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CO2 emissions trading vs. CO2 tax

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ANALYSIS

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Contents

How to bring down CO2 emissions: a comparison of two approaches

1 Introduction

Combating climate change and environmental degradation requires mechanisms to reduce CO2 emissions. Over four-fifths of global energy production is based on fossil energy sources, and during 2018, the usage of fossil resources such as natural gas, coal and oil increased further.[1] When such resources are burned, they emit carbon dioxide (CO2) as part of the combustion process – one of the greenhouse gases responsible for climate change. The total extent of the impact of climate change is not yet known, but it appears that the harms from additional CO2 emissions will outweigh the benefits derived from using these fossil energy sources.

It makes economic sense to charge the costs of preventing or cleaning up pollution to the emitters (the "polluter pays" principle)[2]. Otherwise, they would not incur any costs for the damage they cause to goods such as the environment or the climate, meaning that such costs would have to be borne by the general public and future generations.[3]

When implementing the "polluter pays" principle in climate protection regulations, CO2 is assigned a price to give emitters an incentive to lower their CO2 emissions. The price reflects the right to emit CO2, which had no economic value prior to the introduction of such taxes or emission allowances. Anybody could emit unlimited quantities of CO2. In this sense, the parties causing environmental damage had no incentive to internalise the costs of external effects caused by greenhouse gas emissions. State intervention was required for markets to function efficiently and to ensure that emitters of CO2 paid an appropriate price for doing so.

Each year, about 9.6 tonnes of CO2 per capita are emitted in Germany.[4] Most of these emissions are a result of the burning of fossil resources, with about 40 percent of all greenhouse gas emissions resulting from the burning of lignite and hard coal to generate electricity. The exit from coal-based electricity generation has already begun in Germany, with the last German hard coal mine having been closed down at the end of 2018. The exit date for lignite is currently being negotiated, and no new open-cast mines are being built.

A further 40 percent of emissions are a result of burning fossil fuels to heat buildings, an area where modern heating plants and better heat insulation can help reduce emissions. A different situation presents itself in the transport sector, however. Here, emissions continue to rise. Engines are more frugal than in the past, but the effect of these improvements is undone by the increasing amount of kilometres travelled, as well as increasing numbers of heavier vehicles.

Like many other countries, Germany has undertaken to reduce its greenhouse gas emissions. In 2015, the so-called Paris Agreement was ratified by 196 countries around the world. Its aim is to hold the increase in the global average temperature to well below 2°C above pre-industrial levels by the end of this century while pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels. In addition, the EU member states decided to jointly cut their greenhouse gas emissions by at least 40 percent compared to the 1990 baseline. By 2050, the aim is to reduce the European Union's greenhouse gas emissions by 80 to 95 percent compared to 1990.[5]

In addition, Germany has committed itself to further targets: according to the government's Climate Protection Plan,[6] Germany should become greenhouse gas neutral by the middle of this century. To achieve this, the share of final energy consumption contributed by renewables is intended to increase to 60 percent by 2050. Germany's climate protection measures include levies on the price of electricity (the Renewable Energies Act levy[7] and a tax on electricity) and the so-called energy tax, a fuel tax on diesel and petrol. But on current trends and according to the government's climate protection report[8], Germany will not meet its 2020 emissions targets, namely a 40 percent drop compared to 1990 levels.

Two types of pricing mechanisms for greenhouse gas emissions form a fundamental part of the public debate in Germany: emissions trading systems on the one hand and CO2 taxes or levies on the other. Both models are intended to reduce the attractiveness of CO2 emissions through price incentives, but they are based on two fundamentally different approaches.

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1 Prognos 2005, IEA 2018.

2 Deutscher Bundestag 1971.

3 Weimann 1991, Bergmann/Werry 1989.

4 BMUB 2018, also applies in the following.

5 European Commission.

6 BMU (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety), Climate Protection Plan 2050.

7 *EEG-Umlage* in German *(EEG = Erneuerbare-Energien-Gesetz)*.

8 German Federal Government; Climate Protection Report 2018.

Emissions trading systems target the total amount of emissions (quantity control). Climate protection goals always aim to reduce emissions compared to a reference value. This is why an emissions trading system is the most efficient way to protect the climate. The quantum of the participating sectors' emissions is always known, as is the path along which the emissions are to be cut. Emissions exceeding the total amount are sanctioned.

Conversely, CO2 taxes or levies define a price (surcharge) that is expected to contribute to compliance with the reduction targets indirectly. In other words, emissions trading systems cap total emissions while leaving it up to the market to establish a price. This mechanism leads to the desired result from a climate protection perspective: a reduction in greenhouse gas emissions. In contrast, a CO2 tax regime imposes no limits on emissions, but merely sets a government-defined price per unit of CO2 emitted. It is unclear whether this politically defined price is capable of achieving the aim of a reduction in emissions.[9]

2 CO2 emissions trading

Definition

Emissions trading systems (ETS) are based on the so-called cap-and-trade principle.[10] First, policy makers define the "cap", that is the total amount of carbon dioxide that may be emitted. At the same time, they decide the incremental steps by which this total amount is to be reduced. Both decisions are based on a reduction target that is politically defined. Next, emission allowances – based on the specified total amount – are allocated to the emitters, which these are then able to trade with other market participants.

And herein lies the greatest benefit of emissions trading. The most efficient price level for emitting CO2 is found through trade between emitters instead of being decided by the government. The actual volume of emissions at any given time is known, and it can be reduced over time.

Examples

The European emissions trading system (EU ETS) covers around 11,000 industrial and power plants[11], all of which are obliged to buy emission allowances. Each such allowance permits its owner to emit one tonne of CO2 (= 1 European Union Allowance [EUA]). The number of emission allowances is limited and is reduced annually by a specified amount. Since 2013, the allowances have also applied to nitrous oxide and perfluorinated hydrocarbons (PFCs). Other emissions trading systems can be found in Switzerland, for plants with particularly high greenhouse gas emissions (however, companies that participate in emissions trading in Switzerland are exempted from the CO2 levy)[12], in some US states in the energy sector (Regional Greenhouse Gas Initiative[13]), and in China, also in the energy sector.[14]

Impact

The stepwise reduction of the number of emission allowances that are available creates artificial scarcity, incentivising greenhouse gas emitters to lower their emissions. For instance, if an industrial firm emits less CO2 than it is allowed to, it can sell the surplus certificates to other market participants. Conversely, when a firm does not have sufficient emission rights, it can either buy additional certificates or reduce its emissions. EU ETS participants are also obliged to submit sufficient allowances for the previous year's emissions by 30 April of a given year. Should they fail to do so, they risk being fined.[15]

The aim of an ETS is to drive companies to lower their emissions through their own initiative. The price per tonne of CO2 saved is determined by market supply and demand instead of being decided by policy makers. Price regulation takes place via the various marginal avoidance costs[16] of the respective companies. Companies with low marginal avoidance costs will take steps to lower those emissions and sell their surplus allowances. Conversely, companies with high marginal avoidance costs will tend not to invest in avoiding

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9 The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety published a proposal for CO2 taxation in Germany on 5 July 2019: BMU PM 2019.

10 Commonly used term for the concept underlying the emissions trading system.

11 The following emitters are covered under the EU ETS: electric power stations, as well as plants involved in heat supply, metal production and processing, mineral processing, cellulose and paper processing, chemicals processing and the sequestration and underground storage of carbon dioxide. Since 2012, air travel has also been included in the EU ETS system: it applies to all flights departing from or arriving at an EU member state. EU ETS Directive (2013–2020 and 2021–2030) Art. IV.

12 BAFU e.

13 RGGI.

14 Tamma 2017.

15 DEHSt.

16 Marginal avoidance costs refers to the costs incurred when pollutant emissions are reduced by one additional unit. When cuts in pollutant emissions are hard to achieve, marginal avoidance costs are high. Conversely, when it is comparatively easy to reduce pollutant emissions, the marginal avoidance costs are low.

emissions, instead preferring to buy additional allowances. The price of allowances serves as a market signal for scarcity and ensures that greenhouse gas emissions are lowered and avoided where doing so incurs the lowest cost. This means that emissions trading is a market solution in support of achieving a defined, politically prescribed environmental objective at low economic cost.[17] The consistent reductions in greenhouse gas emissions in the energy sector covered by the EU ETS (by 2015, a reduction of 26.5 percent compared to the 1990 value had been achieved)[18] serves to confirm the system's efficacy.[19]

One of the great benefits of an emissions trading system compared to a CO2 levy is that the maximum quantity of tolerable emissions is known at any given point in time. This is particularly relevant if one takes into account the long-term environmental impact of CO2 (long persistence of greenhouse gases in the atmosphere) and the lacking "hot spot problem"[20] – which is why the allowances approach is said to have higher "ecological accuracy".[21] To combat climate change, the amount of atmospheric greenhouse gases has to be kept at a sustainable level over a long period of time. In addition, an emissions trading system provides the double benefit of limiting CO2 emissions by imposing conditions while also being highly efficient economically because of its incentive effects and price volatility. Emissions trading is market friendly because it achieves accurate scarcity signals through market-based price formation. In contrast, CO2 levies are interpreted as artificial prices defined by the state.[22]

There are frequent calls for a minimum price for the EU ETS because prices are thought to be too low. The so-called "carbon floor price" in the UK is often mentioned as an example, which combines the EUA price and a national CO2 tax to define a minimum price for allowances. Such a national minimum price does indeed help to make allowances more expensive within the country, but it does not make a significant contribution to climate change. When emissions are only avoided at the national level, then the allowances that become available are transferred to other countries, which are then able to increase their emissions. In other words, there is an overcompensation of the national emissions savings.

A European minimum price has also been the subject of public debate. For instance, the French president, Emmanuel Macron, has called for such a minimum price to be introduced.[23] But a minimum price in the context of the EU ETS contradicts free price formation in the market. A minimum price is expected to lead to a general increase in the prices of allowances, which creates an oversupply of allowances not sold at auction. Such allowances could be deleted – thereby lowering the cap – or set aside in a reserve, but this would simply imply shifting emissions to the future.[24] Minimum prices also imply the risk of energy-intensive industries moving to other countries to save costs. When this happens, the net global effect tends to be an increase in CO2 emissions. Furthermore, a minimum price would represent a further government intervention by means of an instrument which is difficult to set at the right level. In contrast to the volume-based cap of the EU ETS, it is not possible to determine a correct minimum price based on EU's climate policy objectives.

Implementation

When an emissions trading system is first launched, a decision has to be made regarding how to provide emitters with their emission allowances. This can either be done by means of an initial allocation or by means of an auction. In the EU ETS, the first emission allowances were assigned at no charge by means of a so-called "grandfathering"[25] approach.[26] One possible effect of choosing such an approach is that companies pay less attention to reducing emissions in the initial phase. At first, they have sufficient allowances, which were given to them based on their past emission levels. In this context, the so-called "windfall profits"[27] enabled by the EU ETS are often criticised. For instance, energy-intensive industries received more energy licenses at no charge than they needed for their actual emissions at the time. Companies were able to sell their surplus allowances at a profit. In the second EU ETS trading period, emission allowances could only be bought, disabling this money-making scheme. Nevertheless, the grandfathering approach makes sense at the time of initial allocations because it helps companies assess and control their emission levels. Existing rights are conserved because there are no immediate costs. For some companies, changing their production processes from one day to the other can be very expensive. Introducing the cap with a delay gives companies enough time to adjust to the new rule.

To further ensure that companies do not leave the EU because of excessively high cost burdens, so-called

17 Endres/Schwarze 1998.

18 Deutscher Bundestag 2018 b.

19 European Environment Agency 2019, European Commission b, European Commission c.

20 No locally or regionally focused constraints on consumption and production processes because of pollutant concentrations. See ifo 2011.

21 Hansmeyer/Schneider 1992, Töpfer 1984, The Guardian 2013.

22 Kloepfer 1998.

23 Elysee.de 2017.

24 Bonn/Voßwinkel 2017.

25 Issuing of emission allowances at no charge.

26 Climate Policy Info Hub.

27 Deutscher Bundestag 2006.

carbon leakage protection has to be implemented as part of emissions trading. It provides energy-intensive industries with electricity price subsidies and free allowances to ensure that they remain competitive within the EU area.

A frequent criticism of the EU ETS holds that allowances are priced too cheaply, making the system ineffective. There are various explanations for the way prices developed. For instance, economic growth – on which the calculations for the second trading period (2008-2012) were based – turned out to be lower than expected. Industrial output was similarly lower than anticipated, lowering demand for electricity and therefore reducing demand for allowances. At the same time, more electricity was generated from renewable sources than had been expected.[28] The EU responded to the low price of allowances through various reforms (so-called backloading resolution)[29] by taking surplus allowances out of the market and transferring them to a market stability reserve intended to offset the difference between supply and demand of allowances.[30]

Burden

In Germany, revenue from auctions of allowances flows to the federal government's Energy and Climate Fund. The fund pays for building renovations that improve their energy efficiency, measures aimed at boosting energy efficiency in trade and industry, and the "Clean Air 2017-2020" programme, among others.[31] But the revenue also offers great potential to be deployed to climate policy measures such as research funding for new climate technologies. It could also be used to benefit citizens directly through a kind of "climate dividend" – in other words, payments to citizens funded through ETS allowance revenues. This would provide a good opportunity to increase the social acceptability of climate protection measures and counteract potential developments like the yellow vest protests.

An update of the EU ETS

Combating rising emissions, especially in the transport sector[32], requires increasing the scope of the EU ETS. Currently, only plants and factories involved in electricity generation, industry, and cement production form part of the EU ETS. Since 2012, it has also included air traffic. Any airline that operates cross-border flights within Europe is obliged to buy allowances. But the transport and building sectors, two of the primary sources of CO2 emissions[33], are not subject to any CO2 levies. Enhancing the scope of the EU ETS to include further industry sectors is possible according to Article 24 of Directive 2003/87. It allows the EU ETS to be expanded to cover other "activities" and "greenhouse gases". Such activities could include transport by vehicles with combustion engines.[34] Such an increase in scope would require approval by the European Commission.[35]

Integrating the transport and building sector into the EU ETS would also enable a Europe-wide, cross-sectoral CO2 price through the linking of other emissions trading systems. In the transport sector, for example, this would set an incentive to develop and supply alternative fuels that are more climate-friendly. It would help stimulate competition around drive systems and energy sources. Other emissions trading systems already cover more sectors than just energy. For instance, the energy, industry, transport and building sectors are covered in California; in New Zealand, it is all emissions with the exception of flight emissions; and in Tokyo, industry and the building sector are both covered.[36]

The current EU ETS is based on a downstream system. This means that the obligation to buy allowances lies with the party consuming the energy source or causing the emissions. In the energy sector, for instance, this means electricity-generating plants. Integrating the transport and building sectors would require using an upstream system because it is almost impossible to apply allowances to building occupants in the building heating market, for example. In upstream systems, the responsibility to buy allowances lies with the importers or producers of energy sources, who would then usually pass on the costs to final consumers, e.g. via refineries and petrol stations in the case of the transport sector.[37]

The transaction costs for trade and monitoring are also significantly lower in upstream systems because fewer participants are obliged to buy allowances. When passing on price signals to consumers, the burden may be higher. Similarly, when pricing CO2 by expanding the EU ETS, the overall burden on consumers has to be taken into account and compensated by reducing other burdens (particularly taxes, duties and levies).

Reforming the EU ETS towards such a solution would also require discussing the new total number of allowances as well as the initial allocations to new market participants.

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28 Agora Energiewende 2015.

29 European Commission d.

30 Article 1 Section 2 Market Stability Reserve resolution (EU) 2015/1814

31 BMWi.

32 Deutscher Bundestag 2018 b.

33 UBA 2019.

34 Nettesheim 2019.

35 In contrast, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) claimed in a June 2019 statement that expanding the EU ETS to include additional sectors was not possible for legal reasons, see BMU PM 2019.

36 Deutscher Bundestag 2018 b.

37 UBA 2013.

3 CO2 tax

Definition

A CO2 tax or CO2 levy[38] means a surcharge on the emission of harmful greenhouse gases, imposed by the government with the aim of achieving a steering effect. In contrast to an emissions trading system, a tax does not guarantee achieving a specific emission reduction target. The price for emitting one unit of CO2 is fixed by law. It can be charged to emitters through a tax on oil, natural gas or electricity, for example. Such a tax causes higher costs for companies as well as for consumers who directly or indirectly emit CO2 in some form. In the transport sector, for example, bus and train trips would become more expensive, as would car journeys. Such a tax would fall under the category of steering taxes (or, in this case, ecological incentive taxes) as the primary function of the tax is not to generate income, but to nudge the behaviour of taxpayers in a certain direction. In the case of a CO2 tax, for example, the purpose of the tax could be to dampen activities that harm the climate or which cause CO2 emissions, such as aeroplane flights.

Setting a CO2 tax or CO2 levy according to the "polluter pays" principle ideally means first quantifying the harm caused per unit of CO2 emitted in order to assess the associated costs. In reality, however, quantifying climate-related damage is difficult because it is not possible to precisely determine all the causes and effects of CO2 emissions.[39] As a result, the tax or levy often takes its lead from the volume of greenhouse gases actually emitted or from the carbon content of the fossil fuels in question. In the transport sector, for example, the tax or levy would either need to be applied to the fossil fuel at its arrival at the refinery or to the resale of fossil fuels. The tax rate (or the quantum of the levy) has to be correctly determined: if it is set too low, emitters will prefer to pay the tax or levy while continuing with high greenhouse gas emissions; but if it is set too high, the estimated costs are higher than needed to reduce emissions, which ultimately impacts the end consumer. This would impose a burden on them in the form of excessive petrol prices, for instance.

The key characteristic of a CO2 tax or CO2 levy is therefore that the price for emitting CO2 is determined at the policy level. This allows companies to base their planning on a set CO2 price. In contrast to an emissions trading system, there is no price volatility in response to supply and demand. However, in contrast to the price, the total amount of emissions allowed is not fixed. The level of total emissions remains unclear. In addition, the tax or levy may have to be adjusted if greenhouse gas emissions are not reduced sufficiently.

Examples

The CO2 levy in Switzerland serves as an example (in addition, the country also has a national emissions trading system).[40] Here, the steering tax applies to fossil fuels such as heating oil, natural gas, coal and petroleum, but not to motor fuels derived from fossil fuels. The levy is calculated individually for each energy source, based on its carbon content, and is charged at the time of purchase. Accordingly, different levies apply to heating oil and natural gas, for example. In addition, there is a statutory maximum rate of 120 francs per tonne of CO2 which may not be exceeded. The levy rate is dynamically decided by the Federal Council, subject to the interim emission reduction targets being achieved. When they are not achieved, the levy rates are increased. This was done in 2014, 2016 and 2018.[41]

Sweden provides another example of a national CO2 tax. The country participates in the EU ETS and has also implemented a CO2 tax for non-EU ETS sectors. Sweden's CO2 emissions are among the lowest in Europe.[42] However, the Swedish energy system in the transport and heating sectors differs from that of Germany. For instance, in Sweden the average population density is 23 people per square kilometre, while it is 236 in Germany – which plays a large role in Sweden's lower energy usage. In addition, the carbon intensity of Sweden's energy supply is significantly lower than Germany's. This is partly a result of Sweden's energy mix, with two thirds of its electricity being contributed by nuclear energy and hydroelectricity. Furthermore, biomass and bio-fuels are widely used as primary fuels in transport and heating.[43] The Swedish CO2 tax applies to all fossil fuels in relation to the CO2 emissions generated during burning, with the calculations being based on the carbon content of the energy source. The tax is charged to companies that sell fuels, which then pass on the tax in the form of higher prices to consumers. Since being introduced in 1991, the tax has been raised incrementally while giving households sufficient time to adjust to the extra cost.[44]

Impact

CO2 taxes have an immediate steering impact – at least from a theoretical perspective – because they come into effect immediately, influencing business and consumer choices through higher prices. But emissions will only drop if consumers are able to adjust their behaviour as intended, as when traffic participants are able to satisfy their mobility needs in a way that emits less CO2, for example. Taxes can also have a dynamic impact on technological innovation. By introducing new, low-emission technologies, companies can save on their taxes. Nevertheless, the fact that adopting

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38 The main difference between a tax and a levy relates to how the revenue generated is used. The price-setting mechanism is the same in both instances.

39 Rusch 1996.

40 BAFU a.

41 ibidem, BAFU b, BAFU c.

42 UBA 2018.

43 Ecofys 2018.

44 Since 2018, there has also been a levy on air travel, but this is already covered under the EU ETS. However, it does not cover industrial process emissions, most agricultural emissions from fertiliser use or ruminants, or emissions from waste incineration, ibidem.

such technologies also incurs costs has to be kept in mind. The business case for reducing emissions by adopting new technologies only makes sense when the resulting cost savings exceed the costs incurred by developing and implementing the technology.[45] The German energy tax illustrates the limited steering effect with regard to new technologies.[46]

From an economics perspective, the CO2 tax does not make the good "emission allowance" any scarcer. Individuals and companies who can afford the tax will continue their emissions unchanged. The financial impact affects mainly those for whom the tax represents a true added burden because they cannot rapidly adjust their behaviour, be it for economic reasons or because of their circumstances. In the public debate, the argument is often put forward that high-income earners are more affected by a CO2 tax or levy because they live in larger houses, drive cars with larger engines and travel more frequently by air.[47] But such households have often already invested in modern heating or building technology in any case. For this reason, CO2 taxes and levies often have a redistributive effect that predominantly and negatively affects rural areas.[48]

Furthermore, the climate-related tax burden is already very high in Germany. On the one hand, Germany's electricity prices are among Europe's highest.[49] Partly, this is as a result of high network charges and the Renewable Energies Act levy.[50] On top of this, there are other environmental taxes with a steering effect regarding CO2 emissions. They include the energy tax, the tax on electricity and the vehicle tax.

Implementation

EU legislation does not stop member states from introducing additional CO2-lowering taxes at a national level.[51] However, a CO2 tax that directly targets emissions would be unconstitutional in Germany. The catalogue of tax types listed under Article 106 of the Basic Law does not mention such a tax. In particular, a CO2 emissions tax is not a consumption tax because it taxes an emission rather than consumption.[52] Based a ruling by the Federal Constitutional Court, the German legislature does not have the power to invent new taxes[53], meaning that a CO2 emissions tax is out of the question – unless the Basic Law is amended with the support of the required majorities in the bicameral legislature, consisting of the Bundestag and the Bundesrat.

The only avenue left open is to raise existing consumption tax rates, in particular the energy tax, in an effort to achieve a greater steering effect. In this case, the good being consumed is the fossil fuel itself, which emits CO2 when it is burned. A variable CO2 price component could be added to the energy tax, its proportion determined by the level of CO2 emissions caused by the corresponding fuel.[54] The energy tax as it stands covers various forms of fossil fuels (petrol, diesel, kerosene, heating oil, heating coal and heating gas) that cause CO2 emissions in the transport and building sectors. The price charged for emitting one tonne of CO2 would then have to be politically decided and adjusted over time as required.

Burden

CO2 taxes and CO2 levies are designed to create a financial liability until behaviour is changed or a technological innovation is introduced. The resulting revenue should not be misappropriated to achieve redistributive goals, much less to boost the state's overall tax take. When introducing a CO2 tax, consumers should be given the benefit of tax cuts in other areas to neutralise the new CO2 tax burden. For example, the tax on electricity could be brought down to the European average level and/or the Renewable Energies Act levy could be scrapped. When the CO2 tax was introduced in Sweden, most other energy taxes were eliminated, while the tax base was expanded.[55] Another option would be to return the additional state revenue to citizens. In Switzerland, for example, two-thirds of revenue from the CO levy is given back to the population in the form of health insurance premiums and via cantonal compensation funds.[56] In France, there is also a CO2 tax in the form of a tax on motor fuels and heating fuels, based on their carbon content. The government defined a trajectory of price increases to achieve certain climate goals by 2030, but this trajectory was accelerated by the Macron administration, leading to higher petrol and especially diesel prices. Ultimately this led to the so-called yellow vest protests, which included violent riots.[57]

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45 Coase 1960.

46 DIW 2019.

47 Quoos/Zinkler 2019.

48 Heckendorf/Nienhaus 2019.

49 Verivox.

50 Through the Renewable Energies Act levy, end consumers pay in the difference between actual electricity prices established on electricity exchanges and the guaranteed fixed tariffs paid to producers of electricity from renewable sources.

51 Kahl/Simmel Würzburg 2017.

52 Regarding the definition of a consumption tax, see Maunz/Dürig/Seiler, 86. EL Januar 2019, GG Art. 106 Rn. 89-92.

53 Ruling by Germany's Federal Constitutional Court dated 3 April 2017 – 2 BvL 6/13 (Nullity of the Nuclear Fuel Act).

54 The Bündnis90/Die Grünen party alliance presented such a taxation concept in July 2019. See Bündnis90/Die Grünen 2019.

55 Pierrehumbert 2016; Zarembra 2019.

56 BAFU d.

57 Welt.de 2018.

4 Summary

	Emissions trading	**CO2 tax**
Core concept	Politically defined CO2 cap, everything else is left to the market	Politically defined financial levy on CO2 emissions
Pros	High ecological accuracy Socially acceptable Economically highly efficient	Opportunity to achieve steering effect
Cons	Risk of delayed impact, especially in the specific sectors Risk of companies passing on the cost – wholly or in part – to citizens	Low ecological accuracy Considerable burden for citizens Economically inefficient

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