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The right way to reform the EU emissions trading system: Alternatives to the market stability reserve

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The right way to reform the EU emissions trading system

Mark A. Andor
Manuel Frondel
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Alternatives to the Market Stability Reserve

RWI Position #65, May 28, 2015

SUMMARY

In the light of persistently low prices for allowances, there is much debate about reforming the EU emissions trading system. Based on a proposal of the European Commission, the EU plans to introduce the so called Market Stability Reserve in 2019: a mechanism that regulates the amount of allowances within the market by temporarily taking some of the allowances into a reserve. The Commission thereby aims at reducing the surplus and securing a higher market price for allowances. An alternative reform proposal is the introduction of a minimum price. This RWI position puts forward a third alternative: retaining the emissions trading system in its original form and reducing the surplus by a one-time adjustment. In 2014, 900 million allowances from the years 2014 to 2016 were back-loaded to be auctioned in the years 2019 and 2020. Instead, these allowances should be deleted. Furthermore, if necessary, the amount of allowances could be constantly decreased by reducing the cap more strongly than planned. Compared with the other reform options, retaining the emissions trading system in its original form has two major advantages: first, politically driven interventions are minimized and, second, free market prices exhibit a stabilizing effect for fluctuations caused by the business cycle.

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1. INTRODUCTION: A MODEL SYSTEM WITH A SURPLUS PROBLEM¹

Emission trading systems are becoming increasingly popular. Ten years after the start of the emission trading system in the European Union in 2005, there are now 17 different systems on four continents, according to the International Carbon Action Partnership (ICAP 2015). These regions produce a total of 40% of the worldwide Gross Domestic Product (GDP). Just recently, South Korea introduced a national emission trading system in January 2015, and China is planning to start one in 2016.

The EU emission trading system is by far the largest of the systems existing today, and is considered to be the central instrument for the reduction of greenhouse gas emission in Europe. This system measures the generation of around 45% of greenhouse gasses in the European Union (EK 2013). With the help of the trade of emission allowances it is hoped to reduce carbon dioxide emissions by 20% from 1990 levels by 2020, and 30% by 2030. A decision was made to annually lower the EU's maximum limit, the so-called cap, by 1.74% from 2013 to 2020 (EP 2010), followed by an increased reduction of 2.2% in the years thereafter (ER2014).

Emission trading in its present form has been questioned many times because of the (unfounded) argument that it has no impact on climate protection.

In spite of serving as a flagship for other systems, the strong deterioration of emission certificate prices from the highest level of 30€/t CO₂ reached in April 2006 has led to controversial discussions surrounding the EU climate protection instrument. Emission trading in its present form has been questioned many times because of the (unfounded) argument that it has no impact on climate protection and is therefore ineffective. This argument is predicated on stagnating CO₂ prices, which have fluctuated between 3 and 8€/t CO₂ for years because of high surpluses of unused allowances (Figure 1).

Indeed, the number of surplus allowances in the beginning of the third trading period in 2013 added up to around 2 billion (EK 2015). The surplus shows the difference between available emission rights (supply) and verified emissions (demand). The European Commission (EC 2014a) has therefore decided on a short-term intervention in emission trading. The planned auction of 900 million allowances for the years 2014 to 2016 was postponed until 2019 and 2020, a procedural maneuver commonly known as backloading.

¹ This RWI Position is an updated English version of the RWI Position #64 „Reform des EU-Emissionshandels, aber richtig!“. We would like to thank Christoph M. Schmidt, Katja Fels, and Nils aus dem Moore for critical remarks.

Figure 1

Allowance prices in the EU emissions trading system (January 2012 – January 2015)



Source: EEX (2015).

However, because this measure only temporarily limits the amount of emission permits without solving the structural problem of certificate surpluses and their low prices, the European Commission (EC 2014b) is currently preparing the introduction of a Market Stability Reserve. According to the European Commission's proposal, this was planned to commence with the start of the 4th trading period in 2021. After negotiations with the European Parliament, the reform is planned to come into effect in 2019 (EP 2015). The idea is to regularly take allowances off the market and hold them in reserve when the number of surplus emission allowances goes above a certain maximum limit. Conversely, allowances will be taken out of the reserve and put on the market when the number of surplus emission allowance goes below a certain minimum limit. The goal of this intervention is to stabilize the certificate prices on a higher level than the current one.

An alternative reform proposal, and one supported by the Advisory Council on the Environment (SRU 2011: 255), is the introduction of a minimum price or a price corridor (Fell and Morgenstern 2010; Wood and Jotzo 2011). The containment of price volatility to the bottom range should lead to an at least small amount of security for investments in prevention technologies (acatech et al 2015: 19; Gräll und Taschini 2011). This RWI Position discusses both proposals and introduces a third variant, favored by the authors: the maintenance of the current system in its purest form, combined with a one-time deletion of all the backloaded allowances, and an additional opportunity to reduce the maximum admissible amount of emissions more strongly than has been the case so far.

2. WHERE IS THE HIGH SURPLUS OF EMISSIONS COMING FROM?

A prerequisite to the discussion of various reform approaches is an understanding of where the high surplus of allowances is coming from. According to environmental economic theory, emission trading is a very cost effective instrument to reach a specified short-term environmental goal. This is the reason why the EU countries established the Emission Trade System (ETS) in 2005 as the central European climate protection instrument. Beside the primary goal of a cost effective reduction of greenhouse gases, emission trading is supposed to have a directional effect: businesses focus more on technologies that are lower in CO₂ emissions, and receive more incentive to invest in them, because of the pricing of emissions.

Owning of an emission certificate authorizes a business obligated to participate in the EU ETS to emit a ton of CO₂ or an equivalent of a different greenhouse gas.² As a rule, the rights can be freely traded. Supply and demand of allowances dictates how much they cost. Since its inception, trade flow has developed on the stock market to the point that the adjusted price is used as reference. At the end of each year, all the businesses obligated to participate in emission trade are required to show their allowances that cover the actual amount of emissions emitted; otherwise they may incur a penalty. In 2013, the charge was 100€ for each missing certificate. The cost is adjusted each year, taking into account the inflation rate (EK 2013). Paying the penalty does not acquit anyone from the obligation of buying the missing allowances. Because these must still be purchased in addition to paying the punitive charge, the charge does not imply a limit for allowance prices, as is often mistakenly claimed.

In their climate protection efforts, businesses orient themselves with the market price for the emission of greenhouse gases; if it is higher than the CO₂ marginal abatement cost, e.g. the costs that occur when a CO₂ unit is reduced more than before, they invest in low-emission technologies. If the market price is below the cost, the investments are waived and more allowances are bought instead. In the past few months, the certificate price has hovered between 6 and 8€/t. This comparatively low price can be traced to a very high surplus of allowances on the market. This type of surplus arises when the sum of mass emissions covered by the allowances is higher than the actual and/or verified CO₂ emissions in a given year.

There are many reasons why pollution emitters presently have a vast number of unused allowances at their disposal. One reason is that there are unexpectedly low emissions of CO₂ as an outcome of the ongoing economic consequences of the finance and debt crisis of 2008.

² Although only CO₂ will hereafter be mentioned throughout the document, the CO₂ equivalents are always implicated. ETS encompasses Laughing Gas (N₂O) and Hydrofluorocarbon (HFC).

Another possible cause is the strong production of green energy in Europe. The commission as well as single EU members have formulated goals for renewable energy and have introduced suitable development systems having a regulatory function that overlaps with the emission trade. For example, the fixed energy feed-in tariffs for renewable energy technologies in Germany and the production of CO₂-free green energy made possible by those tariffs both lead to a reduced demand for emission allowances in the German energy sector. The price for allowances goes down, so that market participants of other sectors or countries can secure the allowances more cost effectively than they could in a situation in which less green energy was produced. Because of the coexistence with emission trading, the promotion of renewable energies merely relocates emissions, it does not avoid them (BMWA 2004).

National measures that aim to prevent emissions capped by the emission trade do not lead to any extra reduction of emissions but rather relocate them.

The same argument goes for all measures that aim to prevent emissions capped by the emission trade, such as the national carbon tax in Great Britain or energy efficiency policies. In order to eliminate these counteracting effects, the sponsoring regimes in the EU will primarily have to promote harmonization amongst each other. Although the EU Commission did a good job of anticipating the emission-reducing effects of energy generated from renewable sources and including them in the fixing of the emission cap, nobody foresaw the strong development of renewable energies in certain countries, Germany amongst them (Fronzel et al. 2015), so that the total produced amount of green energy is slightly above the projected amount, resulting in corresponding price-sinking effects (Agora Energiewende 2015).

The same “sinking certificate price” effects result from credit vouchers that are issued in international climate projects. It was agreed on that so-called Clean Development Mechanisms (CDM) and Joint implementation (JI) would be taken into account for the EU emission trade. Thus, businesses can obtain credit vouchers (Certified Emission Reductions, CERs) through the CDM measures in developing countries – such as electrification projects with solar panels – when they adopt and finance the emission-lowering measures there³. These credit vouchers are equivalent to the legal right to emit one ton of CO₂ in the EU. Credit vouchers from JI measures (called Emission Reduction Units, ERUs) are granted as soon as a business of an industrialized country executes an emission reducing project in a partnering country that has also signed the Kyoto Protocol. The goal of this measure is

³ A total of close to 7,600 CDM projects have been registered that have lead to the issuance of 1,5 bn CERs. Additionally, a total of 872 Mio. ERUs have been granted (UNFCCC 2015a,b).

to facilitate growth impulses in developing countries, and to help the industrialized countries reach their emission goals more flexibly and cost efficiently. It is ultimately irrelevant for the global climate whether greenhouse gases are prevented inside or outside the EU.

Since questionable projects were often supported in the past, and because there was an over-supply of projects that justify the issuance of CERs and ERUs in emission trade, stronger regulations and stricter requirements for new projects were made. This is how politics cut the number of JI and CDM allowances that could be granted by 2020 to half of the emissions to be prevented between 2008 and 2020; this corresponds to about 1.6 billion allowances⁴. From the beginning of 2013, allowances from reforestation projects and credit vouchers for the decomposition of hydrofluorocarbon (HFC) and dinitrogen monoxide (N₂O) were no longer permitted (BMU 2015)⁵.

Emission allowances for projects that had already been granted can still be used for the most part, however, because surplus allowances from the second trading period (2008-2012) could be transferred into the 3rd Period. The Institute for Applied Ecology (Öko-Institut) traces this existing surplus of around 2 billion allowances mainly to the crediting of CERs and ERUs. According to them, this provided around 1.5 billion excess allowances. The remaining quarter of the surplus comes mostly from the effects of the economic crisis at the end of the last decade.

3. MARKET STABILITY RESERVE: LONG WAITING TIME, LOW EFFECTIVENESS

Critics say that because of these massive certificate surpluses, the missing scarcity signals will lead to insufficient investments in low-emission technologies. In order to strengthen the incentives for investment, numerous proposals for reforming the EU emissions trade were submitted, among them the introduction of a rule-based Market Stability Reserve (EK 2014b), to regulate the amount of yearly auctioned allowances. Just recently, negotiations between the European Parliament and the European Council resulted in the decision to introduce the Market Stability Reserve in 2019.

The Commission's preferred measure has two goals: the short-term reduction of the large structural surplus, and the medium to long-term stabilization of CO₂ prices. For this purpose, the cumulative certificate surplus should be calculated once annually. If it exceeds

4 According to the EU's supplementary guidelines, Germany is permitted to credit up to 22% of the issued allowances from third countries, thereby making available around 450 million allowances that can be acquired through the implementation of CDM or JI measures to German plant operators during the third period trade.

5 The lion's share of the CDM allowances that have received credit in EU emission trade (58%) comes from HFC projects (prevention costs circa 50 Cent/t CO₂); a further 24% comes from similarly supported N₂O projects (prevention costs, circa 1 Euro/t CO₂) (Agora Energiewende 2015: 9). HFC and N₂O are many more times dangerous for the climate than CO₂, but can be decomposed into CO₂ at very low costs. Whereas this is legally required in industrial countries, in emerging markets in China, India, South Korea and Mexico, this is done through CDM projects. The resulting very low-cost allowances are very controversial for this reason.

the upper threshold (according to the Commission's concept - 833 Million) at the end of year t , the amount of auctioned allowances in January of year $t+2$ would be reduced by 12%, or at least 100 million. This means that it could take up to a year before this mechanism shows any effect⁶. The allowances that are not auctioned off would be put into the Market Stability Reserve. But if the cumulative surplus falls below the lower threshold, which should be 400 million according to the Commission proposal, then an additional 100 million allowances could be put up for auction at the next possible time (DEHSt 2014).

The Market Stability Reserve, which according to the first Commission proposal would have not been implemented before 2021, will only lead to a gradual reduction of the surplus. According to the estimates of Agora Energiewende (2015), the surplus would have risen to 3.8 billion allowances by 2020 if the Market Stability Reserve were to be introduced only in 2021 instead of 2019 (Figure 2). This means that the surplus would not have been expected to move within the defined interval until 2030, at the earliest. That is, a significant price increase compared to the actual level would not have been expected before 2025 (Agora Energiewende 2015).

**Apparently, the German federal government no longer
assumes that an early and effective begin
of the Market Stability Reserve can be reached.**

Previously, the German government negotiated to ensure that the Market Stability Reserve implementation gets moved up to 2017, so that the first reduction of the auctionable allowances could follow in 2018 (Gibis, Weiß und Kühleis 2015: 28). Moreover, Berlin argued for the transfer of the allowances that were backloaded into the Market Stability Reserve from 2014 to 2016 and not to bring them out into the market in 2019 and 2020, as foreseen. Apparently, the federal government no longer assumes that an early and effective begin to the Market Stability Reserve can be reached. In order to reach the goal of reducing greenhouse gases by 40% by 2020, the Federal Economic Ministry presented a cornerstone paper on the reform of the energy market in March 2015 that proposes an additional instrument for emission reduction (BMWi 2015)⁷.

In addition to the extremely long time delays before the Market Stability Reserve would have an impact, there are general doubts of its effectiveness. Koch et al. (2014:683) criticize that the Market Stability Reserve may not be able to establish the desired price level based on the slight effect of demand shocks on certificate prices. The authors argue that

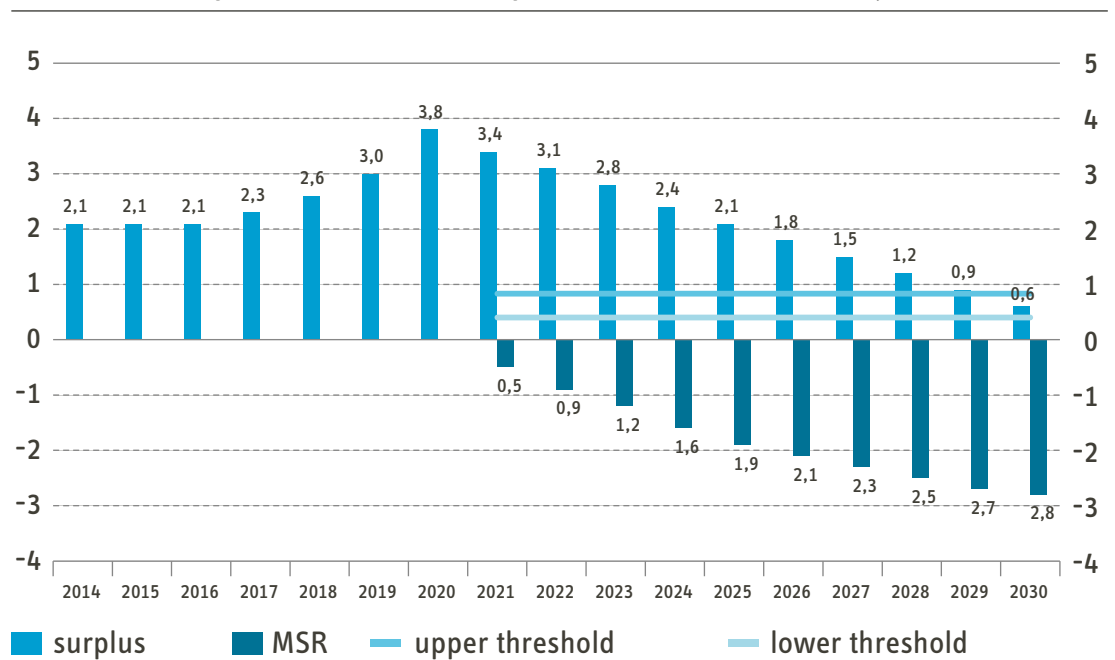
⁶ The time delay is actually shorter, since the yearly verified emissions are not published until May of the following year (Gibis, Weiß und Kühleis 2015: 29).

⁷ According to the cornerstone paper, all power plants that are older than 20 years and produce energy with high emissions per gigawatt must surrender additional ETS allowances for emissions exceeding the allowed amount. These allowances are then abandoned. The allowed amount will be measured in a way in which 90% of fossil energy producers in Germany will not have to pay for this national contribution to the environment.

either a fixed minimum price for allowances or a price corridor are more suitable (Koch et al. 2014: 684). This would supplement the quantity-based instrument for emission trade with a price component.

Figure 2

Potential development of allowance surplus with the Market Stability Reserve (MSR)



Source: Agora Energiewende (2015).

4. PRICE CORRIDOR AND EMISSION TRADE IN ITS PUREST FORM: THE BETTER ALTERNATIVES

The reform proposal presented by Koch et al. is to fix a minimum price or price corridor. A minimum price would prevent the market price from falling below a previously defined level, should the demand for allowances fall. In this case, the supply surplus would then be taken from the market by an independent institution, like a European certificate bank. Its task would be to stabilize emission trading through this action.

A minimum price ultimately acts like a reduction of the upper emission limit. However, other measures can also accomplish the same thing. Some examples of that are permanently deleting the surplus allowances or tightening the emission reduction factor that reduces the amount of emission permitted each year. But minimum prices develop their

impact only when there is a market price that is lower than the minimum price would be. In this case, a minimum price would act like a tax in which the amount is determined by the difference between the minimum price and the market price.

An expanded variant would be the introduction of a price corridor for the traded allowances to reduce the uncertainty of the market participants (Koch et al 2014: 678). In this way, the certificate prices – as well as the abatement costs – would have a range with a fixed upper margin and a fixed lower margin, to be determined by policy. An essential feature of the price corridor is that the existence of a maximum price, which emerges with high demand and great scarcity, leads to an emission level that exceeds the previously fixed upper margin. But since the price now cannot exceed the previously laid threshold, businesses will not make further prevention efforts when abatement costs are over the thresholds; instead, they will demand allowances. If the gap between demand and supply cannot be closed through higher prices, then more allowances will need to be made available at a fixed price. As a result, maximum price functions like an increase of the permitted upper margin.

A third reform variant would be to leave the allowance trade system in its purest form and to correct the undesirable developments through a one-time intervention.

The narrower the price corridor for allowance trade is chosen, e.g. the smaller the difference between the lower and upper margins can be made, the more it will look like a tax. Conversely, the wider the corridor, the more volatile the allowance will be and the more the instrument will look like allowance trade in its purest form.

A third reform variant would be to leave the allowance trade in its purest form and to correct the undesirable developments, like the high allowance surplus, through a one-time intervention. To reduce the surplus of allowances that are currently dominating the market, there could be a one-time intervention in which all the 900 million allowances that are set to come back out on the market at the end of the third trading period according to the backloading decision are deleted once and for all. If the price level rises insignificantly, the allowance upper margin could be reduced even more than it is already planned for the fourth trading period. In contrast to the lowest-price or the price-corridor reforms, the price would be decided exclusively through supply and demand.

The quintessentially practical advantage to a continuation of a pure allowance trade without price restrictions is that it would stabilize the economic situation: low price levels for allowance certificates that also soften the energy prices could provide a relief for the

economy and consumers in hard times. In contrast, during expansive times and booms, high CO₂ prices have the potential to put a damper on the economy and help keep it from overheating.

In contrast, a price corridor would lead to a rise in the cost burden for businesses during a recession, because an allowance price that cannot go below the minimum level results in greater burdens for businesses than in situations in which the price may sink to zero. Conversely, the potential economic dampening effect would limit higher allowance prices because of the upper price margin (cap).

A low price margin could be abused as a political tool. Indeed, the political desire for rising income could lead to a steadily rising minimum price and continual intervention in allowance trading. This is all the more true, since there would be no natural upper limit for political price interventions because of the missing knowledge of what the “right price” for CO₂ could be.

Even the market stability reserve favored by the Commission is not free from politically motivated interventions. It is absolutely conceivable that especially the upper limit at which allowances are taken from the market and put in the reserve would be the object of continual political intervention attempts to influence the allowance price.

The insecurities that would result from discretionary, and usually short-term, political interventions may have very negative effects on the innovative behavior of businesses and therefore on the emission of greenhouse gases: each intervention in the market mechanism of emission trading would entail more uncertainty, particularly about the future amounts of allowances that are available. These contain the risk of negative effects on investing in emission prevention measures, which typically have to be planned in the long-term.

5. RECOMMENDATION OF ACTION

Low prices are not at all an indication that the allowance trade is functioning defectively. They are more likely a sign that the upper allowance limit is not set low enough, and that the emission allowances are subsequently given away too generously, or that the prevention costs were lower than expected.

Indeed, both cases apply to the past. At the end of 2013, the surplus on the market was numbered at 2.2 billion emission allowances (Gibis, Weiß, and Kühleis 2015: 26). A large part of this surplus (about 1.5 billion allowances) can be traced back to the credit vouchers from international climate projects, according to the Institute for Applied Ecology (Öko-Institut 2013). These were supposed to facilitate the development of cost-effective emission reduction potentials outside Europe, while at the same time contributing to technology transfer to give other countries growth impulses.

In the past, however, there were often questionable projects being supported in some of the developing countries, such as the conversion of the very harmful greenhouse gas hydrofluorocarbon (HFC) and dinitrogen monoxide (laughing gas) into the less harmful CO₂. This procedure is prescribed regulatory law and a standard in industrial countries and therefore does not count as an emissions reducing measure. Businesses in developing countries were able to acquire favorable allowances in this way. Since 2013, no more vouchers for these or similar projects have been issued. Additionally, the number of creditable vouchers valid until 2020 has been limited to about half of the agreed-upon reduction of emissions from 2008 to 2020. Those allowances from projects what were already approved, however, can still be used for the most part.

Instead of hastily deciding in favor of a permanently installed mechanism for market interventions, even the discussion of deleting 900 million allowances could have an effect on prices.

The previously mentioned planned adaptations to the system, however, have had as little to do with leading to a reduction of the surplus emission allowances as has the backloading that was decided in 2014, i.e. the delay in the auctioning off of 900 million surplus allowances from 2014 to 2016 until 2019 and 2020. The adaptations can only contribute to preventing the surplus from growing more. This is why the European Commission (EC 2014b) is now preparing the introduction of a market stability reserve, which many are hoping will stabilize the allowance price to a price higher than the present one. Given the reform plans, this would not start until a delay of several years, and it would show neither significant intensive scarcity in the short-term, nor a rise in the allowance price. Add to that the general doubt of the effectiveness of the instrument.

After weighing the three reform alternatives – the market stability reserve, the introduction of a low price margin or price corridor, as well as the continuation of the emission trade after a corrective measure – this RWI position paper comes to the conclusion that it is best to recommend leaving the emission trade in its purest form. The mistakes of the past, especially the excessive crediting of vouchers for questionable projects, should be corrected with a one-time intervention, irretrievably deleting the 900 million allowance certificates from the backloading decision.

Instead of hastily deciding in favor of a permanently installed mechanism for market interventions, albeit rule-based, in the form of a market stability reserve that will not show its effectiveness until years later, even the discussion of deleting 900 million allowances could have an effect on CO₂ prices. The price effect would get even stronger the plainer it becomes that the deletion will really come to pass. If it is the will of policy-makers to stabilize the price even further, then the upper margin could be lowered in the fourth period to less than the current 2.2% per year, starting 2021.

In any case, any reform made because of potential carbon leakage effects should not be conceived such that the CO₂ prices increase too dramatically. Otherwise, European countries may find themselves importing energy and emission intensive products, instead of producing them themselves. This would have a negative effect on climate goals: after all, the world-wide amount of emissions would not be reduced if energy intensive industrial businesses emigrated to non-EU countries.

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