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THE EFFECT OF ENERGY CRISIS IN EUROPE ON THE GLOBAL ECONOMY

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Abstract - This paper deals with causes of ongoing energy crisis which started on natural gas market in Europe in the wake of post pandemic recovery. Multiple factors ranging from weather, supply, demand to market structure and geopolitics led to historically high prices which spilled over to other commodities. With the benefit of retrospective, energy crisis was at least partly manufactured by Russia in the effort to pursue its geopolitical goal with war against Ukraine. The Russian invasion on Ukraine led EU to take steps to halt its extremely high dependence on Russian commodities (40% natural gas, 25 % oil, 70 % thermal coal). Rising inflation forced central banks to start rising interest rates. This creates difficult environment for global economy, especially less well-off countries. Extremely high profits from oil and gas producers can create foundation for financing transition to economy based on renewable energy.
JEL: P48, Q41, Q43

Keywords - Global Economy, European Union, Energy Crisis, Natural gas prices

I. INTRODUCTION

The evolution of European natural gas hub prices since 2020 was extraordinary. In 2020 after pandemic struck global demand, prices in Europe fell to all time low of 3.1 EUR/MWh for Day ahead contract and 11.8 EUR/MWh for Year ahead contract in spring 2020. Less than 2 years later prices for Day ahead delivery increased 69-fold reaching 212.3 EUR/MWh with intraday peaks well above 300 EUR/MWh during the periods of maximum market nervousness caused by Russian war with Ukraine. Contract for Year ahead delivery was more stable, and so far, its maximum occurred in December 2021 with 1 175% increase reaching value 138,5 EUR/MWh, when market was struggling with cold start of the winter and low gas storage levels caused by low flows of natural gas from Russia. The situation is getting calmer since April 2022 and it can be stated thatup until May 2022 current natural gas crisis was not the one of major flows interruption, and physical unavailability, but it was more of crisis of affordability and insecurity since Russia as a largest player on European gas market started to exercise its leverage of indexed hub pricing in tight European gas market.

The aim of this article is threefold. Firstly, to analyze the evolution of natural gas prices in second decade of twenty first century and events that led to current period of elevated prices. Secondly, evaluate measures EU is taking to solve this crisis and possible consequences on European markets. Thirdly to analyze the spillover effects and implications of current European natural gas crunch for global economy.

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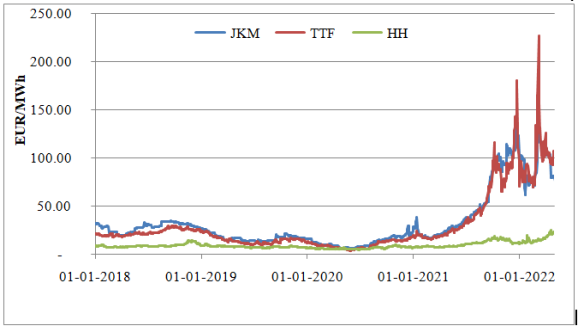
II. THE DEVELOPMENT OF NATURAL GAS PRICES IN THE LAST YEARS

The end of 2019 in European natural gas world was marked with expatiations regarding expiration of Russian transit agreement via Ukraine. In 20.12.2019 Russia and Ukraine announced an agreement to extend the transit contract for five years. At the end of December 2019, gas prices fell below the level of just 11 EUR/MWh (for the reference, long term level of natural gas price in Europe is approximately 20 EUR, the prices has usually seasonal character with prices being slightly higher in winter period due to higher consumption and lower during summer period when demand is usually lower) , as many players in the European market were preparing for possibility of interruption of flows through Ukraine, at the beginning of 2020 and natural gas storage in Europe were 88% full. (EC, 2019c), exceptionally high for given period of the year (high levels of natural gas storage usually translates into lower prices, as there is diminished need for risk premium to be incorporated in prices).

Apart from natural gas storages, the abundance of natural gas in European market in the first half of 2020 was the result of several other factors. Firstly, it was lack of weather driven demand, as temperatures were 1,5-3 °C above seasonal norm. Secondly, supply side did not adjust to lower demand, as new LNG facilities were commissioned exactly in this period and LNG imports to Europe increased by 24 % in first quarter 2020. The third reason for low demand in this period was strong generation from RES (for instance in February 2020 as much as 61 % of power production in Germany originated from renewable energy sources. These factors caused that natural gas prices were already extremely low (around 9 EUR/MWh) when impacts of first wave of pandemic hit Europe in March 2020.



Graph 1: Spot natural gas prices Europe (TTF), Asia (JKM), USA (HH)
Source: based on Data from ICE, CME

The pandemic related lockdowns decreased European natural gas demand by 10-17 % in second quarter of 2020 and the price of natural continued in its downward trajectory to average under 6 EUR/MWh in second quarter in 2020 with lows under 4 EUR/MWh. These price levels led to supply destruction and up to 30 LNG cargoes with delivery to Europe were canceled for June delivery, before 40-50 LNG cargos from USA were canceled during summer months. Restraints in supply were visible also in domestic production which decreased by 25 % decline in endogenous production and 6 % slowdown of pipeline imports. As most of pandemic measures were put on hold during this period the demand was almost on pre pandemic levels, prices reacted accordingly and increased to 9,5 EUR/MWh in Europe during third quarter. Stronger increase in prices was prevented by fullness of underground gas storages were over 94% full.

Already in this period, Asian countries which were not hit by pandemic so severely at that time, started exploiting benefits of low demand from other regions and attractive prices, increasing their imports. LNG imports from north-eastern Asian countries were 8,7 % up year on year in September (Engie, 2020).

The fourth quarter of 2020 was defined by slight, 2,4 % yearly increase in consumption in EU driven by higher utilization of natural gas in power generation and higher residential demand, as pandemic restrictions led to increase in teleworking and forced people to spend more time at home. Much stronger increase in demand was recorded in Asia due to "La Nina" weather conditions which translated in higher demand for heating. Asian demand for LNG in December increased by 10 %.

[2]The Take-or-Pay level for transit were agreed to lower to 65 bcm of natural gas in 2020 and 40 bcm for following 4 years. This represented significant decline compared to some 90 bcm, that were shipped via Ukraine in previous years as Russia was preparing for commissioning of Nord Stream 2 and Turkstream pipelines.

The supply was unable to respond quickly enough as despite ramping up of US production which recorded 44 % yearly increase in December. The reason was supply bottleneck in Panama Canal which limited the speed of US LNG imports. This meant prices in Europe increased to 15 EUR/MWh and JKM neared to 19,7 EUR/MWh on average in fourth quarter. Stronger prices in Asia meant flexible LNG headed there in expense of Europe, where LNG imports declined despite higher demand. Other import options also remained underutilized which increase the call natural gas storages withdrawals.

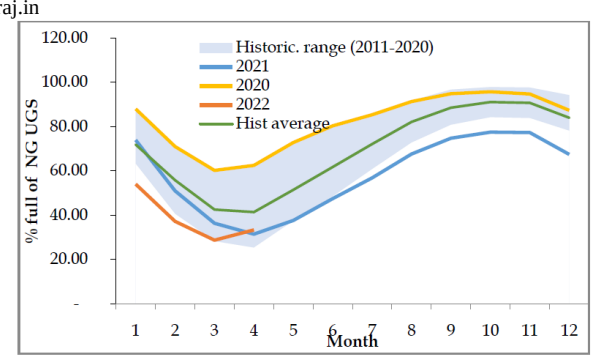
Described developments only got stronger in Q1 2021. EU natural gas consumption increased by 7,6 % in Q1 2021due to periods of cold weather and continuing utilization of teleworking. Demand was extraordinarily high in China, which experienced coldest January since 1966 (Japan Times, 2021), and some spot priced LNG cargos were sold for over 100 EUR/MWh, with spot power prices in Japan reaching over 1000 EUR/MWh during some days. In this context diminishing European LNG imports were not surprising, but EU did not get extra supply from other sources neither. Russian imports decreased as well after second year of transit agreement guaranteeing only 40 bcm of gas transit through Ukraine began. The January panic on the gas markets however did not last for long as more modest temperatures became reality in February and March and higher withdrawals from natural gas storages were able to ensure adequate supply, the average spot prices of natural gas reached 17,9 EUR/MWh, which was pretty much in line with historical averages, despite massive 87 % y-o-y increase.

Unlike usual year, when prices of natural gas tend to soft be coming into summer, situation in 2021 evolved differently, and prices of natural gas continued in their upward trajectory averaging 25 EUR/MWh highest ever for this time of year in second quarter only to almost double to 49 EUR/MWh in third quarter, and almost double once again in fourth quarter to an average of 96 EUR/MWh. This was not an expected trajectory of prices development at the beginning of summer 2021 and many natural gas suppliers in Europe went to bankruptcy at the of this periodbecause of such unprecedent development. With the benefit of hindsight several factors can be claimed to be behind such development. Fullwood (OIES, 2022) summed up the reasons for the sharp rise in prices in 2021 into three phases.

1) In the first quarter of 2021, cold weather caused an increase in consumption by 18 bcm. This, together with the reduced flow of gas through Ukraine in line with the long-term transit contract through Ukraine, which led to a reduction in flows from 178 mcm/dto 110 mcm/d led to faster emptying of storages, which

mitigated the impact of these events on prices over the period. The period of strong demand continued in second quarter due to cold spring and the continuing anti-pandemic measures. The increase of natural gas consumption cannot only be attributed to residential sector, but power generation played an important role as the price of emission allowances exceeded the level of 50 EUR / ton. The higher price of emission allowances favors the use of gas at the expense of lignite and coal in power generation, and thus leads to an increase in demand for this commodity.

2) Europe was not the only place with strong demand as high industrial activity in Asia and unfavorable hydro conditions in South America sharply increased demand for LNG during the summer. Supply side was still lagging as Norway continued with lower exports due to the need for more maintenance atproduction fields and facilities, after they were postponed from previous summer due to COVID. Non elastic supply was observed also in case of Russia. Even though, Russia used Yamal and Nord Stream pipelines to the maximum, supplies through Ukrainian route were more or less kept in accordance with the volume agreed in the long-term contract for 2021-40 bcm per year, despite more than double the technical capacity available on this pipeline. Some analysts believed that this was strategical decision on the part of Russia with aim to a push for the completion of the Nord Stream 2 gas pipeline (Timera, 2021), which construction was halted only 100 km before the completion at the end of 2018. In the environment of inelastic supply and demand natural gas storages served as a balancing point, however low levels of UGS fulness at the end of September, when the injection season traditionally ends, reaching just 74% compared to the traditional level of 88%, led to panic on the market. The storage injections were especially low for UGS owned by subsidiaries of Gazprom, as Gazprom was preferring supplies to building stocks in Russian territory and was supposed to start focusing on EU market only laterin the winter season when it reached its target in domestic market. This was again often interpreted as Russian pressure to put the Nord Stream 2 pipeline into operation, after Germany struck deal with US and NS2 pipeline construction was finalized.



Graph 2: Fullness of European natural gas underground storages (UGS)
Source: Authors based on data from AGSI

3) 3) Promises of higher prioritization of European UGS never became reality and moreover, in fourth quarter Russia unexpectedly reduced flows to EU via Yamal pipeline. Extreme prices in this period attracted to EU LNG which was to a large extent able toreplace Russian flows and get the overall EU supplies to previous year level. This was however not enough to prevent quick emptying of UGS storages which got to 15 % below normal levels and real threat of rationing in case of cold winter was on the minds of EU gas market participants.The event that was supposed to lead to increase of Russian deliveries and help to resolve lacking gas supply was the commissioning of the Nord Stream 2 pipeline. However, growing geopolitical tensions on the Ukrainian border with growing presence of Russian troops was only increasing the overall insecurity as German Foreign Minister made it clear that a possible escalation of the conflict by Russia would prevent the pipeline from being put into operation. This translated into period of extremely high and extremely volatile markets at the end of 2021.

As a result of the described developments the EU paid 120.8 billion EUR to third countries for gas in 2021 EUR compared to 35.9 billion EUR in 2020. According to EC estimates (2021) 41.5 bln. EUR went to Russia (gas transported by pipelines), 32.9 bln.EUR went to Norway and the bill for LNGreached 35.8 billion EUR.

The situation on the natural gas market in Europe began to calm down at the beginning of 2022. Warm winter and a strong influx of LNG caused spot gas prices in both Europe and Asia to lose 29% in January compared to December. During this period in 2022, the spot price of TTF reached 81.6 EUR / MWh. The fall in prices in Europe took place amid continuing trends from the previous quarter. According to ENTSOG, in the first quarter Russia further reduced supplies to Europe via (Yamal, Brotherhood, Nord Stream and Turkstream pipelines) by 34% to 2.7 TWh / day, Norway was able to increase exports by 9% year-on-year to 4.1 TWh / day. In the first quarter, the European natural gas prices maintained an unusual premium over Asia,

[3]In the United Kingdom alone, for example, soaring gas prices have led to the bankruptcy of 31 household gas suppliers, forcing millions of customers to seek new suppliers (Forbes, 2022).
[4]During May of the previous year, the price of these certificates was around 20 EUR / ton. The growth was mainly due to the communication of EU officials on the tightening of emission reduction targets and the inflow of speculative capital into this market (the volume of funds invested by financial investors in this market increased by 140% year-on-year; ICE, 2021).

which led to a massive redirection of LNG flows to Europe. LNG supplies to the European gas network increased by 73% and averaged 4 TWh / day. Thus, total gas imports into Europe did not change significantly from previous year, which, together with lower consumption, led to a slight improvement in the critical situation with gas storage facilities (see Graph 2), but remained at the lower end of historical observations. However, concerns about the growing number of Russian troops on the Ukrainian border have already begun to have the greatest impact on gas prices during this period.On the first day of the Russian invasion, gas prices rose from 88 to 134 EUR / MWh, and in the case of oil, daily prices rose from 96 to 106 USD / bl. After the initial panic, the markets calmed for a moment in the hope of a speedy resolution of the conflict. But after a few days, the seriousness of the situation became apparent to the gas and oil market participants. European countries, along with the United States, have begun imposing sanctions on Russia in response to military aggression, which have excluded most Russian banks from the SWIFT system (in the first phase, several banks processing payments for energy commodities were granted waiver from this sanction). In the second week after the start of the invasion, natural gas prices in Europe rose to 192 EUR/MWh (intraday price reached high of 342 EUR/MWh) and the price of Brent crude oil exceeded USD 118 / bl (with intraday high of 140 USD/bl). The sharper rise in gas prices compared to oil prices reflected the greater rigidity of the gas market, as 41% of extra-EU gas supplies are significantly more difficult to replace than 25% of oil imports, for which logistics is also significantly simpler. In the case of gas, prices rose during this period mainly due to fears of a possible disruption, as gas flows paradoxically increased by 18% to 2.9 TWh / day during this period.

Since the outbreak of the war, spot gas prices at the TTF trading point have reached 116 EUR/MWh, an increase of 43% compared to the pre-war level.

The attitude of EU´s Energy security

The tool of choice for EU, traditionally used to tackle energy security issues was liberalization and market-oriented measures. Policy makers in Europe have for many years argued that the market would take of energy security, if only existing legislation were implemented, however execution of policies adopted at EU level was not always welcome eagerly and applied in timely and complete manner by national states. For last decade energy affordability and environmental aspects of energy consumption were in the forefront of attention. Energy availability was taken for granted and sufficient infrastructure interconnections were not constructed as those reflects predominantly local interests due to complex and costly financing and lacking adequate budgetary means from European commission. Despite saying that many infrastructure projects have been completed since 2009 when first halt of Russian flows via Ukraine to EU occurred, and resiliency of European natural gas system certainly improved (Boersma, 2014), which put EU in better position than in 2009 when complete halt of flows shocked Europe. The axis of Russia-Ukraine-EU have frequently engaged into gas related disputes since the first crisis in 2009. However, several things changed during these years, firstly bargaining power changed among Russia, Ukraine, and Europe. Gas crises of the first decade saw Ukraine being in the most favorable position as it has the least to lose (transit fees) compared to revenues for molecule (Russia) or industrial output and comfort of its citizens (Europe in case of gas rationing). In this trilateral partnership EU was the most vulnerable member, due to its lack of diversification options which became well understood after 2009 stoppage of natural gas flows. Europe and Russia developed new transit routes which cost Ukraine its dominant position. This played its part in severity and character of 2014 gas crisis, which was no longer only about the gas. Flows to Europe were reduced, but Europe was able to better cope and Russia ventured with attacking Ukraine’s territorial sovereignty. At that time Europe still had more redundancies in energy system, larger endogenous production, stronger position of coal and nuclear in power generation and partial loss of flows via Ukraine was not especially hurtful. The next years saw Russian effort to eliminate the need for Ukraine in gas transit role, so it no longer represented threat for Russian commercial interests in Europe, while Ukraine was aiming at integration to Europe to protect itself, realizing it lost its strategic strength.

[5]European gas imports actually increased by in Q4 2% year on year in this period. This was mainly due to a 12% increase in gas imports from Norway and 28 % yearly increase in LNG supply, which was driven by a favorable spread between the European and Asian prices. For the whole of 2021, the EU imported 80 bcm of gas (in 2020 it was 84 billion m3). The largest exporter of LNG to Europe in 2021 became the USA with 22.3 bcm, after their production increased by 50% year-on-year), the second and third most important exporters of LNG to Europe were Qatar and Russia (Novatek) with 16 bcm).

[6]The dynamics of the Russian gas flow to Europe is worth to analyze in this period. After Gazprom stopped using its ESP platform to sell gas to Europe on a spot basis in the second half of last year and decided to limit the use of its gas storages located in Europe, gas supplies from Russia to Europe became most affected byclients’ nominations on Gazprom's European long-term contracts. During 2022, it can be observed that if the spot price of gas in Europe moves below the price of a long-term contract, Gazprom's European customers order less gas and vice versa. This may explain the low supply from Russia during January and February (until the outbreak of war), when the price of a long-term contract moved well above the spot price and then, fearing the impact of the war on gas supplies, the spot price in Europe rose sharply and despite escalating rhetoric and severity of fights, gas supplies to Europe from Russia have increased.

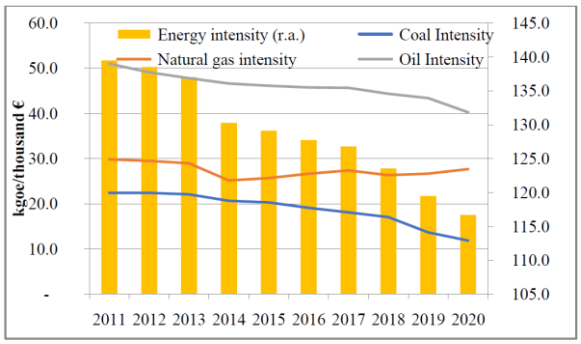
The countries of EU also improved their negotiating position by investing to LNG import infrastructure which to a certain degree alleviated EU's dependence on Russian imports.We think this was important factor that prevented looming gas crisis of 2019 when transit contract via Ukraine agreed in 2009, expired. Neither Russia nor Ukraine had sufficient negotiating power to use EU as a hostage in the transit deal negotiation.Similar conclusion can be made about 2021-2022 crisis. Up until May 2022 we could observe only limited impact on physical availabilityof Russian gas despite severity of geopolitical situation. So far, the gas part of the overall situation was more of problem of affordability then availability. We think this is caused primarily by 2 factors we discussed:

- Europe has more diversified portfolio of supply routes then decade ago and increased LNG availability and European infrastructure made the system more resilient depending on individual countries.
- Gazprom and Russia have more to lose, due to its indexed hub pricing. Extremely high prices (over 100 EUR/MWh which is equivalent to some 200 USD/bl in oil terms) made gas exports more important for Russian economy.

Those markets led changes ensured some (higher) degree of energy security despite the primary objective of energy security oriented on sustainability goals in recent years. Current shock however inevitably leads to rethinking of ways used to cope with energy security issues. Metcalf (2014) sees energy security as the ability of households, businesses, and government to accommodate disruptions of supply in energy markets. He claims energy security is enhanced by reducing consumption, not imports. The important point is that, despite the small share of energy in GDP, energy in general and oil can have large impacts on economic performance. Despite (or perhaps because of) the lack of consensus among economists on the macroeconomic impact of energy supply shocks, policy makers place great importance on supply stability as an economic stabilizing force. This is expected as the elasticity of demand for energy is low. Combined with a low short-run price elasticity of supply, small fluctuations in supply and demand can have large price impacts. Therefore, he claims any policy that reduces consumption of an energy source, enhances the ability of households, businesses, and government to accommodate disruptions of supply in energy markets.

[7]In May Gazprom halted supplies of natural gas to Bulgaria, Poland, Netherlands,Finland, and Denmark which refused to comply with Russian demand for Russian revised payment scheme that required Gazprom's customers to pay for natural gas deliveries in rubles. Gazprom also halted deliveries to its former Europeansubsidiaries which became target of Russian sanctions. These steps are interpreted as weaponization of natural gas.

But the transfer of rents, the goal of the exercise of monopsony power, does not enhance our ability to accommodate supply disruptions. Since exercising monopsony power – unified approach by single supplier can be counteracted by equally structured counteraction by marginal supplier. This idea is fully applicable in terms of status of European natural gas market where in tight market Russia has a position of marginal supplier.



Graph 3: Energy intensity – aggregate and individual energy sources
Source: Authors based on Eurostat data

Energy intensity expressed as a used energy for Euro of output lost 16 % and reached 117 kgoe/thousands Euro of output (in 2010 prices). This was caused by combination of slow GDP growth increasing over the period by 6 % and lower energy consumption. Energy intensity and its evolution varied across the energy sources reflecting changes overall energy mix. Coal intensity of economy between 2011 and 2020 went down by 47 %, oil intensity has seen decline by 21 % and the only fossil energy source keeping its relative importance in energy was natural gas as natural gas intensity of economy declined by mere 7 %. As European mantra of natural gas's "bridge fuel" position justified its stable consumption and lower energy intensity was predominantly reflection of higher GDP.

The development in Ukraine leads to calls for immediate phase out of Russian natural gas (oil and coal). The opinions about feasibility of such steps varies widely, with politicians mainly aiming for soonest deadlines and energy analyst claiming total halt of Russian gas can lead to rationing of natural gas. In April 2022 Members of European parliament voted for an immediate embargo Russian imports of natural gas, coal, and oil. Even though the ban on coal imports was implemented with grace period of several months in fifth round of sanctions. An immediate ban on oil and gas imports was still less likely, however, since any sanctions must be approved by all 27 EU countries before they can be applied. Most of large EU economies still opposed a ban on gas imports in May 2022 as it would have a detrimental effect on its economy. The uncertainty of impacts of possible complete cut off from Russian

gas remains even among analysts. Analysts from think tank Bruegel (McWilliams et al., 2022) came to conclusion that even record high non-Russian imports would not be enough to sufficiently refill storage ahead of winter 2022-23. Europe would need to reduce demand by at minimum 400 TWh (or 10%-15% of annual demand). They claimed this is possible and that as much as 800 TWh could be abated if "exceptional options" were implemented. Their conclusion without specific focus on measures needed to decrease demand by 10-15 % was often used in policy debate afterwards among the proponents of firm sanctions against Russia. On 8. March 2022 the European Commission itself published the outline of a plan to make Europe independent from Russian fossil fuels well before 2030, starting with gas, considering Russia's invasion of Ukraine. The Commission stated that dependence on Russian gas could be cut by two-thirds (101.5 bcm) –before the end of 2022 (In May 2022 it is almost certain, this target will not be met). The plan envisaged increased non-Russian gas supply by 63.5 bcm through a combination of additional non-Russian LNG and pipeline imports and an increase in biomethane production. This supply increase was complemented by a 38 bcm reduction in EU gas demand, that should be achieved through a combination of large-scale wind and solar power generation, rooftop solar power generation, heat pumps, and "EU-wide energy saving". OIES (2022) deems such plan as challenging and most likely than not, not achievable in its full scale. Even if this plan was feasible – it is not - (abstracting from contractual obligations of EU customers of Russian Gazprom), some 50 bcm of natural gas was still needed from Russia. Analysts from consultancy Energy Aspects (2022) calculated that a halt of Russian flows would reduce Western European countries' GDP by an average of 2.2%. in 2022 with overall impact of demand rationing on GDP varying across countries, depending on the relative gas intensity of industry in each country, as well as the share of industry in a country's GDP. As such, highly industrialized and gas-intensive countries such as Germany would suffer from larger reductions to GDP (-3.5 %) than relatively less gas-intensive and industrialized countries such as Sweden (-0.2%).

[8]To meet the target, the communication proposes the following estimates:
1. Increase imports of liquefied natural gas (LNG) by 50 bcm
2. Increase pipeline gas imports by 10 bcm
3. Increase biomethane production by 3.5 bcm
4. EU-wide energy saving to cut gas demand by 14 bcm
5. Rooftop solar to reduce gas demand by 2.5 bcm
6. Heat pumps to reduce gas demand by 1.5 bcm
7. Reduce gas demand in the power sector by 20 bcm by deployment of wind and solar

[9] European UGS must be filled to 80 % before this winter, since next year this target is risen to 90 % of capacity.

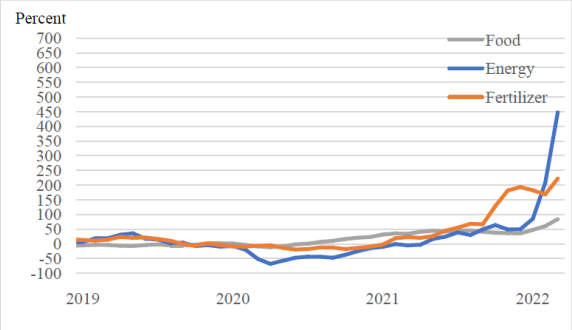
These trends also play out on a European level, with Central and South Eastern European would have an average 2.8 % reduction of GDP, with Slovakia being the hardest hit country with negative impact on GDP reaching – 4.8 %. Initial communications were followingly expanded by more specific and imminently achievable measures such as EU wide mandates on gas storage filling requirements, but also considerations on price caps in both natural gas and power on wholesale level (so far only approved on Iberian Peninsula). Activities aimed at enlarging available LNG import capacities also became clear as over 80 bcm of LNG ragas capacity has been announced to become operational in next 4 years, compared to 220 bcm capacity available in 2021, as existing LNG terminals were being used at full capacity (apart from Iberia and England which do not have sufficient interconnection to the rest of Europe to fully utilize their LNG import terminals.)

On the other hand, by decision of Russian President Gazprom started demanding payments for gas deliveries to be realized in rubles which after prolonged discussion was accepted by vast majority of Gazprom customers, as sudden cut off from Russian gas from most of customers is basically impossible without severe economic consequences. This pragmatism was further visible at the end of May when ban on maritime oil imports was announced by EU in sixth package of sanctions while it was stated that ban on gas imports was not on the table. Russian response to oil sanctions is however unclear, and it cannot be excluded gas import cessation will come from Russian side.

The effect of energy crisis on world economy

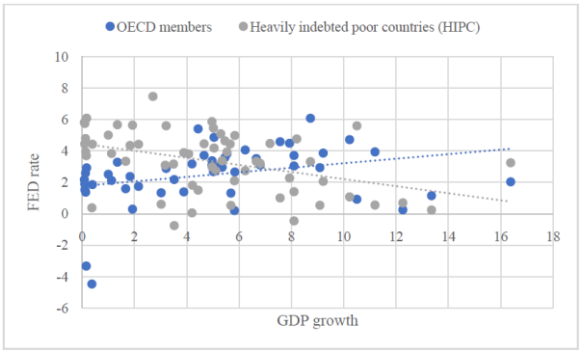
After an extreme demand shock caused by a pandemic, which led to wholesale oil, gas and coal prices on world markets hovering below their production costs for several months in 2020, a combination of factors pinched by Russian military aggression drove oil, coal and especially gas prices to historical highs. The effects of soaring costs for fossil fuel consumers will only gradually spill over into economies because of complex trade relations and purchasing strategies of consumer entities, and therefore even the measures taken by European governments to protect its population from soaring costs may not be enough. In addition, such subsidies will keep demand "unnaturally" high in Europe, which inevitably leads to a supply-demand balance on the world market being established by reducing consumption in economically weaker countries. Examples of this can already be seen, whennon-European countries, have to take various measures due to lacking fossil fuels supply, such as phasing-in black-outs in the case of India, or directly banning the export of coal Indonesia(the largest exporter). Europe's economic strength thus means that what has

largely begun as a European problem has global ramifications. EU's decision to gradually stop importing coal and oil in following months and natural gas in few years requires dramatic adjustments of world energy flow, that will require time, while in the meantime price spikes inevitably occurs. These translates into higher inflation of energies, spilling over to food prices, and while the current predictions suggests that energy prices should peak this year. This might not be true for food prices which gained 14 percent in 2022Q1 (q/q) and stands nearly 20 percent higher than a year ago. Trade disruptions and high input costs fueled a rally that pushed some food commodity prices to record highs, with particularly large increases for wheat prices. Production shortfalls played a key role as well, especially in wheat and soybeans, partly in response to lower yields in South America. Higher fertilizer prices are a key concern for food prices next year as natural gas and coal are essential input in their production and impact can already be seen in more than 200 % growth in fertilizers prices up to date compare to two-year average.



Graph 4:Food, energy and fertilizes prices
Source: World Bank

Inflationary pressures originating to a large extent form high commodity prices forced central banks to abandon their narrative of transitory nature of inflation which was the lead storyline in 2021 with post pandemic recovery. Even though the share of energy prices on rising inflation is considerably higher in EU (in case of EU some 50%) then in USA, the fact is that central banks in both regions plan to significantly tighten their monetary policies. While there is a history of this kind of policies being implemented without causing recession in developed countries, emerging economies usually suffer during these periods, as was the case in mid 1990s when growth in interest rates caused economic distress. Expectations of higher interest rates led IMF to lower its GDP growth estimate 3.8%, a full percentage point below what it forecast in January.Rising interest rates have historically uneven impact on differently well-off countries. As can be seen on graph below higher fundrates in USA was usually correlated with lower economic growth in poorest countries and vice versa. Current market expectations indicate US federal funds rate to reach up o 3 % in 2023, which is from historical perspective still relatively manageable level even for HIPC, however right now it remains unclear if this level of fund rate will be sufficient in its goal to return inflation back to targeted levels.



Graph 5: Correlation between economic growth and US fund rates for OECD and HICP countries.
Source: Authors, based on data from FRED, IMF

III. CONCLUSION

The strong recovery in demand for energy in post pandemic recovery ignited almost two years long lasting growth in energy prices. In between energy resources, natural gas prices in Europe can be marked as the most impacted commodity, in terms of price volatility and overall level. Current price of natural gas in Europe in USD/MMBtu term is 26, compared to average since 2010 of 8,3, while the maximum recorded price during this year was 72 USD/MMBtu. The relative figures for oil are current price 20, vs. average 13 and 2022 maximum of 22 USD/bl. Coal prices mimicked gas prices to a large extent as coal is the main alternative to natural gas (mainly due to coal-gas switching in power plants) rising to current value of 13,5 USD/MMbtu, compared to long term price of 3,7 USD/ MMBtu, even though the high of 2022 of 18 USD/MMBtu, was less dramatic then in case of natural gas. Reason for high prices was dubbed by OIES (2022) as „Series of unfortunate events,, and as we analyzed in the first part of the article the causes ranged from weather, strong economy, environmental policies and culminating in Russian war aggression which added further foundational layer to spiking gas and at that time already energy prices.

EU response to aggression was to double down on its effort to decarbonize system while shutting down imports of coal, oil and natural gas from Russia as quickly as possible meaning year 2022 for coal, 2023 for oil and before 2030 for natural gas. At the same time European nations are looking for new partners for energy developing project for instance in Asia (Italy with Algeria, Germany with Senegal etc). For long time it was pointed out by experts that European decarbonization efforts will have impact on energy prices on the continent, the extent of cost now

become clearly visible, as EUs bill for natural gas morethan tripled between 2020 and 2021 and further substantial increase will come in 2022. Extremely high cost for consumer however meansglobal net income from oil and gas production in 2022 is anticipated to be nearly $2 trillion higher than in 2021 and two-and-a-half times the average of the past five years, according to new IEA analysis. If the global oil and gas industry were to invest this additional income in low emissions fuels, such as hydrogen and biofuels, it would fund all of the investment needed in these fuels for the remainder of this decade in the Net Zero Emissions by 2050 Scenario. For oil and gas producing economies, this could be a once-in-a-generation opportunity to diversify their economic structures to adapt to the new global energy economy that is emerging (IEA, 2022). On the other side, exclusion of Russia from global trade means financing production of renewable technologies will become more expensive as multiple inputs needed in them originates from Russia which makes energy transition more costly (IMF, 2022).Lastly, the European energy crisis became global energy crisis as European purchasing power pulled away energy resources from other parts of world, which together with other logistical constrains resulting from post covid recovery drives inflation to a levels where central banks are forced to take steps against rising inflation. Growing interest rates have historically put more burden on less well-off nations which are currently dealing with lacking supplies of food, energy and fertilizes because of Russia-Ukrainian conflict. It is crucial for developed countries to recognize burden which current events places on developing nations and help them to cope to avoid further escalation in the world geopolitics.

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