Policy Brief - The EU ETS Market Stability Reserve: Does it Stabilize or Destabilize the Market?

Grischa Perino, Universität Hamburg
Maximilian Willner, Universität Hamburg
Simon Quemin, Université Paris-Dauphine (CEC) & Potsdam-Institute for Climate Impact Research (PIK) & London School of Economics and Political Science (GRI)
Michael Pahle, Potsdam-Institute for Climate Impact Research (PIK)

Abstract

The Market Stability Reserve (MSR) was introduced into the EU Emissions Trading System to address an historical surplus of emission allowances and to improve the system's resilience to major shocks through automatic adjustments to the supply of allowances. We summarize the main strengths and weaknesses of the MSR and identify when it stabilizes the market as intended, as well as when it is destabilizing. We argue that recently proposed design changes strengthen both its stabilizing and destabilizing effects. We conclude that a price-based supply adjustment mechanism would help to address the main shortcomings rooted in the banking-based approach of the current MSR design.

JEL Codes: Q58; Q54; D47

INTRODUCTION

The European Union Emissions Trading System (EU ETS) has been a centerpiece of EU climate policy since its launch in 2005 and it is currently scheduled for a general overhaul to make it consistent with the EU's climate target for 2030 of decreasing emissions by 55 percent (Regulation (EU) 2021/1119, Article 4(1)). The EU ETS Market Stability Reserve (MSR) adjusts the supply of emission allowances by withholding them from auctions, storing them, and either releasing or canceling them later. The MSR started operations in 2019 and is tasked with addressing imbalances between the demand and supply of allowances, enhancing synergies with other climate policies such as renewable support schemes and coal phase-outs, and delivering a credible price signal for low-carbon investments (EU 2015, 2018).

This article summarizes the main strengths and weaknesses of the current MSR and assesses the changes proposed to the MSR by the European Commission (EC) as part of the 'Fit-for-55' package (EC, 2021), which overhauls the entire set of EU climate policies to align them with the new 2030 target. In particular, we shed light on when the MSR is likely to stabilize or destabilize the market. We argue that the EC's proposed changes strengthen both its stabilizing and destabilizing effects. We conclude that a price-based supply adjustment mechanism would help to address the shortcomings associated with the MSR's current banking-based approach.

Our discussion is organized as follows. In the next section, we describe the current MSR and the proposed changes in more detail. Then we discuss the strengths and achievements of the MSR, which is followed by a discussion of its shortcomings and risks. The final section presents conclusions and recommendations for improving the MSR.

THE CURRENT MSR AND PROPOSED CHANGES

The MSR has been controversial since its creation. While policy makers have emphasized its purported strengths,[1] economists have identified a number of shortcomings, including increased price volatility, reversal of the effects of climate policies that overlap with the EU ETS, and vulnerability to speculation (see e.g., Perino et al., 2021b; Gerlagh et al., 2021; Quemin & Trotignon, 2021; Tietjen et al., 2021; Willner & Perino, 2022a). This controversy about the MSR highlights the fact that it is not merely a technical detail of the EU ETS but rather a key design feature that has substantial, complex, and potentially counterproductive impacts on emission and price trajectories.

Flexibility mechanisms such as the MSR adjust allowance supply based on market outcomes and thus respond, for example, to the business cycle, technological change, or other climate policies. Indeed, under a fixed emissions cap, uncertainty about such market fundamentals fully translates into price

[1] "The review of the MSR showed that it has fully achieved its objectives, since it began operating in January 2019 […] Moreover, the MSR has so far functioned in a stable and predictable manner." (EC, 2021, Impact Assessment Report, SWD(2021) 601 final, p. 16)

and hence cost uncertainty because the market equilibrium can only move up and down a given vertical allowance supply curve. In principle, flexibility mechanisms allow the policy maker to split the impacts of changing market fundamentals between price responses and adjustments to the cap (i.e., the climate target), and thus to better reflect how society trades off costs against climate benefits. Price-based flexibility mechanisms, such as the cost and emission containment reserves in the U.S. Regional Greenhouse Gas Initiative (RGGI) and the California cap-and-trade scheme, adjust allowance supply based on the allowance price and increase efficiency compared to a fixed-cap scheme or a carbon tax (e.g., Burtraw et al., 2020; Murray et al., 2009). In contrast, the MSR adjusts allowance supply based on the amount of allowances banked by firms for future use, known as the 'total number of allowances in circulation' (TNAC). Specifically, when the TNAC is above a given threshold, the number of allowances auctioned is reduced by a specific share of the TNAC (called the MSR intake rate) and the withheld allowances are shifted to the MSR. The allowances shifted to the MSR are eventually canceled, which results in a tightening of the system's long-run cap on emissions.[2]

[2] While some allowances will be released from the MSR in the future, the total number released is generally independent of changes in market conditions. Hence, at the margin, all allowances shifted to the MSR due to changes in the TNAC will eventually be canceled (see Perino, 2018).

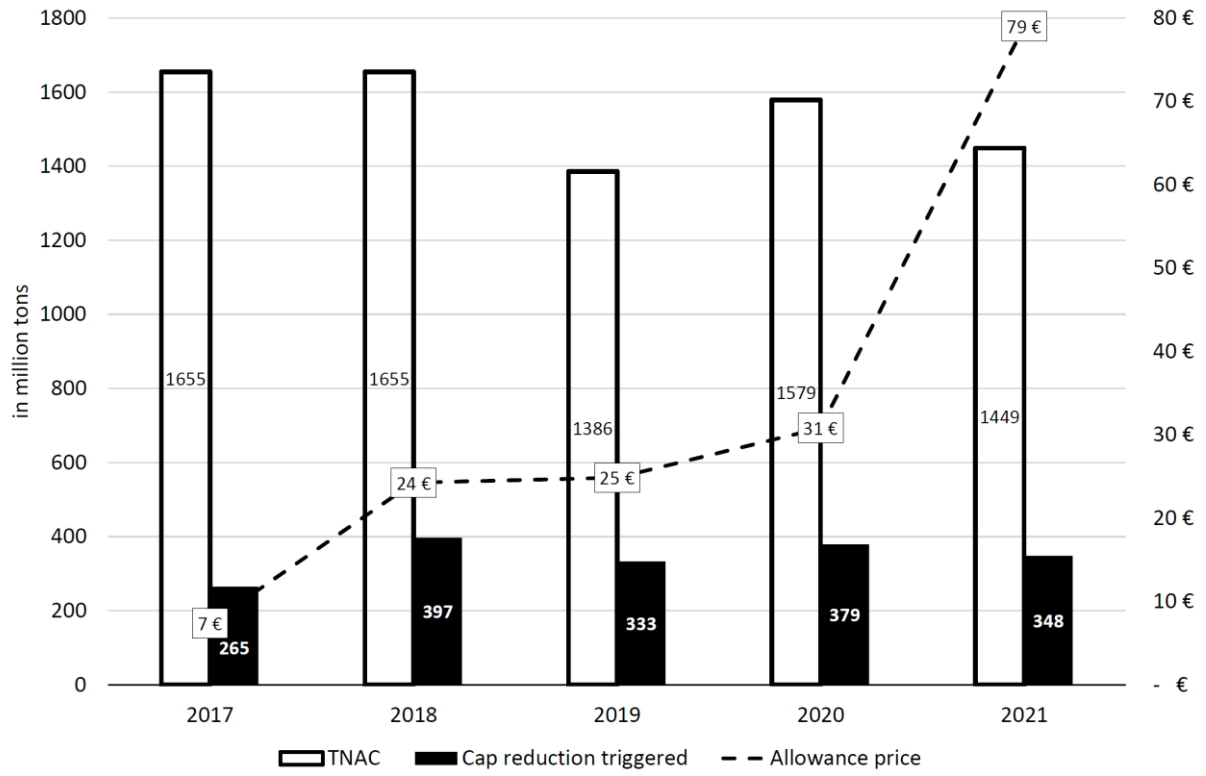

Figure 1 Past MSR activity and key indicators. *Note*: *TNAC* measured on 31st Dec. each year. *Cap reduction triggered* refers to the number of allowances withheld from auctions between 1st September one year later and 31st August two years later. Prices are Intercontinental Exchange (ICE) closing prices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

To illustrate past MSR activity, Figure 1 presents the evolution of the TNAC, the number of allowances that were shifted to the MSR, and trends in the allowance price from 2017 to 2021. The MSR started to withhold allowances in January 2019 based on the TNAC measured at the end of 2017. Figure 1 indicates that the TNAC remained relatively stable while the allowance price increased by an order of magnitude over the same period. On first inspection, the trajectories of the TNAC and allowance price appear to be unrelated, suggesting that they respond differently to changes in 'supply-demand imbalances' (EU 2015, 2018) – or as economists call it: the scarcity of allowances.

Table 1 Design parameters of current and proposed versions of the MSR

	Current MSR	Proposed Changes (EC 2021)

Allowances shifted to MSR (intake rate)	if TNAC > 833 million:
	intake = 24% of TNAC until 2023; 12% thereafter
		if TNAC > 1,096 million:
		intake = 24% of TNAC until 2030; 12% thereafter;
		if 833 million < TNAC < 1,096 million (buffer range):
		intake = TNAC – 833 million

Allowances released from MSR	if TNAC < 400 million: release = 200 million until 2023; 100 million thereafter	
Price-based intervention	100 million allowances are released if allowance price triples for at least six consecutive months relative to two preceding years	
Allowances canceled from MSR (from 2023 onwards)	All MSR holdings in excess of the number of allowances auctioned in the previous year are canceled	All MSR holdings in excess of 400 million allowances are canceled

Table 1 presents the current and proposed MSR rules and parameter values. The EC has proposed two main changes. First, the proposal introduces a buffer range for the TNAC, in which the intake equals the difference between the TNAC and 833 million allowances (rather than being equal to 24% of the TNAC). This change seeks to avoid a 'threshold effect' whereby 200 million allowances are shifted into the MSR if the TNAC marginally exceeds 833 million allowances, but no allowances are shifted if the TNAC is just below this threshold. Second, the proposal requires that the number of allowances held in the MSR be limited to 400 million (currently it is the auctioned volume in the previous year). Both of these changes are aimed at increasing the predictability of interventions.

ADVANTAGES AND ACHIEVEMENTS OF THE CURRENT MSR

Historically, the main rationale for introducing the MSR into the EU ETS was to reduce the surplus of allowances that had accumulated in the past and to increase the system's resilience to future shocks. The surplus was considered to be the main reason for a decade of low allowance prices.[3]

The COVID-19 pandemic tested this resilience to unexpected shocks and the MSR responded as intended (Gerlagh et al., 2020). In fact, the pandemic clearly illustrates the kind of problem the MSR is designed to successfully address; that is, an unanticipated demand shock that occurs when the TNAC is still high enough to trigger an allowance intake by the MSR (see Figure 2).[4] Because such a shock immediately decreases demand for allowances, firms will bank more (i.e., the TNAC increases). Over time, the MSR will partially take in the resulting increase in the TNAC, with cumulative intake rates ranging from 12% up to (but never reaching) 100% depending on when the shock occurs and when the MSR stops taking in allowances. In general, the earlier the shock, the higher the intake. Under the EC proposal, the cumulative intake rate would immediately increase to 100% if the TNAC is between 833 and 1,096 million in at least one future year or in the same year that the shock occurs.[5] This means that the entire shock-induced 'surplus' of allowances would eventually be shifted to the MSR and canceled. Thus, the proposed rule would strengthen the MSR's stabilizing effect on prices in response to unexpected shocks because it adjusts supply in the same direction as the demand shock (see Figure 2).

[3] The surplus accumulated due to the global financial crisis, overlapping climate policies, and imports of international offsets (Koch et al., 2014). Indeed, prices and abatement efforts remained below expectations during this period. This was also the case for most ETSs in North America, such as the RGGI and the California cap-and-trade scheme (Burtraw & Keyes, 2018).

[4] Also see the online appendix.

[5] See the online appendix.

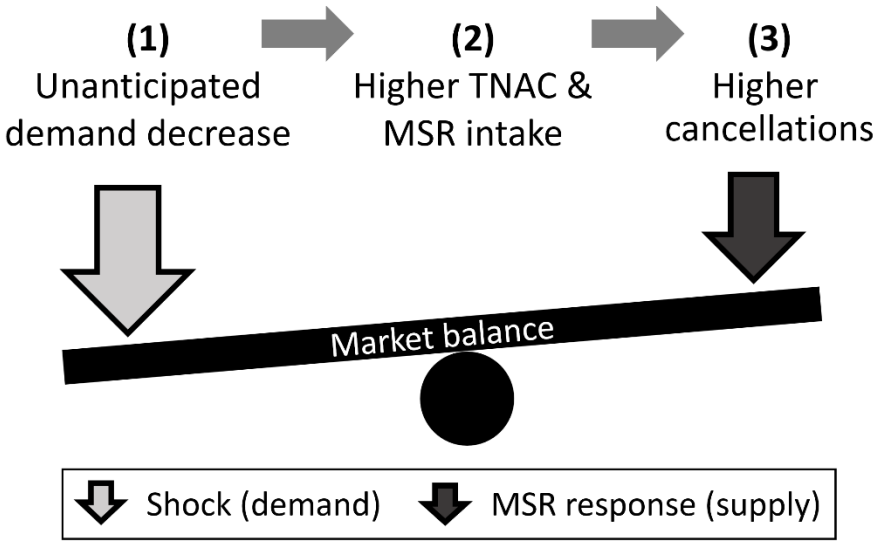

Figure 2 Stabilizing effect of the MSR in the case of an unanticipated shock.

The proposed cumulative intake rate of 100% has direct implications for the effectiveness of overlapping climate policies. That is, to the extent that such policies translate into allowance demand shocks (Perino et al., 2021b), they would trigger a one-to-one reduction in allowance supply, which means the policies would be fully effective in lowering aggregate emissions.

WEAKNESSES AND RISKS OF THE MSR

It is important to emphasize that the same mechanism that shields the EU ETS from sudden demand shocks also leaves it vulnerable to anticipated shocks and speculation. For example, coal phase-outs or technological breakthroughs in low-carbon technologies, which are anticipated and mainly reduce emissions in future years, may *increase* rather than reduce total emissions (Gerlagh et al., 2021; Perino et al., 2021b). That is, if the demand reduction occurs after the MSR has stopped taking in allowances (i.e., once the TNAC has dropped below 833 million), but the change is anticipated during the time that the MSR is still taking in allowances, then the MSR will actually amplify the price response (as shown in Figure 3).[6] This destabilizing outcome occurs because current allowance prices drop, emissions

[6] Also see the online appendix.

increase, and the TNAC contracts. The MSR responds by taking in, and eventually canceling, fewer allowances, thus increasing total supply. Similarly, a tighter long-term emissions cap may increase the cancellation of allowances through the MSR because it increases current prices and the TNAC, and thus the number of allowances cancelled by the MSR (Osorio et al., 2021). The allowance price rally in early 2021 illustrates this point. Starting in autumn 2020, the anticipation of more ambitious EU climate targets and increased activity of financial investors in the allowance market (Reuters et al., 2021) more than offset the low demand for allowances during the partial lockdowns of the first COVID-19 winter. Allowance prices increased in response to the anticipated supply contraction. Indeed, the price increase reduced emissions further and increased the TNAC, and hence cancellations. The MSR response exaggerated the market imbalance caused by the anticipated increase in climate ambition because both the MSR response and the anticipated tighter long-term cap push prices in the same direction (Figure 3 illustrates this for an anticipated demand shock). The EC's proposed changes to the MSR will exacerbate this effect because the cumulative intake rate of 100% increases the MSR's responsiveness to future shocks.

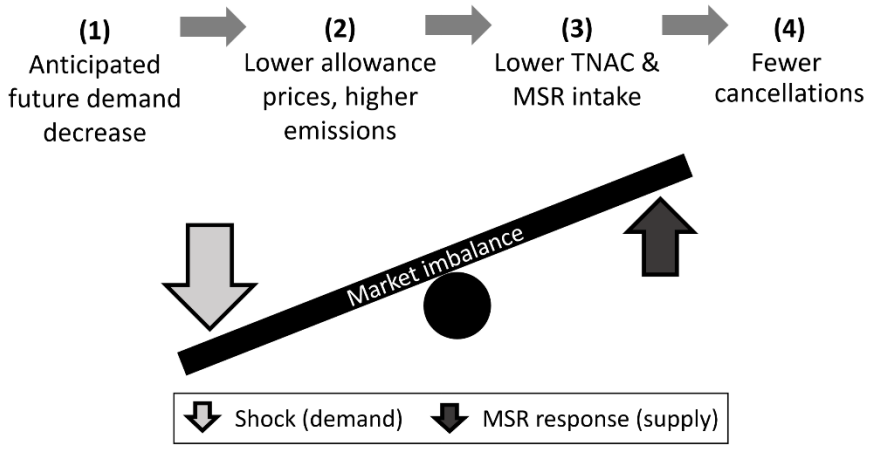

Figure 3 Destabilizing effect of the MSR in the case of an anticipated future shock.

There are other ways in which the MSR may undermine market stability. First, the MSR generates large uncertainty over future allowance supply (Bruninx et al., 2020; Osorio et al., 2021; Quemin & Trotignon, 2021), which allows for the existence of widely diverging beliefs about future prices. Specifically, if allowance prices increase or decrease (for example, due to inaccurate perceptions about

future scarcity) to an extent that affects emissions, then the MSR will adjust future supply in a direction that matches the distorted price signal. This tendency to sustain such self-fulfilling prophecies will become more pronounced under the proposed changes to the MSR because (as discussed above) the cumulative intake rate of 100% makes the MSR more responsive to changes in market outcomes. Second, under the current MSR, the threshold effect when the TNAC reaches 833 million can create multiple equilibria (Gerlagh et al., 2021), which encourages speculation by market participants. The proposed changes would eliminate that problem.

An additional disadvantage of the rules proposed by the EC is that supply-side interventions such as voluntary allowance cancellations (for example, in accordance with Art. 12(4) of Directive 2003/87/EC) would have no impact on total emissions if they occurred while the TNAC was above the intake threshold. Such interventions would merely substitute for automatic cancellations by the MSR (Gerlagh & Heijmans, 2019) and thus would only shift revenue streams rather than reducing total emissions.

SUMMARY AND CONCLUSIONS

The MSR is a flexibility mechanism that adjusts allowance supply in response to allowance banking by firms. We have argued that the MSR is effective at reducing historical allowance surpluses and providing resilience against unanticipated demand shocks. However, we have also shown that it undermines market stability when shifts in demand or supply are anticipated in advance by market participants. Importantly, this implies that the MSR reduces the efficacy of overlapping climate policies, which will clearly play a more important role in the future. Because the EC's proposed changes do not alter the MSR's core mechanisms, they reinforce *both* its desirable and undesirable properties.

This leads us to conclude that in order to address the MSR's shortcomings, the TNAC should no longer be used as the indicator of scarcity. In fact, for anticipated changes in market fundamentals and price changes not connected to (expected) changes in fundamentals, the TNAC-based design of the MSR

leads to interventions that actually run counter to the MSR's objectives.[7] As a result, the MSR is inconsistent in how it balances changes in abatement costs with changes in abatement levels. Directly specifying the allowance supply curve via *price*-based cap adjustments would ensure that the MSR stabilizes all types of shocks. The MSR already allows for limited cap adjustments based on price changes (see Table 1). However, it will most likely never be triggered because it requires a tripling of allowance prices. Thus, we conclude that eliminating the current quantity-based supply adjustments and strengthening the price-based mechanism so it defines the elasticity of an allowance supply function would maintain all the current benefits of the MSR while avoiding most of its shortcomings (Karp & Traeger, 2021; Perino et al., 2021a; Willner & Perino, 2022b).

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[7] See the online appendix for details.

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