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# CONCEPTS, CRISES & COMPROMISES: REFORMING THE EU ETS IN TURBULENT TIMES

WORKSHOP BY GRISCHA PERINO & MAXIMILIAN WILLNER (UNIVERSITÄT HAMBURG)



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Bundesministerium  
für Bildung  
und Forschung

WELCOME!

# Shaping EU climate and energy policy: Insights from and questions for the Ariadne project

## Who is in the room?

15 sec  -intro each

# WHAT'S ON OUR PLATE TODAY?



# CRITERIA FOR FUNCTIONING MARKETS



# MARKETS, EXPECTATIONS, PRICES I

## ■ prices as scarcity signals

- › prices reflect current and expected future fundamentals
- › marginal abatement costs
- › expected long-run scarcity of allowances
- important for abatement and investment decisions

## ■ intertemporal arbitrage

- › market participants trade off value of emitting today vs. emitting at a future point in time (several years)
- › expectations matter!
- important for investment decisions

# MARKETS, EXPECTATIONS, PRICES II

## ■ absence of market power

- › no individual market participant is able to strategically affect prices
- › absence of cartels and collusion
- important for market efficiency

## ■ liquidity

- › at any point in time, the number of potential buyers and sellers and the number of potential allowances to be bought and sold is sufficient to avoid (short-term) market power
- important for avoiding price volatility

## ■ transaction costs

- › the costs of trading should be small.
- important for finding cheapest abatement opportunity

## SUCCESSFUL ETS DESIGN...

- **requires credible scarcity signal → price stability**

- › short-term abatement decisions
- › low-carbon investments

- **requires predictable interaction with other climate initiatives → manage ‘waterbed effect’**

- › EU (energy efficiency, renewable targets, vehicle standards)
- › Member States (coal phase-outs, renewable support)
- › subnational policies and private initiatives

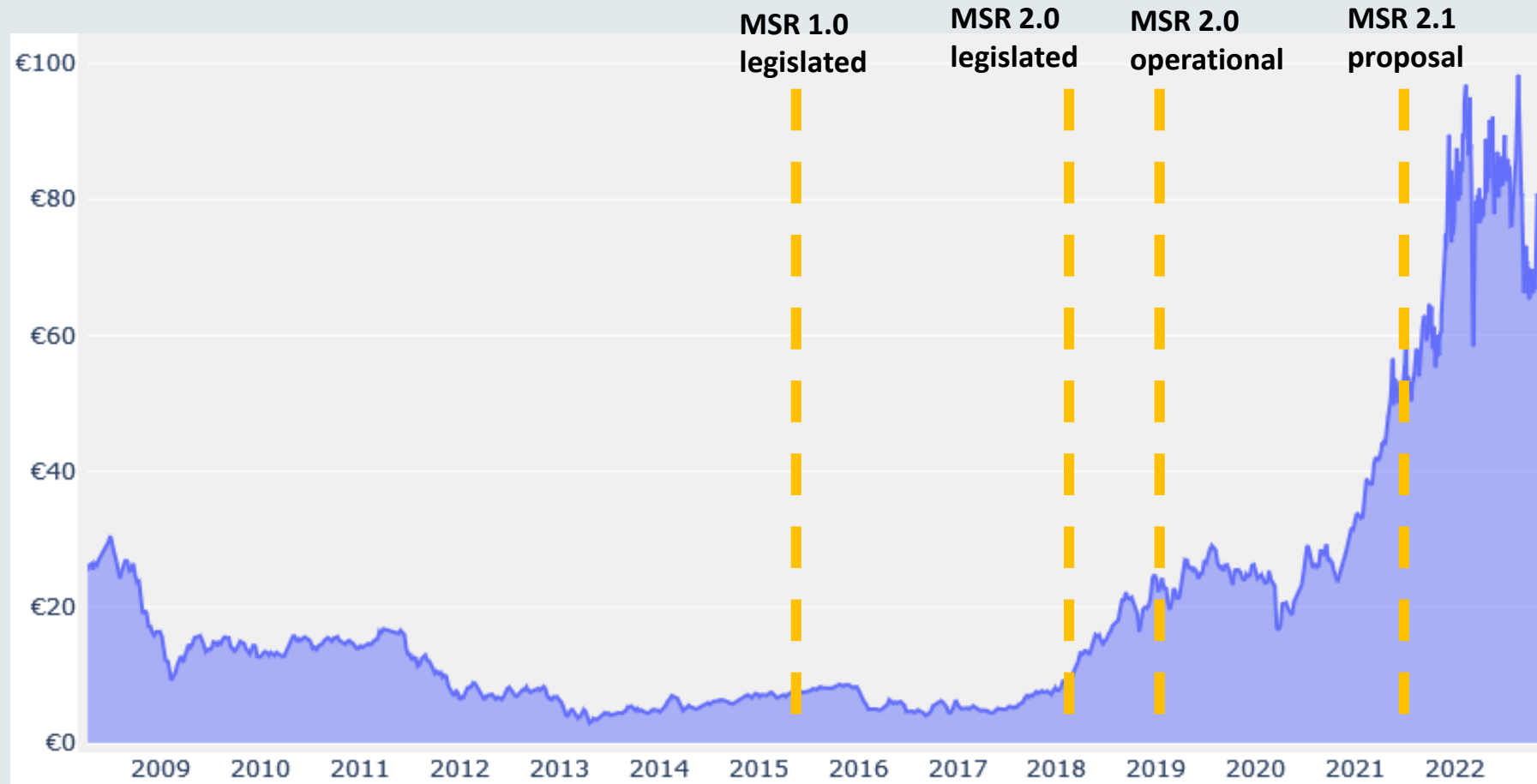
# STRUCTURAL MARKET BALANCE (MSR)





MSR-1 & MSR-2	COM	EP	Council
<b>MSR-1 intake</b>	if TNAC >1,096 mio. EUAs, intake of 24 %, then 12 % from 2031 over 12 months	same as COM	same as COM
<b>MSR-1 threshold corridor</b>	1,096 mio. to 833 mio. EUAs intake then difference of „TNAC-833 mio. EUAs“	921 mio. to 700 mio. EUAs adjusted by LRF from 2025	same as COM
<b>MSR-1 release</b>	if TNAC <400 mio. EUAs, release of 100 mio. EUAs over 12 months	same as COM adjusted by LRF from 2025	same as COM if Art. 29a triggered, release over 3 months no later than 2 months after trigger date
<b>MSR-1 max. holdings</b>	400 mio. EUAs, excess to be cancelled	same as COM	same as COM
<b>MSR-2</b>	first TNAC publication in 5/2027 start of operation from 9/2027	starting one year earlier	starting one year later
<b>MSR-2 intake</b>	if TNAC >440 mio., -100 mio. taken in over 12 months	same as COM	same as COM
<b>MSR-2 release</b>	if TNAC <210 mio., +100 Mio. released over 12-months period if Art. 30h triggered, release over 3 months	same as COM	same as COM
<b>MSR-2 holdings</b>	seeding with 600 mio., any „left-over“ allowances to be cancelled by 1/1/2031	same as COM	same as COM

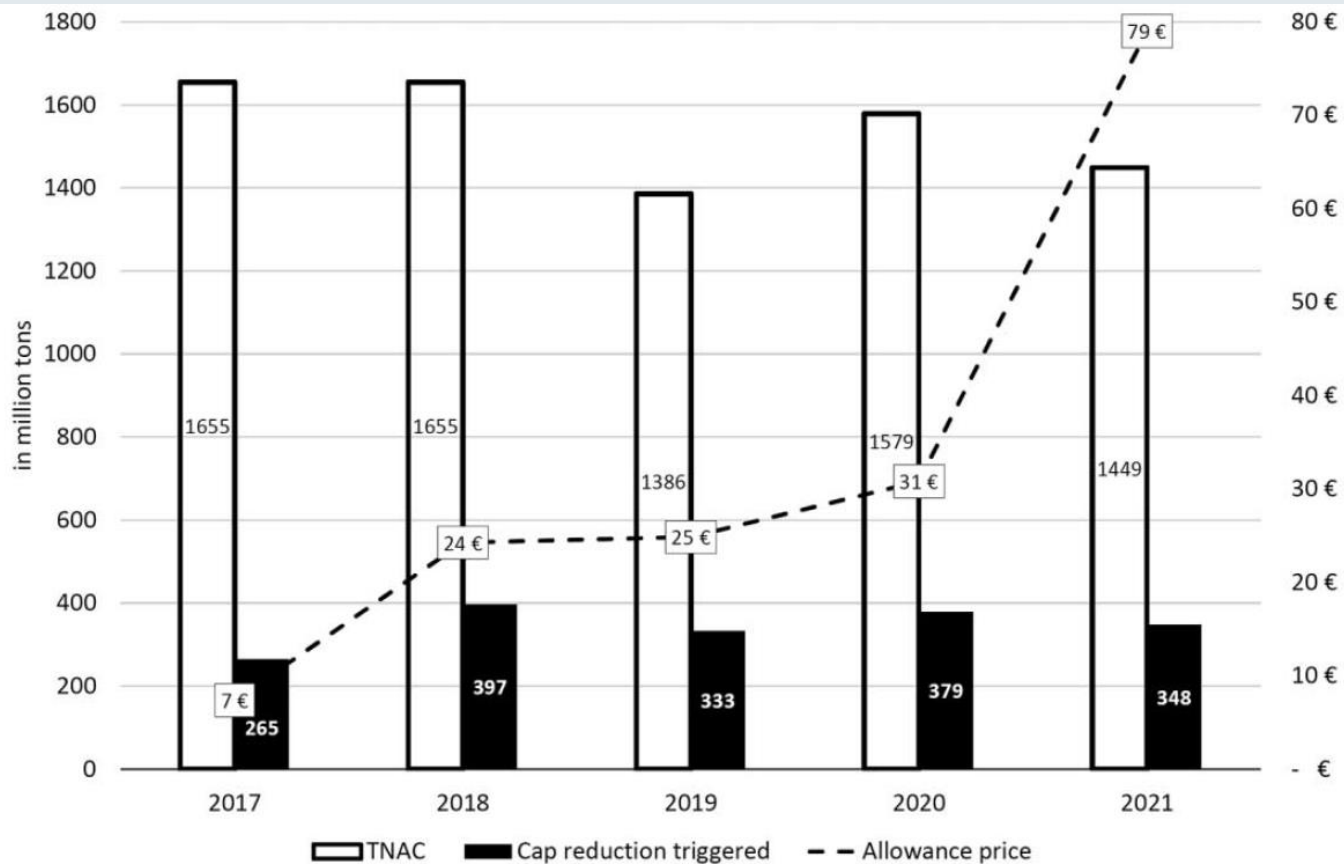
# EU ETS-1 EUA PRICES 2008 - 2022



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# CONFLICTING SCARCITY SIGNALS



**Figure 1** Past MSR activity and key indicators. TNAC measured on December 31 each year. “Cap reduction triggered” refers to the number of allowances withheld from auctions between September 1 1 year later and August 31 2 years later. Prices are Intercontinental Exchange closing prices of futures expiring in December of the year stated. Sources: EC (2018–2022); ICE (2019).

- MSR was tasked to reduce historic surplus (TNAC)
- in principle, suitable
- in practice, limited effect
- TNAC misguided scarcity indicator

# MSR DAMPENS UNANTICIPATED SHOCKS

## examples

- › COVID
- › business cycle

## status quo

- › MSR helpful
- › impact decreasing over time
- › stops once TNAC < 833 Mt

## Fit-for-55 (COM)

- › increases impact
- › ability to respond ends earlier

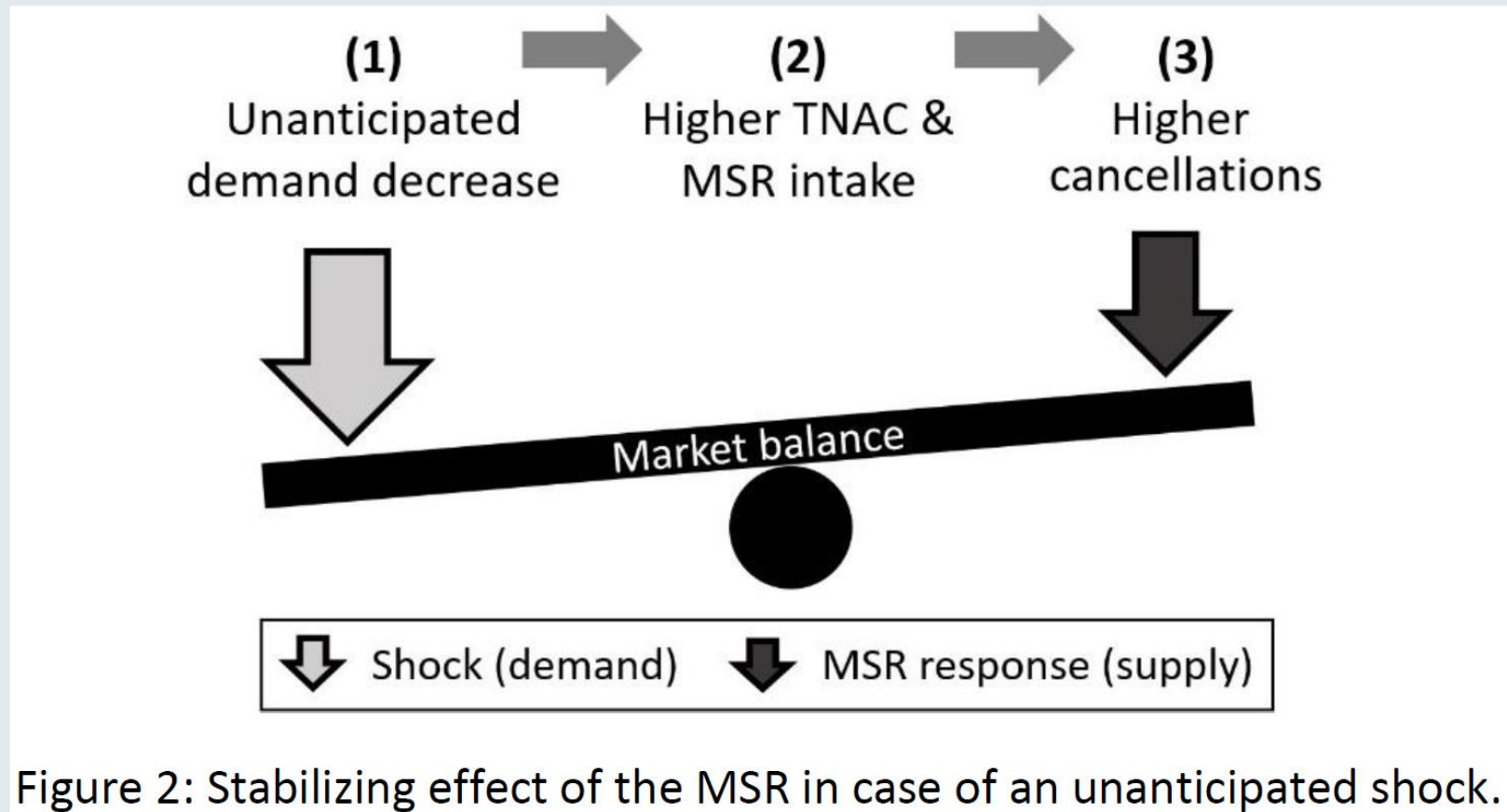


Figure 2: Stabilizing effect of the MSR in case of an unanticipated shock.

Source: Perino, Willner, Quemin & Pahle (2022)

# MSR AMPLIFIES *ANTICIPATED* SHOCKS

## examples

- › technological change
- › overlapping policies

## status quo

- › MSR counterproductive
- › impact decreasing over time

## Fit-for-55

- › increases impact
- › increases likelihood of occurrence

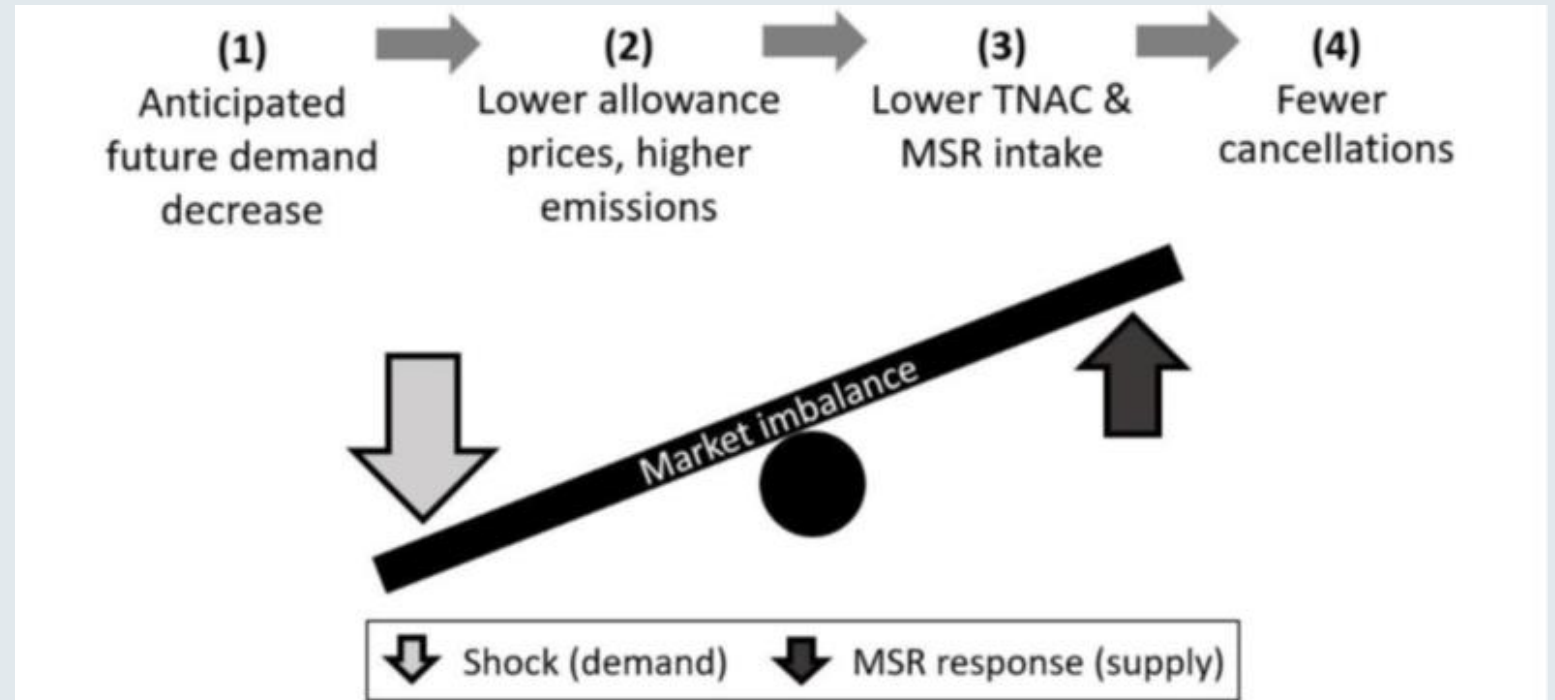


Figure 3: Destabilizing effect of the MSR in case of an anticipated future shock.

Source: Perino, Willner, Quemin & Pahle (2022)

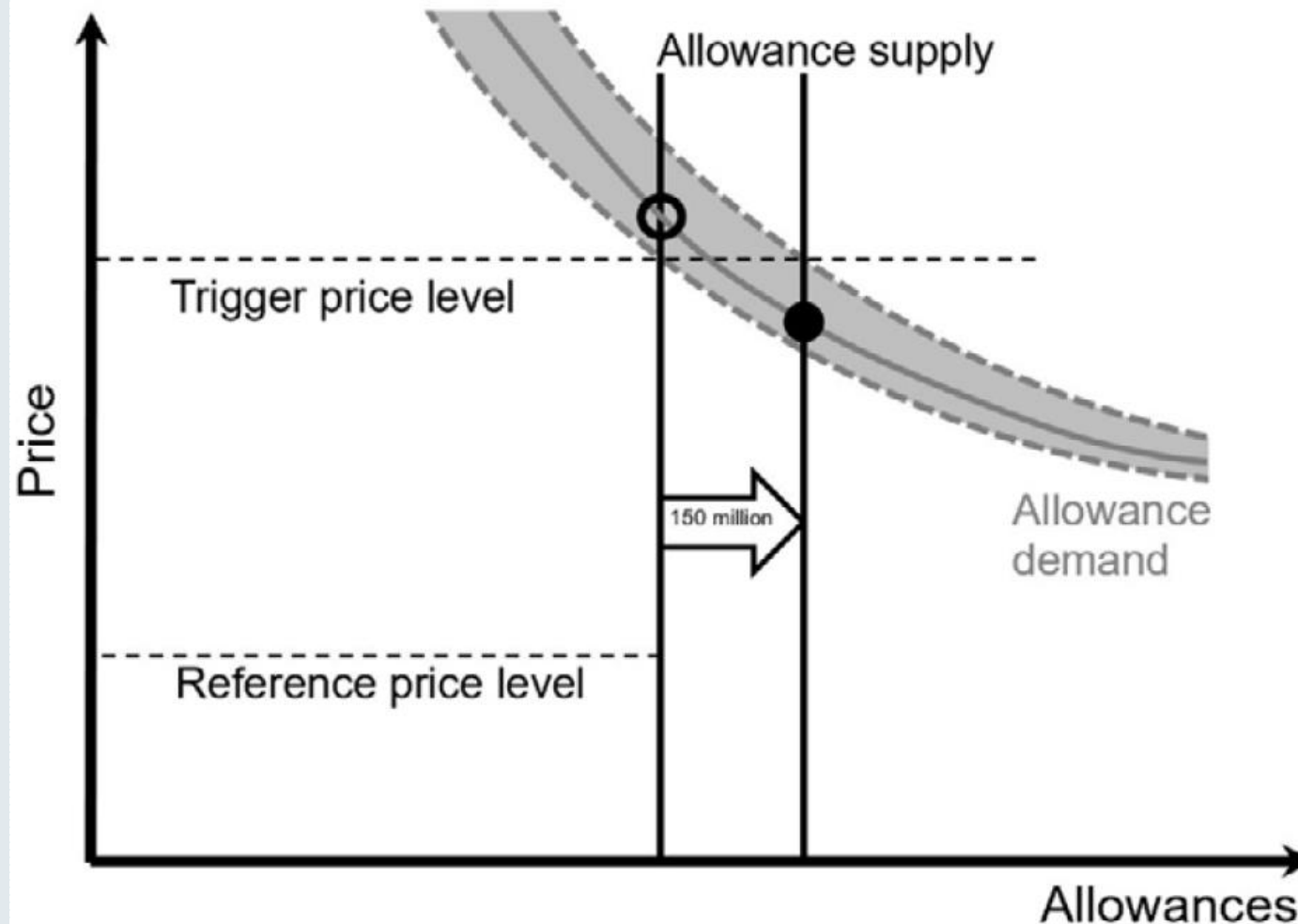
# PREVENTING EXCESSIVE FLUCTUATIONS (ART. 29A/30H)



Art. 29a & Art. 30h	COM	EP	Council
<b>Art. 29a trigger</b>	6 consecutive months avg. price > <b>3x</b> than avg. price of 2 preceding years	6 consecutive months avg. price > <b>2x</b> than avg. price of 2 preceding years	6 consecutive months avg. price > <b>2,5x</b> than avg. price 2 preceding years prior
<b>Art. 29a procedure</b>	COM shall convene Art. 9 Committee to check if price evolution due to <b>fundamentals</b>	COM shall convene Art. 9 Committee within 7 days to check if price evolution due to <b>fundamentals</b>	<b>automatic</b>
<b>Art. 29a intervention</b>	if not, one measure <i>may</i> be taken a) MS may bring forward auction quantity b) MS may auction up to 25% of EUAs from NER if taken, MSR-1 releases <b>100 mio.</b> EUAs over <b>12 months</b> unless it already releases due to TNAC < 400 mio.	if not, any measure <i>shall</i> be taken same as COM  and/or c) release of <b>100 mio.</b> EUAs from MSR-1 over <b>6 months</b>	MSR-1 to release <b>75 mio.</b> EUAs once for <b>12 months</b> unless it already releases due to TNAC <400 mio.; then quicker release within 2 months for <b>3 months</b>
<b>Art. 30h trigger</b>	3 consecutive months avg. price > <b>2x (&gt;3x)</b> than avg. price of 6 preceding months	same as COM but until 2030; 30h(2a): avg. price exceeds <b>50€</b> (45€)	same as COM
<b>Art. 30h intervention</b>	MSR-2 releases <b>50 mio. (150 mio.)</b> over 12 months	same as COM but until 2030; 30h(2a): <b>MSR-2 releases 10 mio. if price &gt; 50€</b> (> 45€, COM and MS shall take measures to reduce emissions to keep price cap); only if other trigger is off	same as COM

FIGURE 1:

DISCRETE INTERVENTIONS UNDERMINE MARKET EQUILIBRIUM



Source: Willner & Perino (2022)

- › discrete changes in allowance supply *undermine* market stability
- › grey-shaded area indicates range of market fundamentals for which *no equilibrium* exists – *because of Art 29a/30h*
- › interventions should be
  - › **continuous**, i.e. continuously increasing in the price (supply function), to ensure that equilibrium exists
  - › **reversible**, i.e. allowances are removed at the same rate if prices drop, to avoid strategic behaviour and path dependency



# MARKET (SUPPLY) MANAGEMENT

## › Market Stability Reserve (both systems)

- › aims at structural imbalances, not short term fluctuations
- › amplifies rather than dampens price fluctuations *not* based on current fundamentals – reform proposals increase this effect

## › Art. 29a (old & COM)

- › aims at price changes not explained by fundamentals
- › price trigger too high (3x) and discretionary procedure
- › ill-designed, i.e. one-sided, discrete, not pegged to cap or inflation
- › if triggered, MSR would neutralize the effect

## › Art. 29a (Council) and 30h (COM)

- › still one-sided, discrete and not pegged to cap or inflation
- › coupling to MSR-interventions prevents direct counteraction, yet expectations may lead to changes in MSR-activity

# WHERE ARE WE HEADED? #TRILOGUE

- **EU ETS is driven by expectations**
- **by design, the MSR ...**
  - ... escalates price responses if expectations change
  - ... increases emissions in response to ambitious, credible and long-term climate policies of MS
- **adjusting TNAC-based parameters and thresholds won't help because ...**
  - ... both, strength (unanticipated demand changes) and weakness (anticipated demand changes) are tied to it
  - ... changing how the MSR responds to TNAC will only affect both aspects equally
- **a way out:** replace TNAC by the price of allowances, e.g. as proposed in Art. 29a/30h

## AN UPGRADE FOR THE EU ETS: MAKING ART. 29A AND 30H FIT FOR EFFECTIVE PRICE CONTAINMENT

MAXIMILIAN WILLNER Department of Socioeconomics, Universität Hamburg, maximilian.willner@uni-hamburg.de  
GRISCHA PERINO Department of Socioeconomics, Center for Earth System Research and Sustainability (CEN),  
Universität Hamburg, grischa.perino@uni-hamburg.de

### EXECUTIVE SUMMARY

- Price hikes and volatility have prompted a debate among policy makers about price stabilization measures in European carbon markets.
- The European Commission's 'Fit-for-55' reform proposal for the EU ETS envisages two separate carbon markets, each featuring an instrument intended to reduce price volatility: Articles 29a and 30h.
- Multiple amendments were put forward in the European Parliament aimed at refining but not altering the general design proposed by the Commission.
- We establish five principles for the general design of price stabilization measures: continuity, predictability, synchronism, symmetry, and adjustability.
- Following our analysis, we find current policy proposals in the EU's legislative process inadequate to address price fluctuations.
- We propose a Price Containment Mechanism (PCM) which adheres to the five principles and which on top of stabilizing prices would also be a major step forward in reducing policy incoherence of EU climate policy.

### THE CURRENT DEBATE ABOUT PRICE STABILIZATION

After a decade of one-digit prices for European Union Allowances (EUA), the past four years have seen a rapid increase in prices up to 96 € in February 2022 (see Figure 1). This price increase, which resembles a hockey stick rather than a gradual growth curve, has stipulated concerns among policy makers, market participants and other societal stakeholders about the sustainability of price developments (Gerlagh et al., 2022). In particular, the quadrupling of EUA prices between March 2020 and March 2022 has focused attention on the rate of change in allowance prices. The speed of ongoing and planned abatement, it seems, is exceeded by current and expected scarcity of EUAs. When compared to earlier debates about market signals, we see a marked shift of attention away from the structural supply-demand-imbalance of the

2010s. Back then, low prices and the abundant supply of EUAs led to the introduction of the Market Stability Reserve (MSR) in 2015. Despite its substantial shortcomings in design, the MSR copes well with past and unexpected shocks to demand by gradually absorbing the subsequently accruing supply of allowances (Bruninx & Ovare, 2022; Gerlagh et al., 2020; Perino et al., in press). The recent discussion about price fluctuations gained further momentum in the wake of the war of the Russian Federation against Ukraine, when a short-term slump of EUA prices of -40% within a few days showed volatility knows two directions. Market participants nearing the EU ETS April 2022 compliance deadline saw themselves confronted with price differences of more than 30 € per EUA, severely challenging risk management. Clearly, the EU ETS is not equipped with an effective measure of price stabilization able to guide price expectations of market participants. The market is thus exposed to increased uncertainty about commodity prices, economic cycles, political decisions and speculation. The quest for finding an answer for how to decrease price volatility and strengthen market participants' expectations about the future price path is in full swing.

Formally, the existing rules for the EU ETS contain price stabilization measures in Article 29a of Directive 2003/87/EC, but they have not been activated so far. Given recent price jumps in both directions, this in itself indicates that they might not be up to the task. Mechanisms that are meant to steel, stabilize, dampen or contain the price path can be found as automatic to (semi-)discretionary versions in many modern ETS around the globe (Burtraw et al., 2020; Friesen et al., 2022). Graphically speaking, they bend the vertical supply curve of a rigid ETS into different shapes, allowing changes in demand to translate into both price and emission responses. These hybrid approaches to ETS design between fixed-cap emissions trading and fixed-price taxing have been studied for some time, making for a broad discussion on price floors and ceilings, both fixed and dynamic, asymmetric and symmetric (Burtraw et al., 2010; Flachsland et al., 2020; Wang et al., 2020; Roberts & Spence, 1976; Wood & Jato, 2011). An adjacent and less ample strand of the literature investigates endogenous supply adjustments based on price changes rather than levels (Karp & Traeger, 2021).

# ONE SIZE FITS ALL SOLUTION (PRICE CONTAINMENT MECHANISM)

get the paper: [LINK](#)

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# PRICE CONTAINMENT MECHANISM – EVOLUTION OF ART. 29A (COUNCIL) & 30H (COM)

Art. 30h only ticks predictability and thus potentially increases volatility and destabilizes the market.

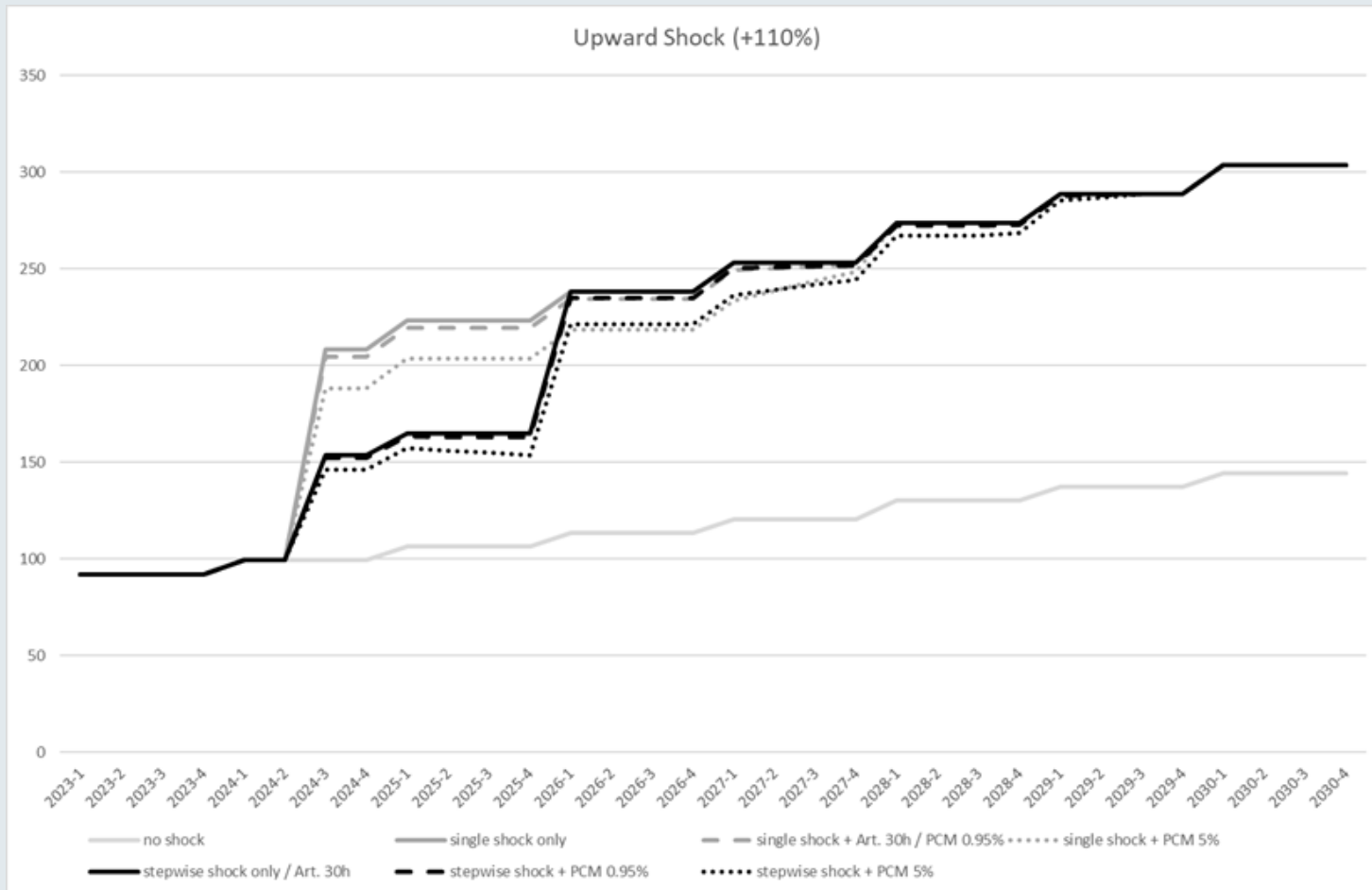
Furthermore, there are **interactions with the MSR!**

- TNAC might be pushed over a threshold by intervention
- potentially leads to a net reduction in allowances rather than an expansion in the medium run
- price-based interventions and TNAC-based MSR are incompatible

## › 5 criteria for a well-designed mechanism

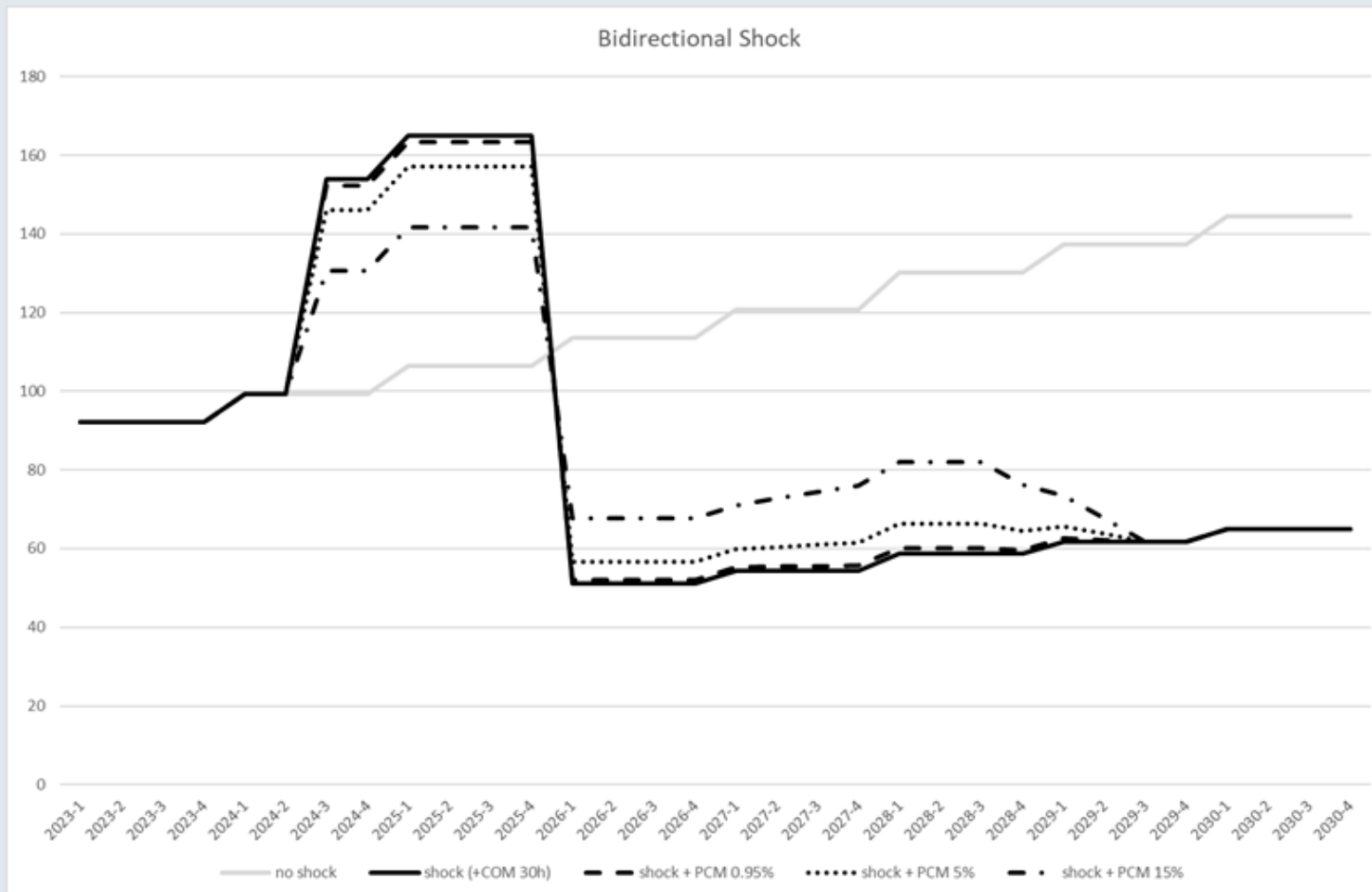
- › **continuity**      no threshold effects by discrete interventions
- › **predictability**      clear trigger values and understandable effect of overlapping policies
- › **symmetry**      contract and expand supply to avoid path-dependency of the cap
- › **synchronism**      align the size of the intervention relative to the decreasing cap
- › **adjustability**      correct triggers according to inflation

## RESPONSE OF 30H VS. PCM – UPWARD SHOCK



- COM's Article 30h has only minor dampening effect
- only responds to single large shocks
- PCM responds to sequences of shocks as well
- shown are PCM base rates of 0.95% and 5% of annual cap

## RESPONSE OF 30H VS. PCM – BI-DIRECTIONAL SHOCK



- COM's Article 30h has no effect, because the average price doesn't trigger it and it only works in one direction
- PCM responds to positive **and** negative price shocks
- shown are PCM base rates of 0.95%, 5% and 15% of annual cap

## „Political Constraints“

Concept  
& Idea

Process

Policy

- › How does the European legislative process constrain design choices?
- › What are your experiences with the determinants of negotiation within and between EU institutions?
- › Which role do external stakeholders, i.e. associations or voters play?
- › How important do you consider path-dependency?

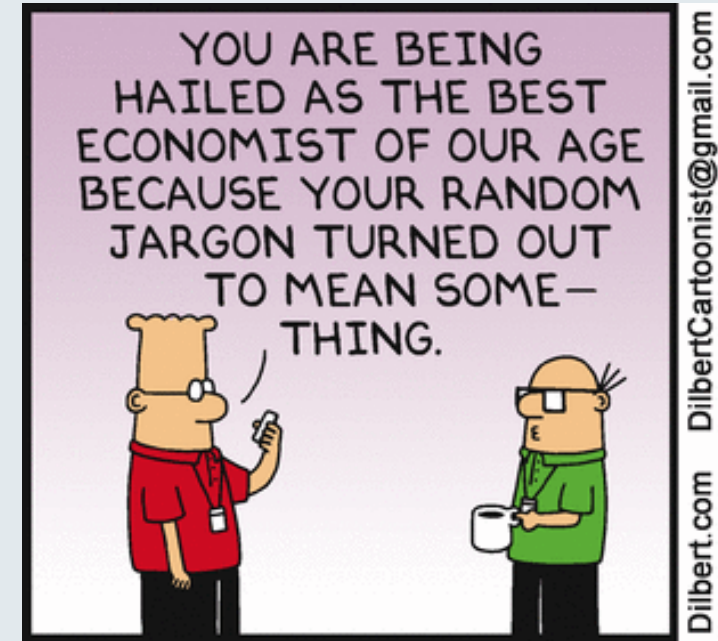
# THE END AND A NEW BEGINNING – THE FUTURE OF ARIADNE

Should there be only one ETS in the future and what challenges do you believe need to be met?

Will both the MSR-1/2 and Art. 29a/30h continue to exist or what kind of supply management would you like to develop?

For which design elements of different ETS would you like to get more scientific advice?

How can science inform policy makers, policy making and instrument design when faced with political constraints?



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When looking at carbon pricing more broadly, do you think the EU ETS has reached its limits in scope?



# CONCEPTS, CRISES & COMPROMISES: REFORMING THE EU ETS IN TURBULENT TIMES

grischa.perino@uni-hamburg.de  
maximilian.willner@uni-hamburg.de  
ariadneprojekt.de



MSR-1 & MSR-2	COM	EP	Council
Reductions by 2030	- 61 %	- 63 %	same as COM
„rebasings“	- 117 mio. EUAs	2024: - 70 mio. EUAs 2026: - 50 mio. EUAs	same as COM
LRF	4.2 %	2024: 4.4 % 2026: 4.5 % 2029: 4.6 %	same as COM
free allocation	gradual phase-out until 2035	progressive phase-out until 2032	progressive phase-out until 2035
ETS-2	starting 2026 LRF 5.15 % from 2024 LRF 5.43 % from 2028	from 2025: only commercial from 2029: also private price cap of 50€ LRF same as COM	starting 2027 suppliers to be exempted if national carbon tax LRF same as COM

# MSR DAMPENS UNANTICIPATED SHOCKS

*in particular if 1,024 – 833 million range is implemented*

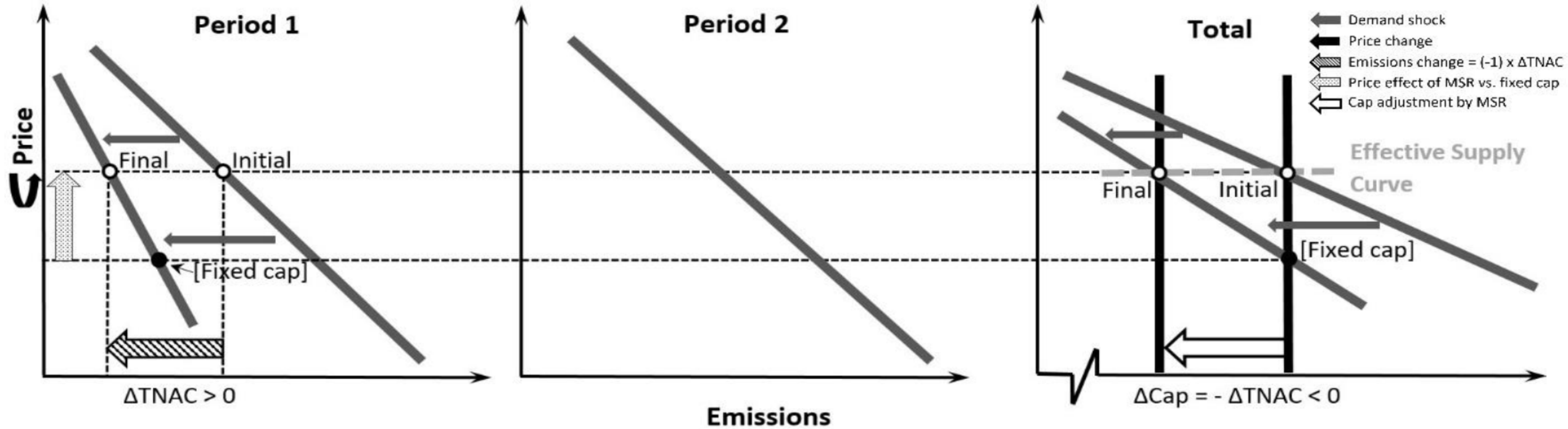


Figure S1: MSR response under proposed rules to an *unanticipated* early shock while the MSR takes in allowances (i.e.  $TNAC > 833$  million). *Note:* The figure sketches allowance demand in the periods before (left) and after (middle) the  $TNAC$  drops below 833 million and total demand with the total cap (right). Allowance prices are connected through intertemporal arbitrage with a zero interest rate. Adapted from Perino et al. (2021).

# MSR AMPLIFIES ANTICIPATED SHOCKS

*in particular if 1,024 – 833 million range is implemented*

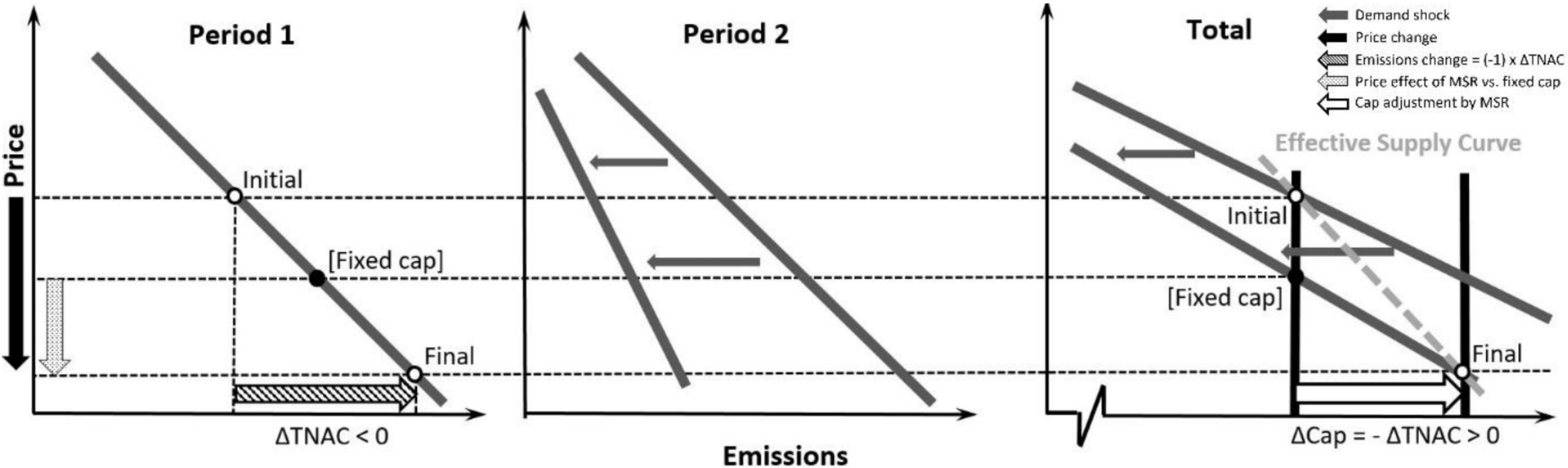


Figure S2: MSR response under proposed rules to an *anticipated* late shock occurring after the MSR has stopped taking in allowances (i.e. TNAC < 833 million). Adapted from Perino et al. (2021).

Source: Perino, Willner, Quemin & Pahle (2022)