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The Tale of the German Gas Price Brake: Why We Need Economic Disaster Preparedness in Times of Overlapping Emergencies

The gas price shock has been a major contributor to inflation in Germany. In this context, Dullien and Weber (2022a, b, c) proposed a two-tier pricing scheme for natural gas in the spring of 2022 that lowers the price for a base quota through a subsidy while maintaining high market prices on the margin. In response to the war in Ukraine, the German government acted swiftly to try to access new sources of gas supply. However, it was not until September that the government decided to dampen the effects of the gas price shock and initiated the so-called “gas price brake” that implements such a two-tier system.

In this article, we argue that the gas price brake makes a critical contribution towards providing relief for households, and alleviates cost pressure on firms while retaining incentives for consumers and businesses to save gas. It is also an important measure for macroeconomic stabilisation and marks a breakthrough in the policy approach to price shocks in systemically significant sectors. The gas price brake establishes that targeted price stabilisation can be an important tool for governments in times of emergencies. Yet, the delay in responding to the price shock meant that the speed of policy implementation had to take priority over everything else and that help came at a time when the shock had already percolated through the whole economy. Our times of overlapping emergencies require disaster preparedness in eco-

nomic policymaking for governments to be able to react to sectoral shocks without delay (Weber et al., 2022).

The threat of gas shortages and the price shock: Germany's heavy reliance on gas

Russia's war against Ukraine has derailed the European energy system, with Germany hit particularly hard. While Germany was importing large amounts of oil and coal from Russia,¹ Europe and Germany were most dependent on Russian natural gas imports. Germany is responsible for around a quarter of all gas consumption in the EU (Ritchie et al. 2022). According to Destatis (2022), 95% of the roughly 905 TWh natural gas that was consumed in Germany per year is imported, of which 55% came from Russia in 2021. The German state could have used the opportunity of low or even negative borrowing rates in the years before the pandemic to create a green energy infrastructure and pioneer a green transition. Instead of leading the way to tackle climate change, the Merkel government prioritised a balanced budget. Locked into fossil fuels, the high dependency on Russian gas became a serious cost burden to key German industries and about half of German households who use natural gas for heating. With the onset of the crisis, the impetus in Germany was put on reducing gas consumption while finding substitutes for Russian gas on the world market and building a new liquefied natural gas infrastructure.

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The gas crisis has put a dual pressure on the German economy: the looming threat of physical gas shortages as well as an enormous cost pressure following from price shocks induced by the turmoil on the energy markets. In parallel to natural gas, oil and electricity also experienced significant price increases. This had major implications for overall inflation and macroeconomic stability. Of the 10.4% headline inflation in October 2022, 4.6 percentage points reflect the cost increase for energy and fuel consumption (Endres and Tober, 2022). The contribution of energy and fuels is even larger if we also account for indirect effects that result from the cost-

¹ According to Destatis, 45.2% of German oil imports came from Russia in 2021 (27,741 tonnes). In 2020, according to the BDEW (2022b), 45% of German imports of black coal came from Russia.

push impact of systemically significant prices throughout the industrial production network.²

In Germany, the average price of gas for households increased more than threefold from 6.11 cents per kWh in the first quarter of 2021 to an average of 20.04 cents per kWh in the fourth quarter of 2022, even though the government eliminated the value added tax of 7% (BDEW, 2022a). Wholesale gas prices have increased even more dramatically. EU Dutch TTF rose from €4.77/MWh on 31 March 2021 to well above €150/MWh from July to October 2022, indicating additional price pressure.

Energy-induced inflation hits people with less savings and financial flexibility the hardest. Households in the lower income deciles are particularly affected as they spend a larger share of their income on essentials like energy, food and transportation (Endres and Tober, 2022). But the gas price shock also overburdens middle-class households.³ Prices have been too high in relation to household income way into the middle of the income distribution while demand of energy is relatively inelastic. Endres and Tober (2022) point out that the energy-driven inflation that Germany has experienced has significant distributional consequences. While a family with two children in the lower income deciles experienced inflation of 11.8%, singles in the higher income deciles faced an inflation of only 8.4%.

In a time when many people were pushed to the limit by the price explosion in essentials like gas, fear of social unrest emerged in German policy discussions. Demonstrations for immediate relief packages (Tagesspiegel, 2022), a run on consumer centres (Zeit, 2022a) and an increasing fear of being overburdened by regular bills (WSI, 2022) are just some of the signs that large shares of the population have felt threatened by energy insecurity. High gas prices have also figured prominently in demonstrations organised by right wing groups in many cities in autumn 2022 (Tagesschau, 2022).

Energy-intensive companies provide basic inputs at the beginning of value chains. Price increases of 300% to 400% compared to pre-crisis levels have been a reality for many industrial firms and can potentially under-

mine the competitiveness of energy-intensive industries (PWC, 2022; Heymann, 2022). The Deutsche Bundesbank (2022a) went as far as to warn that the gas price crisis could mark the beginning of an accelerated deindustrialisation in Germany as key industries could move to countries that provide a cheaper and more secure energy supply. If such German companies decided to move production elsewhere in response to the energy crisis, it could imply the destruction of thousands of formerly secure and well-paid jobs in the German industrial sector (Hüther, 2022; Die Zeit, 2022b). It could also mean a setback for green reindustrialisation as a lot of industrial capacity and know-how is on the line.

The policy debate: What to do about the gas price shock?

In February 2022, Dullien and Weber (2022a) first called for a policy broadly resembling what came to be known as the “gas price brake”. They proposed to cap the price of households’ basic consumption by fiscal means while leaving market prices to govern marginal consumption. This follows the principle that prices are stabilised where consumption fulfills basic needs, while preserving price incentives for more discretionary consumption. Based on this basic need principle, they recommended a per capita quota of price-capped gas. The initial response from economists was overwhelmingly critical. Unions were the first to officially endorse the policy proposal.

With the onset of Russia’s war on Ukraine, more and more interest groups started to support the idea of a gas price brake as a key instrument to tackle the crisis. Broad social support built up over the course of 2022. Groups and parties that represent opposed interests for the most part issued endorsements for a two-tier gas price policy: organisations of landlords and tenants (GDW, 2022; ZDF, 2022); consumer protection organisation and retail and wholesale associations (Energate, 2022); the Left and the Christian Democrats (CDU/CSU, 2022; Linke, 2022). Some economists came up with their own versions of non-linear gas price policies (e.g. Bayaz and Grimm, 2022). Many economists remained sceptical of any interference with the price mechanism discounting that the market price at the margin would preserve incentives to save gas (Hildebrand and Olk, 2022; Hauser, 2022).

Initially, the burden on households using gas was not addressed in a targeted fashion. In the fight against inflation, the main focus has been on the ECB. Meanwhile, purchasing power has been propped up by a sequence of relief packages providing cash transfers of €300 to employees through their paychecks. Many could not be

² See Weber et al. (2022) for an analysis of the contribution of systemically significant prices such as those of gas and oil to inflation in the US and Weber and Wasner’s forthcoming analysis of the propagation of cost shocks along the value chain.

³ For example, a typical one-family household with a gas consumption of 22,000 kWh paid €1,430 in 2021 (assuming a price of 6.5 cents per kWh). Without the gas price brake, the gas bill would have increased to €7,040 in 2022 (32 cents per kWh).

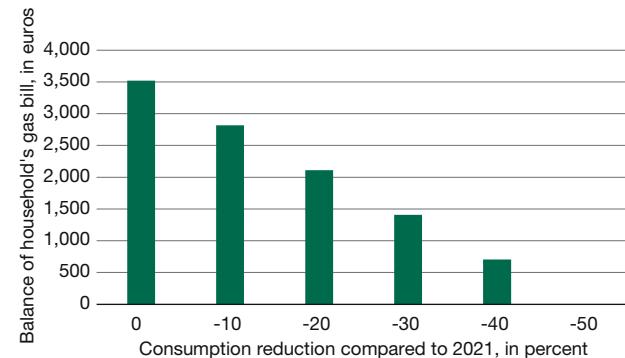
reached in the first round due to a lack of payment infrastructure for direct cash transfers. Pensioners received direct financial support only as late as December 2022. As of today, students are still waiting for their direct payments. The specific burden on households dependent on gas was not addressed. Some received money they did not need; many gas customers got transfers that were welcome but not enough to cover the cost burden. Some households dependent on gas were not reached at all. Meanwhile, inflation kept climbing higher. The cost-push of rising energy prices trickled through value chains during the summer. This resulted in significant price increases, for example in the gas-intensive, systemically important chemical industry, where in the third quarter of 2022 prices rose by 23.7% compared to 2021 (VCI, 2022).

Before shifting to a price stabilisation strategy, the German government initially wanted to implement exactly the opposite: as late as September 2022, the government was on the verge of passing a law that would have imposed a surcharge on gas consumption – the so-called *Gasumlage* – to finance the bailout of Uniper. Every household and industrial customer was meant to pay an additional 2.4 cents per kWh for gas starting in October 2022. The *Gasumlage* stirred a lot of opposition. In late September 2022, the German government made a policy U-turn and announced the so-called *Doppel-Wumms* – a massive €200 billion financial programme with a gas price brake as the core measure. To design such a price stabilisation policy, an expert commission was appointed by the German government. One of the authors of this article was fortunate to serve on this commission. Members of the commission included CEOs of utility companies, industry representatives, unions, charity and environmental organisations and academic economists. The task was to design a policy that would achieve the balancing act of lowering prices while at the same time providing sufficient incentives to continue the reduction in gas consumption. The scope was not just households but all firms in Germany.

The gas price brake policy

The gas price brake follows the basic logic we introduced in relation to Dullien and Weber's (2022a, b, c) proposal. It defines a price-capped quota for every household and firm. Unlike in the initial proposal for households, this is not defined in per-capita terms but as a share of past usage. All consumption above that quota is at market prices. This also renders the national gas price brake complementary to the EU-level gas price cap that was passed shortly after. Under the gas price brake, prices are capped at a level that corresponds to a "new nor-

Figure 1
Exemplary gas bill at different levels of gas savings



Note: One-family house, gas consumption of 22,000 kWh.

Source: Authors' calculation.

mal", i.e. the price level projected to prevail when the crisis eases. Thus, the gas price brake does not fix prices at pre-crisis levels but aims to smooth the transition to a world of structurally higher gas prices by dampening the effect of the current gas price shock.

The gas price brake policy distinguishes two groups of users: non-industrial gas users, including households and firms, and large-scale industrial users. All users with an annual gas consumption of less than 1.5 million kWh belong to the first group and all others to the second group. For every gas user, the gas price brake is implemented as a discount calculated according to the following formula:

$$\text{Discount} = (\text{contractual gas price} - \text{gas price gap}) \\ \times \text{price-capped quota}$$

The first part of the equation is the difference between the current (high) gas price and the price cap of 12 cents per kWh. The quota in the second part of the equations is 80% of a consumer's expected gas consumption based on past use. Consumption above the 80% threshold must be paid at full market prices.

This pre-defined discount is fixed and independent of actual gas consumption. Therefore, households can significantly reduce their annual gas bill if they save more than 20% of the projected gas consumption (which for most customers is based on the past year's consumption). The gas bill can even drop to zero. For instance, if a household currently has to pay 32 cents per kWh, saving 50% on projected gas consumption (for simplicity here illustrated as the same as in 2021) would result in a gas bill of 0 euros (see Figure 1).

However, according to the gas price brake legislation, energy bills cannot turn negative. This means the gas price break remains a two-tier pricing scheme but with saving incentives that go beyond a price cap for base consumption. Rich households are likely to have more capacity to save and are likely to benefit more from the lump sum element that is part of the gas price brake than poorer households. But if they have a second home, rich households are not paid by the state for vacant and thus unheated homes because the gas bill cannot turn negative. Businesses benefit if they increase their energy efficiency or reduce their operating rate and thus lower their gas consumption below 80% of projected usage, but they are not paid for shutting down their operation entirely. The gas price brake for non-industrial customers will be effective from March 2023. For January and February 2023, the gas price brake will apply retroactively. To provide immediate support to households, the government also covered a months' worth of gas costs in December, which has already lowered measured inflation.

The gas price brake largely followed the recommendation of the expert commission. The commission acted under enormous time pressure. It was called into session in late September and had to deliver the decisive interim report by 10 October 2022. Given the time frame, feasibility constraints as assessed primarily by utility companies were key in setting the terms for the policy design. This has resulted in a gas price brake that is less socially balanced than the initial proposal by Dullien and Weber (2022a, b, c) for a fixed per capita quota. Since on average gas consumption rises with income, this would have resulted in poorer households having a larger average share of their gas consumption subsidised compared to richer households. It would also have avoided penalising households that already made great efforts to save gas before the 2022 crisis, be it because of financial pressures given elevated gas prices in 2021 or due to environmental concerns. Such a per capita approach was, however, not feasible given the short timeline due to limited data availability and bureaucratic capacity. With the gas price brake that is now being implemented, all households will benefit equally in relative terms. In absolute terms, however, rich households will on average benefit more than poor households (Bauermann et al., 2022; Kellner et al., 2022). A floor and a ceiling for the price-capped quota were intensely discussed in the parliamentary process to make the distributional effects of the gas price brake more balanced (Weber, 2022a, b). They were not implemented at this stage mainly due to feasibility concerns on the part of utility companies in charge of the implementation of the gas price brake.

The gas price brake for industrial users works in a similar way to that for non-industrial customers. The price-capped quota is defined as 70% of the previous year's gas consumption with a price cap of 7 cents per kWh. This alleviates the massive cost pressure to which companies are exposed. Usage above this quota is at market prices. Therefore, analogous to the price brake for non-industrial users, the industry instrument contains significant saving incentives and is complementary to the EU gas price cap. The total subsidy is determined in advance and paid out to companies on a monthly basis. The industrial gas price brake became effective in January 2023. Further, the total amount of subsidies any one company can receive as part of the gas price brake is capped to bring the policy in line with EU regulations. For energy-intensive companies, the maximum subsidy is €150 million. For all other companies, it is €4 million. Companies receiving a subsidy of more than €2 million must secure the production location and are obliged to maintain 90% of the jobs for a full year – unless they have collective bargaining and company agreements in place.

The gas price brake policy does contain some conditionalities but the thresholds are very high and the link with the urgently needed energy transition remains limited. Companies that received subsidies in excess of €25 million are not allowed to increase bonuses and dividends. If the subsidy passes the threshold of €50 million, bonuses and dividends are prohibited altogether. Furthermore, subsidies above €50 million oblige companies to present a plan to the government outlining the measures to improve environment protection with a specific focus on, among other things, electrification measures to expand the use of renewable energy sources, energy-efficiency measures and other initiatives to improve the company's carbon footprint.

More ambitious conditionalities that could have contributed to lowering inflation and encouraging green investments fell between the cracks in the rushed policy process. If, for example, companies had been obliged as part of the gas price brake programme to pay back the subsidy in case they generated windfall profits, that would have created a powerful mechanism to ensure that lowered gas input prices are translated into lower output prices. In addition, green investments could have been made deductible, so that firms that reaped profits above a certain threshold could avoid paying back the subsidy by contributing to the urgently needed energy transition (Weber, 2022a, b).

One of the points of contestation among German economists was whether companies should receive a so-called "hibernation premium" either by being allowed

to resell their subsidised gas at current market prices or through a lump sum payment of the subsidy, independent of whether firms shut down their production. Advocates for this approach argue that this will ensure an efficient allocation of the scarce resource gas at a time when such efficiency is needed most (Bayer and Jung, 2022). In this way, the government would subsidise production shutdowns and the market would decide who does and who does not produce (Bayer et al., 2022).

Opponents of this idea argue that a hibernation premium can trigger dangerous cascading effects: Shutdowns are most likely at the energy-intensive beginning of value chains, which are points of great vulnerability for the stability of the industrial system. Shutdowns in sectors that produce key inputs can exacerbate supply chain issues and shortages, which can have ripple effects beyond the domestic economy given Germany's position as an important exporter of goods like chemicals and machinery (Dullien et al., 2022; Krebs, 2022a, b). Furthermore, given the enormous volatility of gas prices in an environment of extreme uncertainty due to the war, it is not clear whether market prices present correct scarcity signals (Krebs, 2022b). Instead of shielding industry from the full force of price fluctuations while maintaining price incentives to save, a hibernation premium carries the risk of accelerating deindustrialisation, increasing an inflationary cost-push dynamic and exacerbating macroeconomic downward pressures. The German government has decided not to implement a hibernation premium: for industrial customers like for all other gas users, the total gas bill is not allowed to become negative. In order to receive the subsidy, a company must therefore continue to use gas as part of its business operation and not simply have a gas account from past use.⁴

Overall, the gas price brake represents a targeted measure and constitutes a shift in policy thinking toward smart and strategic price stabilisation as part of emer-

4 Consider the following example to illustrate this point. An energy-intensive company used 100 million kWh of gas in 2021. Accordingly, the company's price capped quota is 70 million kWh. Multiplied by the difference of an assumed current gas price of 18 cents and the price cap of 7 cents, the maximum subsidy for that company is €7.7 million (70 million kWh times 11 cents). The company is entitled to receive and to retain this maximum subsidy as long as its actual gas procurement costs for its own use are equal to or exceed €7.7 million. In this example, the company's overall gas bill (procurement costs minus subsidy) would be exactly zero. This corresponds to a usage of 42.8 million kWh of gas. If, however, the same company decides to use only say 20 million kWh during the time of the gas price brake, then it only receives a subsidy of €3.6 million, because the overall gas bill is not allowed to be negative. Below a certain threshold, in this example 42.8 million kWh of gas usage, the subsidy is shrinking with decreasing procurement costs. Of course, the company can decide to close down the production site and not use any gas at all. However, then it will not receive any subsidy.

gency economics. The Deutsche Bundesbank (2022b) estimates that the household part of the gas price brake alone will lower inflation by one percentage point in 2023 and this does not take into account any effects from lower costs. Nevertheless, the policy could have been more socially balanced. Due to the delay in the policy response, help comes very, if not too late for many households and firms – especially the vulnerable ones. The gas price brake is designed to dampen the price shock. But it becomes effective at a time when the first major gas price explosion that peaked in August is easing. Yet, this does not make the gas price brake redundant: it offers a price guarantee for the larger part of gas use, which provides households and businesses with greater certainty on their financial outlook and thus enables them to plan ahead and invest. The gas price brake also preserves households' purchasing power, which together with enabling investments, helps mitigate a consumption-driven recession. Analysts have in fact already adjusted previous predictions for a recession since the gas price legislation has been passed. Additionally, the cost of the subsidy necessary to bring down the gas price to the price cap depends on the level of the market price, so the lower the market price the less costly the gas price brake, which is important as a shield against ongoing price pressures and possible future price explosions. It would have been even better if it had been put in place sooner.

The future is now: New mindsets and institutions for overlapping emergencies

The energy crisis in Europe was a shock induced by a war and geopolitical confrontations. We are living in a time of overlapping emergencies that renders future price shocks likely (Weber et al., 2022). From the climate crisis to the COVID-19 pandemic and ongoing geopolitical confrontations, sectoral shocks are prone to become more systemic. If they hit systemically significant sectors like energy, shocks can have far-ranging implications for monetary stability. At the same time, inflation affects households differently. While richer households can buffer price shocks to essentials more easily, such shocks can be an existential threat for poorer households.

What is required in this time of overlapping emergencies is a new mindset from a reactive management of shocks to a form of economic policy disaster preparedness. Monetary stabilisation policies must go beyond monetary policies. The crisis year of 2022 has demonstrated that the ECB is not equipped to absorb an energy price shock where it hits. This requires new institutions that monitor price movements in systemically significant sec-

tors and policy preparedness that enables a swift and targeted response to sectoral shocks. Shocks need to be absorbed with suitable policies where they hit instead of letting them ripple through the whole economic system (Weber et al., 2022).

The experience of other European countries shows that a less reactive approach is possible. In France, for example, gas and electricity prices were capped already in late 2021. Unlike in Germany with over 1,000 gas suppliers, utilities in France are few in number and mainly in the hands of the state. That is one reason why price caps could be implemented without much delay. The French price cap unlike the German gas price brake lacks incentives to save gas. But the swiftness with which state-owned entities were able to react to a crisis affecting a basic good like gas for heating is instructive.

The energy crisis has highlighted once more that structural changes are needed to overcome dependence on fossil fuels. The best way to achieve this is to accelerate the transition to a climate-neutral economy. The gas price brake can only buy time for that urgently needed transformation of the German economy towards a greener industrial state. The expert commission on gas presented a range of recommendations on short-term investment initiatives, e.g. to improve the energy efficiency of low-income housing, that the government has not yet acted upon. The lasting success of the gas price brake will ultimately depend on whether the bought time is used to leverage Germany's current industrial strength to initiate ambitious investments into greening the economy. This demands massive public investments in the expansion of renewable energies, in railway networks and housing. In this decade alone, an additional €160 billion would need to be invested in green infrastructure in Germany (Murau and Thie, 2022). First steps are being taken (Finke, 2022), but much more is needed. A paradigm shift from the reactive crisis management of the past years towards emergency preparedness and a mission-oriented, market-shaping state is necessary to turn the crisis into an opportunity (Weber et al., 2022; Mazzucato, 2021).

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