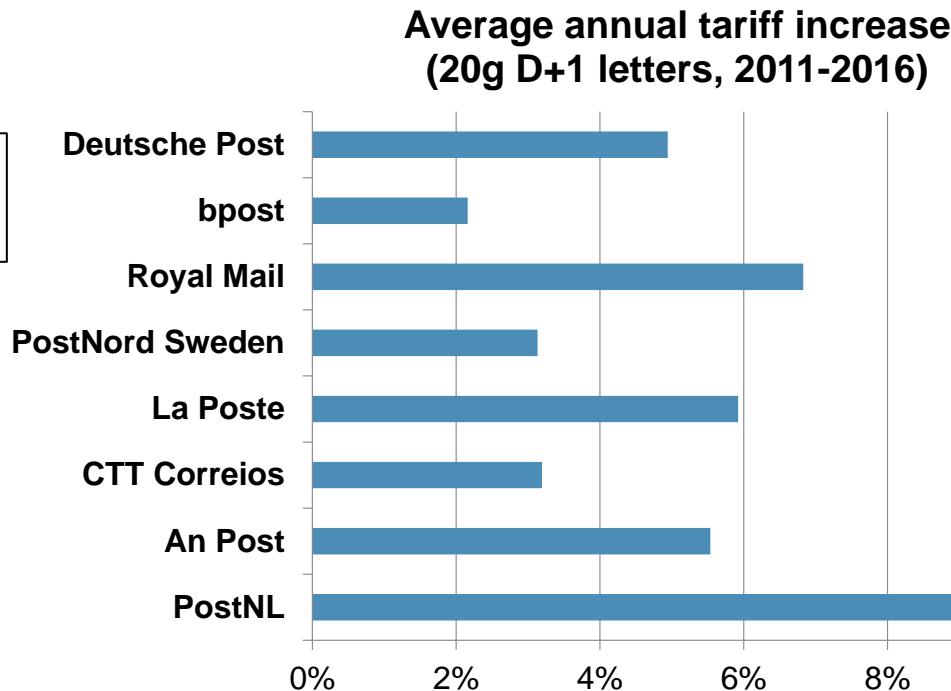
Letter post items per capita (2011, 2016)



# ...that results in increasing average cost and tariffs



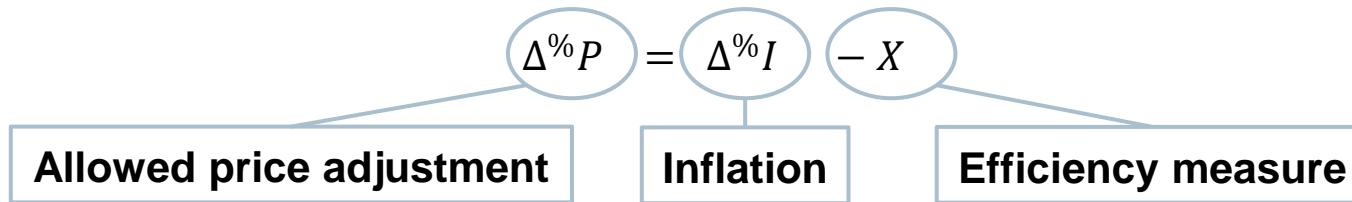
Significant share of fixed cost in postal operations



Universal service providers respond with price increases

# Purpose of price cap regulation

- Price cap regulation aims at simulating cost-based prices in competitive markets

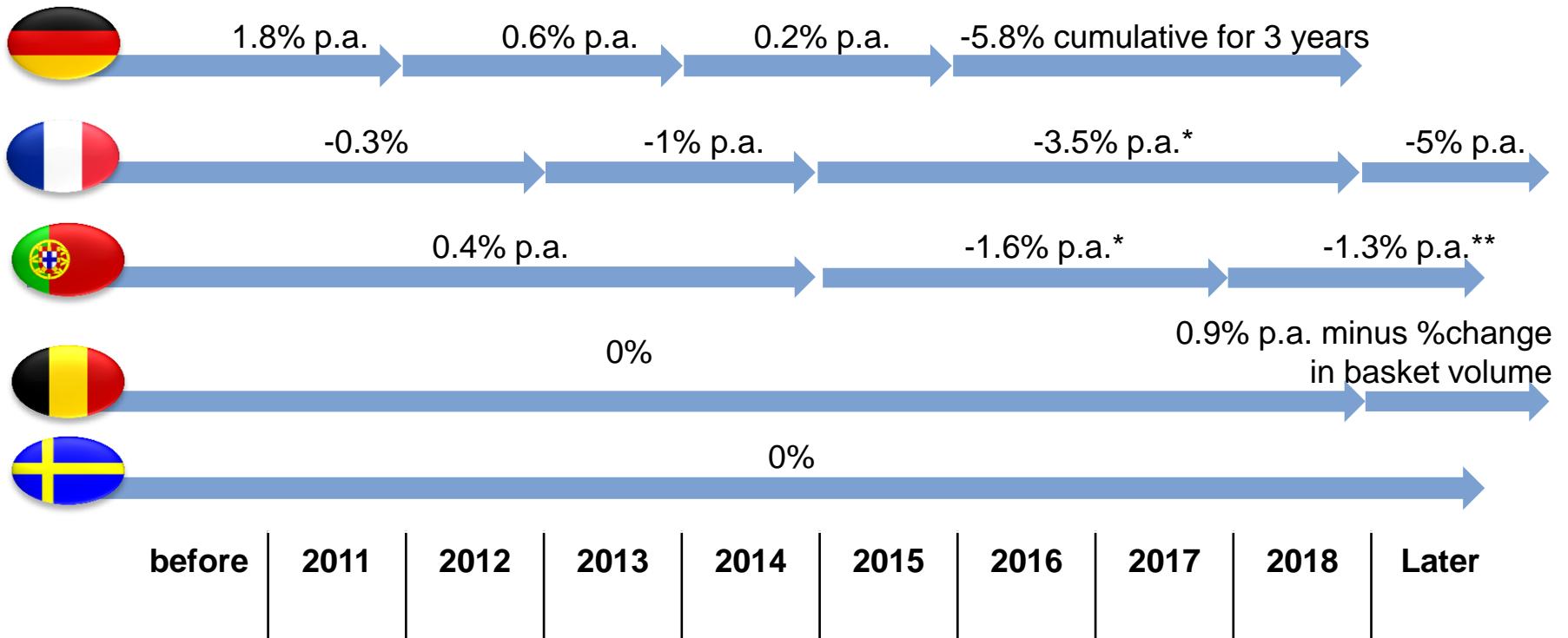


- Price cap regulation should provide incentives for postal operators to improve efficiency
- Price caps usually applied to service baskets for more pricing flexibility within the basket
- Regulators should be committed to the price cap during the term to ensure regulatory certainty

# Price cap regulations in Europe

Country	Services included	Formula	Period
Belgium	Single-piece letters and parcels	$\Delta \text{CPI} + \text{Quality Bonus}$ (until end of 2017) $\Delta \text{CPI} - X$	Without a fixed term
France	Single-piece and bulk letters, single piece parcels	$\Delta \text{CPI} - X$	3 – 4 years
Germany	Single-piece letters (up to 1kg)	$\Delta \text{CPI} - X$	2 – 4 years
Ireland	Single-piece and some bulk letters and postal parcels	$\Delta \text{CPI} - X$	5 years [repealed in 2017]
Netherlands	Single-piece letters and parcels	$\Delta \text{CPI} - X$	Without a fixed term
Portugal	Single-piece letters and postal parcels	$\Delta \text{CPI} - X$	3 years
Sweden	Single-piece letters (up to 500g)	$\Delta \text{CPI}$	Without a fixed term
UK	Single-piece letters (non-priority mail)	$53\% + \Delta \text{CPI}$	8 years

# X-factors became negative over time



\* Adjusted for actual volume and CPI developments:  
FR: 2017, 2018: -3.3%

PT: 2016: -0.6%, 2017: -1.2%

\*\* Anacom's proposed price cap decision, consultation period extended

# Brennan & Crew proposed an approach for linking price caps to volume decline

- Introduction of an adjustment factor into the price cap formula

$$\Delta\%P = \Delta\%I - X + Z * \Delta\%Q$$

improves transparency by explicitly separating

- price adjustments due to projected productivity gains (X-factor) and
- price adjustments to compensate effect of volume decline on average cost (Z-factor)
- Z-factor should capture effects that are not under control by the regulated firm
- Promising theoretical approach ...but how to implement it in regulatory practice?
  1. Determination of the volume development  $\Delta\% Q$
  2. Determination of the Z-factor

# Determining the volume base

$$\Delta \% P = \Delta \% I - X + Z * \Delta \% Q$$

- Forecasts versus actual (past) volume development?
- Basket volume versus total volume of the regulated company?
- Total volume of the regulated company versus market volume?

# Brennan & Crew's Z-factor requires information on cost and demand functions

$$\Delta \% P = \Delta \% I - X + \textcircled{Z} * \Delta \% Q$$

$$Z = \textcircled{e_{AC}} + \textcircled{e_{AC} * e_D * Z} \Leftrightarrow Z = \frac{e_{AC}}{1 - e_{AC} e_D}$$

First order effect:

Increase in average cost  
due to volume decline

Second order effect:

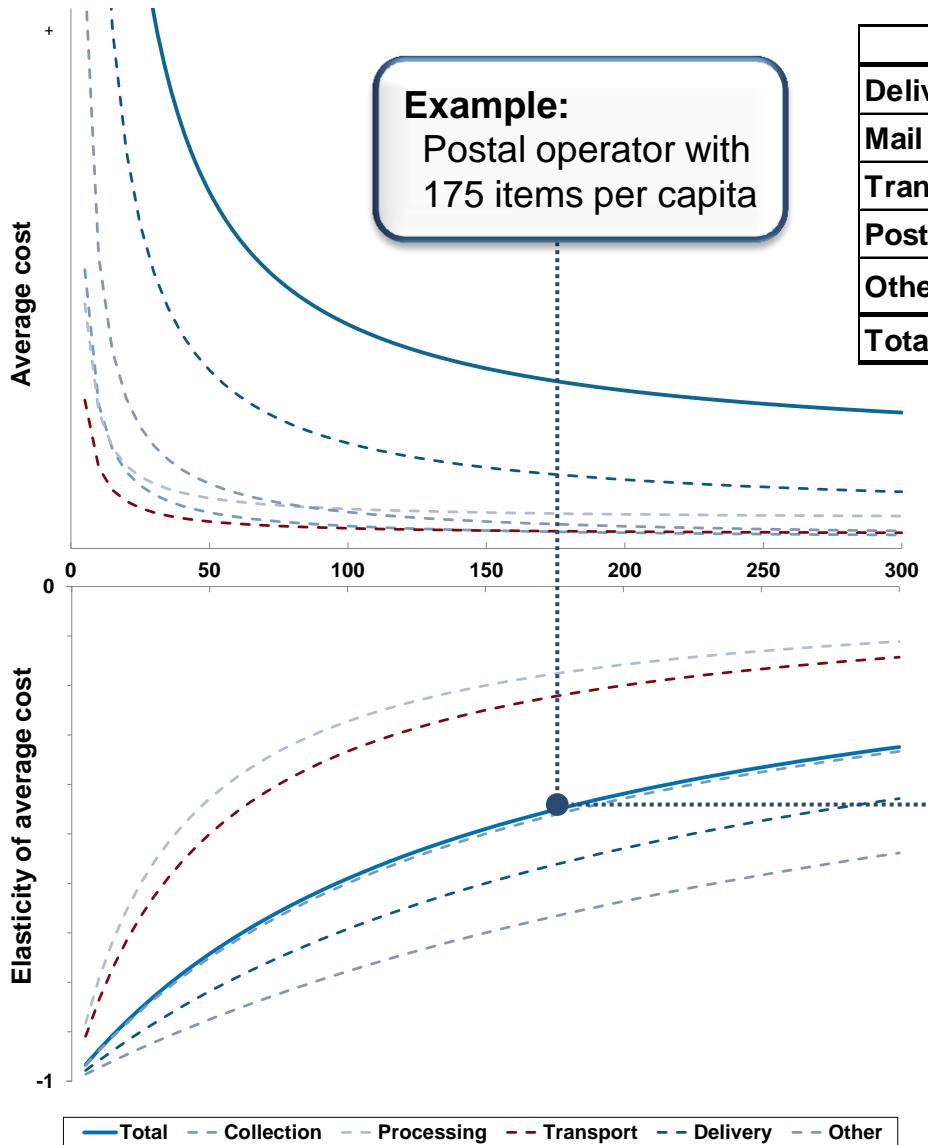
Decline in demand from price increases  
due to rising average cost

- To determine the Z-factor it is necessary to estimate two key components
  - Elasticity of average cost (w.r.t. volume)  $e_{AC}$
  - Elasticity of demand (w.r.t. price)  $e_D$

# WIK model helps to estimate the elasticity of average cost

- WIK model to estimate the financial effects of volume decline
  - General cost function for a stylized postal operator allows estimation of relative changes in cost (Cohen, Pace et al. 2002 & Cohen, Robinson et al. 2004)
  - Includes core activities: collection, processing, transport, delivery, others
  - For each activity separately: considers economies of scale and fixed cost degression
  - Estimates for relative changes in cost due to volume changes independent from actual cost level
  - Published in the Main Development study for the European Commission in 2013
- Model parametrization per activity: cost shares and cost elasticities
  - Based on literature reviews, interviews and discussions with an expert panel of PostEurop
  - Estimates for a stylized European postal operator with 150 items per capita

# WIK model: Example



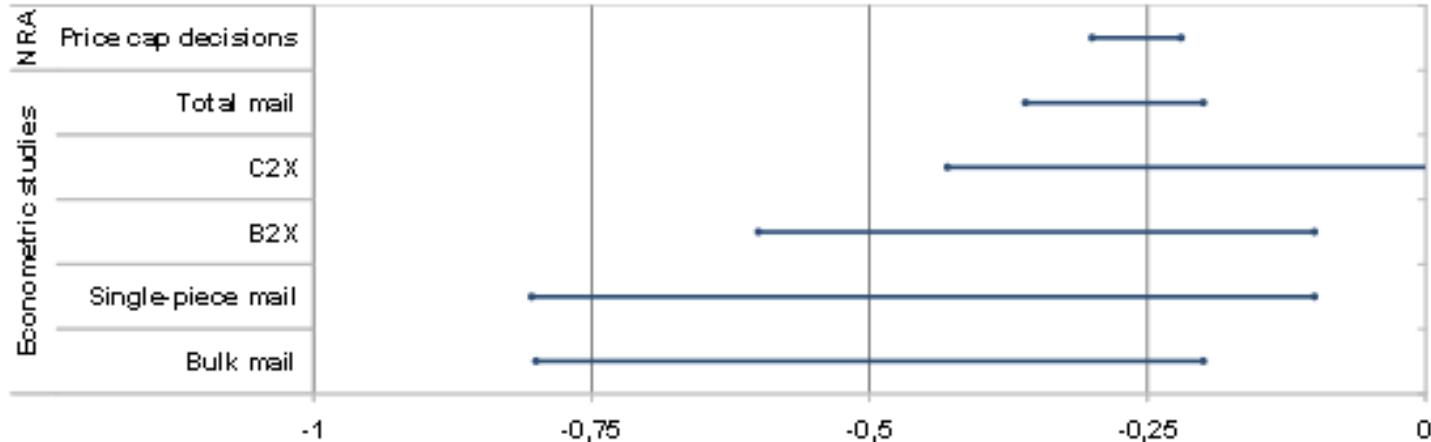
	Percent of Total Cost	Cost Elasticity
Delivery	45%	0.40
Mail processing	20%	0.80
Transportation	10%	0.75
Post offices & collection	10%	0.50
Others	15%	0.30
<b>Total</b>	100%	0.51

Source: WIK-Consult (2013), Main Developments in the Postal Sector (2010-2013)

Note: Calibrated for a stylized postal operator with 150 items per capita

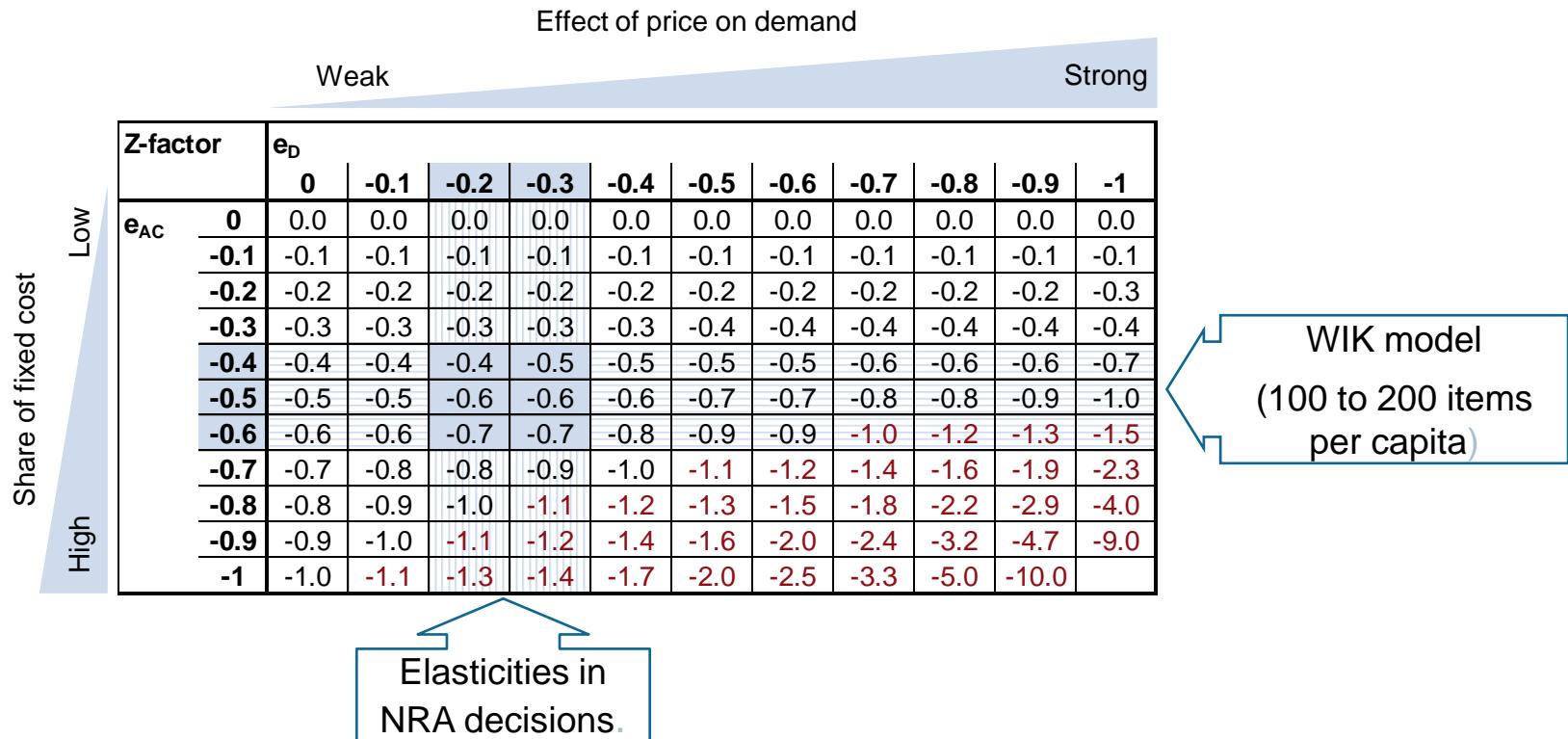
**For a volume of 175 items per capita, elasticity of average cost is -0.45**  
A marginal volume decline increases average cost by 0.45%

# Determining demand elasticities: Difficult task worth the effort?



- Estimation of demand elasticities w.r.t. price is a challenging task
  - Elasticity of demand varies between services and customer groups
  - Elasticity of demand varies with the level of service aggregation
  - Different economic models and econometric approaches lead to different results

# Z-factor is primarily driven by average cost elasticity in relevant cases



- Low levels of demand elasticity w.r.t. price have a little effect on the Z-factor
- High levels of demand elasticity could immensely increase the Z-factor
  - Exploiting the cap could accelerate volume decline further (vicious cycle)
  - Price cap may not be binding for the regulated firm (price cap still meaningful?)
  - Affordability of postal tariffs at risk

# How to implement the Z-factor in regulatory practice

- An adjustment factor additional to the X-factor increases transparency in price cap regulation
- The adjustment factor should only incorporate cost effects outside the control of the regulated firm
- Volume development ( $\Delta \% Q$ ): Based on most recent developments of total letter volume
  - to avoid ex post adjustments and to be less dependent on USP's forecasts
  - to better reflect cost effects outside the control of the regulated firm
- Elasticity of average cost ( $e_{AC}$ ):
  - WIK model facilitates the estimation of volume-driven cost effects without having detailed information on the costs of the regulated company
  - The model produces useful indications of the effect of volume decline on average costs and the elasticity of average cost
  - It can be adjusted on specific operators to better reflect differences in cost shares and elasticities.
- Second-order demand effect ( $e_D$ ): Difficult to identify and for low values usually little effect on the Z-factor

**MANY THANKS FOR YOUR ATTENTION!**