



The Ukrainian-Russian War and its Impact on The Energy Sector in the European Union

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ABSTRACT

The research aims to define energy security and highlight the sensitivity of European energy security by examining the European-Russian relations before the 2022 Russian-Ukrainian war. It identifies challenges for EU countries and Russia, as well as alternatives to European energy supplies. The European Union plays a crucial role in supporting alternative energy resources for energy generation. The recent energy crisis in the Russian-Ukrainian war has exposed global energy system weaknesses, leading to record oil and gas prices. Russia is unlikely to cut off energy supplies to European countries due to high dependence between the parties, as this could lead to a third World War. Future scenarios related to energy relations between Europe and Russia are discussed, with Ukraine being the only victim. The research highlights the difficulty of realizing the fourth scenario, which involves Russia's loss and Putin's fall, which could result in the loss of Russia and the fall of Putin.

1. Introduction

The war in Ukraine has generated a sharp increase in energy prices and significant volatility in energy markets. Amid fears of disruptions to energy supplies and increasingly strict sanctions on the Russian energy sector, prices have fluctuated, as markets have tried to assess the potential implications for global energy supplies. Given their heavy reliance on Russian supplies before the invasion, euro area energy markets have been especially affected. This box provides an overview of the impact that the war in Ukraine has had on euro area energy markets so far. It outlines Russia's role in the euro area's energy supply and looks at measures that have influenced prices. In this context, it also discusses the implications for euro area energy commodity and consumer prices.

2. Energy Security and European-Russian Relations

The end of the Cold War in the early nineties of the twentieth century constituted a decisive turning point in the history of international relations, in terms of the number of new transformations and changes that it produced at all levels. The international relations shifted from bipolarity to unipolarity and the hegemony of the United States of America, but went further to the degree of radical change that occurred in the nature of the discussion topics in the agenda of international relations, so many new concepts emerged such as sustainable development, ethnic conflicts and terrorism, in addition to a shift in the nature of the concept of Security, whose connotations have expanded to include other concepts, food security, human security, cyber security, and finally energy security. It may be difficult to define an exact definition of energy, as it is not a physical thing like other things, but it is the source of every movement and one of the components of the economic security of states, which has become comparable in importance to military security, so concepts emerged. A multiple, contradictory theory that identifies with the interests of these countries. (Qian, 2022). In December 2021, as rumours of a Russian invasion of Ukraine grew, there was a sharp spike in the price volatility of energy commodities. Oil, coal, and gas prices increased by roughly 40%, 130%, and 180%, respectively, in the first two weeks after the invasion (Fig. 1). Wholesale electricity costs in the Eurozone rose because of rising petrol prices. Since then, the prices of energy commodities have levelled off, with oil and coal now 27% and 50% above their pre-invasion levels, and petrol now 11% cheaper. As a result of the EU's decision to embargo most Russian oil imports and rising global demand for oil as a result of China's decision to loosen COVID-19 limitations, oil prices have lately begun to rise again. Even though legislative measures have been implemented in reaction to the price hikes, wholesale electricity prices are still extremely variable and are 8% higher than they were before the invasion. An IEA definition of energy security is "continuing stability in supplies within the level of acceptable prices that are within reach, with continued attention to environmental issues." The organisation sees different aspects of energy security. Maintaining investments in time-appropriate energy supply infrastructure is the major factor in the long run. The same holds true for the needs of the economy and the environment. In the short term, energy security refers to the global energy market's reaction to sudden shifts in the equilibrium between demand and supply; in the long term, energy-importing countries are interested in long-term and secure energy supplies at low prices. In addition to other factors that are embodied at the level of transit countries and non-international actors like international companies and terrorist groups, energy security for exporting countries means ensuring the stability of

energy supplies at high prices and supporting the efficiency of the oil and gas sector in their economy, to use the financial and economic capabilities to build a modern economy.

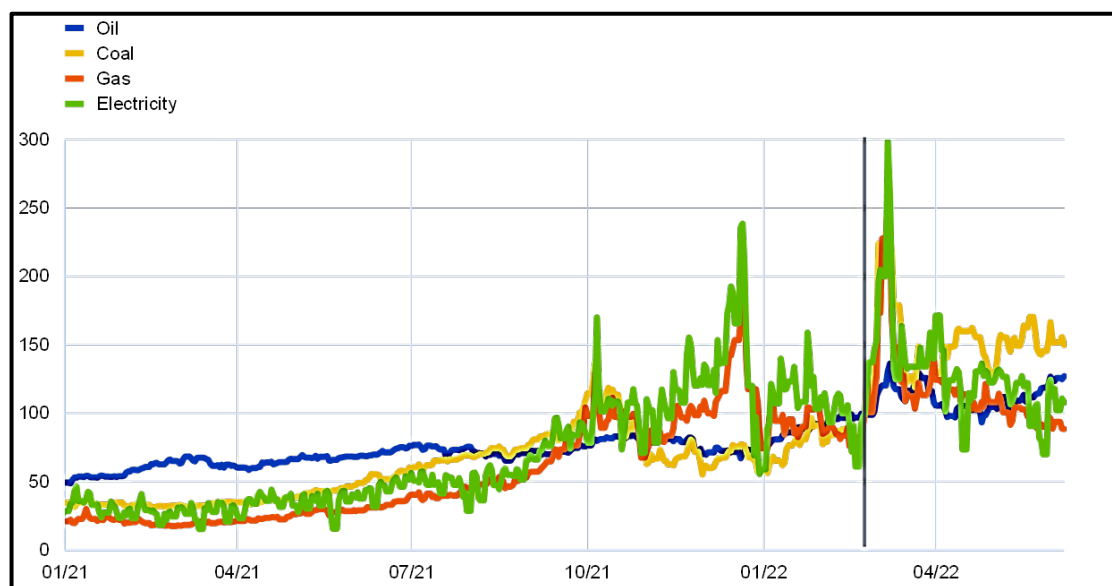


Figure: 1 Energy prices before and after the invasion of Ukraine

2.1 The Effect of Strains on Energy Supplies in the Euro Area

Strains on energy supplies from Russia may affect the euro area via both world market prices and direct supplies. Russia supplied 12% of the world's oil in 2019, 5% of the world's coal, and 16% of the world's gas in 2019. Figure 2A shows that in 2021, the country supplied 23% of all energy imports into the Euro Area, making it the region's leading supplier of energy commodities. In 2020, Russia supplied 23% of crude oil imports to the Euro Area and 43% of coal imports, accounting for 9% and 2% of the primary energy consumed in the Euro Area, respectively. Russia supplies a disproportionate share of natural gas to the European Union (EU), with imports from the country accounting for 35% of EU gas imports and 11% of EU primary energy consumption in 2020 (Fig.2, B). [1]. When it comes to the major countries in the Eurozone, Germany and Italy are the most reliant on Russian gas. To what extent these energy sources may be substituted is an important consideration when assessing the economic effects of the conflict on energy costs and supplies in the Euro Area. Statistics from the British Petroleum Company show that in 2019, European countries produced roughly 3.566 million barrels of crude oil per day, whereas their consumption was about 14.975 million barrels per day. About 288 billion cubic metres of natural gas is produced annually in European countries, while 531 billion cubic metres is consumed. European Union countries' oil stockpiles reached about 112.5 million tonnes in 2021, the largest share of crude oil being about 47.4 million tonnes, and European countries have been working to import the difference between annual production and consumption of 11.409 million barrels of crude oil and 303 billion cubic metres of petrol through imports. Following close behind, at over 40 million tonnes, is natural gas. After the crises witnessed by European energy security, it became based on another dimension represented by the need to diversify energy supply areas in order to reduce European energy dependence on Russia, as most European countries suffer from the dependence of their energy imports on imports, which made their economy and policies linked to the data of this dependence and the fluctuations of relations. between producing and active countries in the energy market.

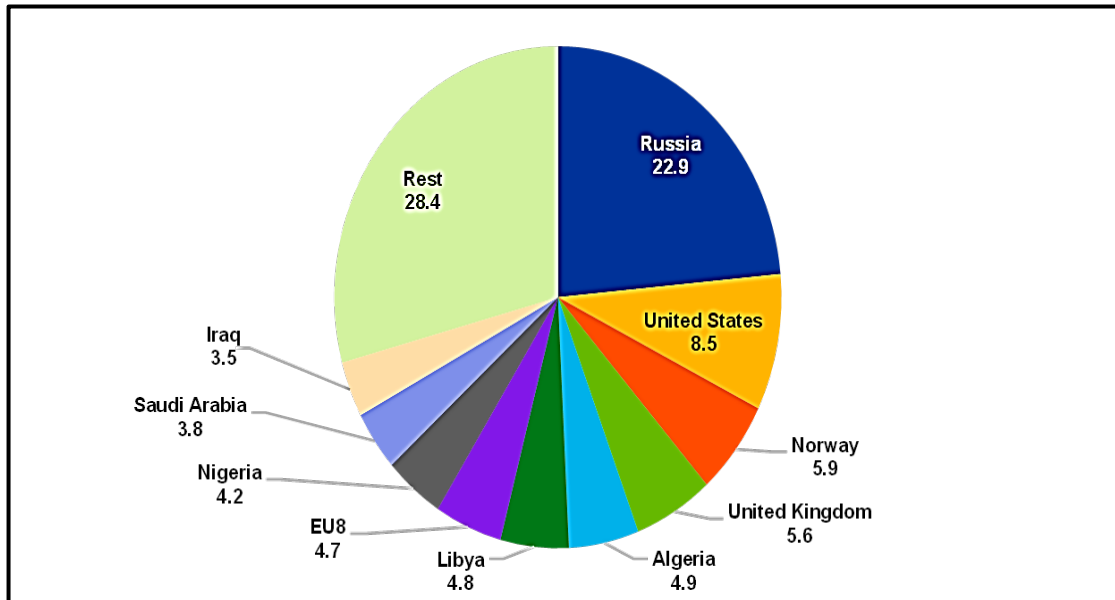


Figure: 2 Russia's share in euro area energy and gas imports.
A: Energy imports by source country (%).

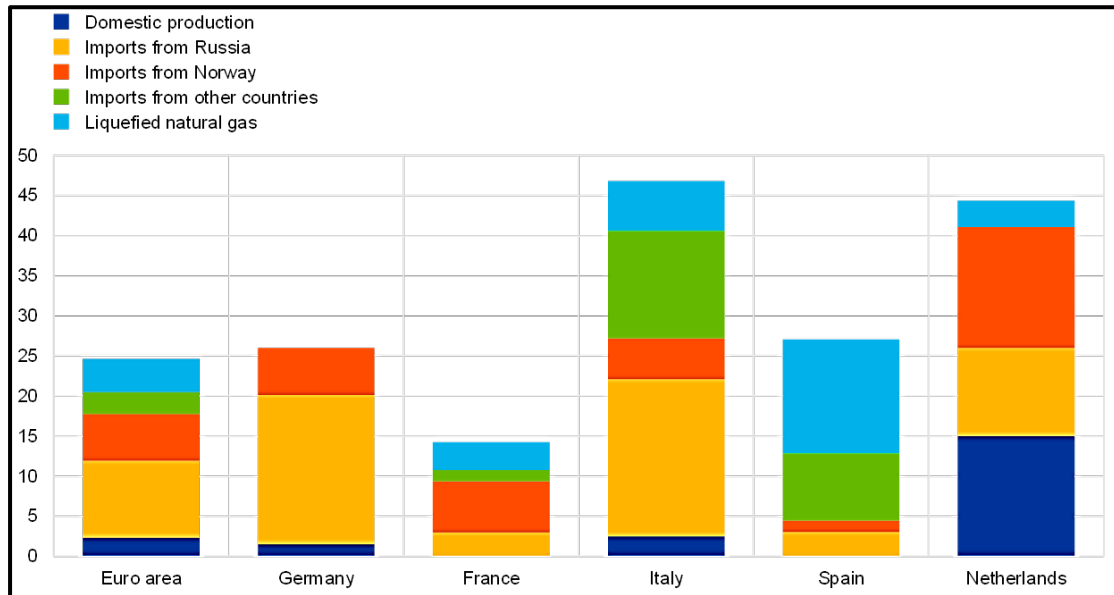


Figure: 3, B: Share of gas imports in primary energy consumption*

2.2 Economic Sanction

The European union introduced economic sanctions targeting the Russian energy industry, most notably the coal and oil sectors. The sanctions also include a ban on EU exports of goods and cutting-edge technology used to develop the Russian oil and gas sectors. Moreover, the EU has prohibited the import of Russian coal as of August 2022. At the special meeting of the European Council at the end of May, it was decided to stop most Russian oil imports. Says the researcher at the Center for Energy Strategy in Moscow, M. M. Belova states that “there is no single definition of Russia's energy security like any other energy resource.” Energy security revolves around demand security, long-term prices and long-term commitments as well. The Russian concept of energy security focuses on the need for sufficient extraction from Russian energy sources located in difficult and harsh geographical areas. It also includes the need for safe access to global energy markets, especially European ones, as well as the need for safe export of Russian energy supplies without obstruction by transit countries and at high prices that achieve Significant profits in addition to the necessity of owning modern technology to extract energy, owning and controlling the network of transmission lines to foreign markets with the need to create diversity and balance in energy markets in a way that does not make them dependent on one energy market, this concept makes Russia a pivotal actor in energy balances in the international market, It is a geopolitical tool and one of the assets of the decisive soft power that Russia uses to maintain its sphere of influence in the world, and Russia exercises

its influence through energy companies, the most important of which is the "Gazprom" company, as an attempt to move to a pluralistic formula of the international system, and gas pipelines have emerged as an effective strategic weapon in the hands of Russia against The other parties through what is called energy diplomacy. It is not surprising that the political literature uses the phrase: "Russia does not have a foreign policy, but rather an energy policy."

Russia is one of the active countries in the field of energy and one of the richest countries in the world, as it possesses the largest global reserves of gas amounting to 1.688 trillion cubic meters, equivalent to 23.4% of the global reserves of natural gas. Russian production from this resource reached 605 billion cubic meters annually in 2014. Exporting at least 191 billion m3 of it, the most important part of which went to Europe while the rest was consumed locally. It is expected that Russian gas production in 2035 will reach 727.3 billion m3, and about 268 billion m3 is expected to be exported during that year. Russia also possesses the eighth largest global oil reserves, estimated at 10-12% of the world's oil reserves. The value of these proven reserves was estimated at the beginning of 2016 at about 80 billion barrels, while Russia's oil production in 2015 amounted to 1103 million barrels per day of oil and the rest other oil liquids, and Russia subsequently exported 7.5 million barrels per day of crude oil while consuming 3.5 million barrels of oil. Thus, the main income is from oil, whose revenues reached 191 billion dollars in 2013, and from gas about 28 billion dollars, providing gas and oil together 68% From the Russian export revenues, and we see that Russia uses energy security as an economic and political concept, and to have an effectiveness and influence in the international system in order to achieve its goals, rather than dealing with it as a concept that focuses on the security of supply and the abundance of energy markets.

By the end of the year, all Russian oil shipments will be prohibited by the accords, apart from crude oil transported through pipeline. Germany and Poland are rumoured to have promised to stop buying pipeline oil from Russia, thus although though seaborne oil accounts for roughly two-thirds of overall imports, the embargo is believed to effectively encompass around 90% of oil imports from Russia. Russian oil exports to Europe dropped by 23% in March when European energy, maritime, and insurance industries began "self-sanctioning" in response to Russia's invasion of Ukraine. Although Russia has been able to diversify its oil exports to include markets like India's, the country's oil supply is still expected to drop by 25% by the end of 2022 compared to its beginning (Fig. 3, A), despite recent efforts to increase output. If other major producers don't speed up their output, the global oil market will tighten due to continued low Russian production levels, as seen in [3].[4] Since the invasion began, this would cause a 3 percent decrease in projected world oil supplies for the remainder of the year (Fig. 3, B).

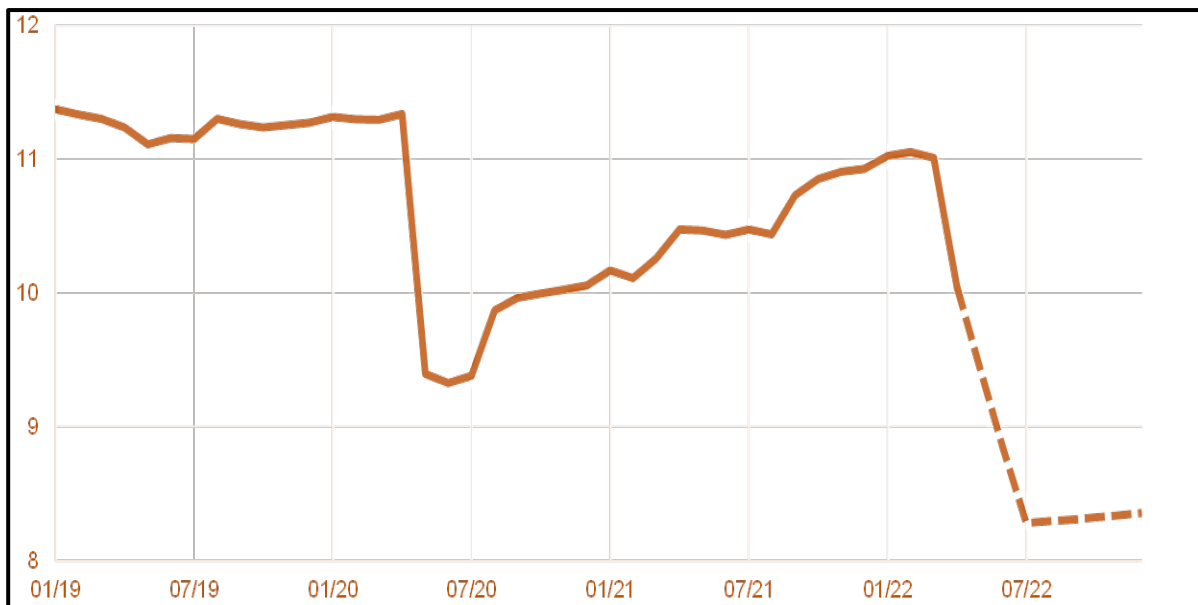


Figure: 4 Downward revisions to oil supply forecasts

A: Russian oil supply (million barrels per day).

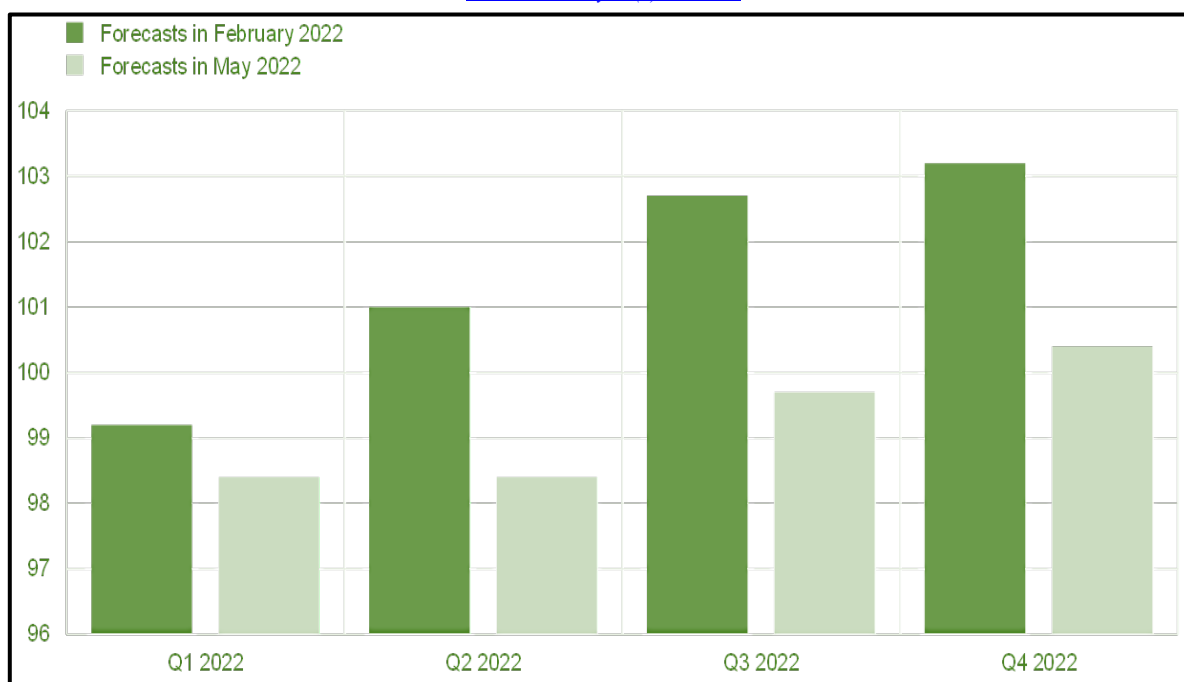


Figure: 5 B: Global oil supply (million barrels per day).

2.3 Towards Independence

The EU has taken steps towards independence from Russian gas. Nord Stream 2, a gas pipeline connecting Russia and Germany, has been delayed because of EU sanctions that target Russian gas exports. However, there are indications of increased dangers to the gas supply in the Eurozone, even though the war in Ukraine appears to have had a relatively minor impact on flows of Russian gas into the Eurozone thus far. By 2022, the European Union ("EU") hopes to cut its reliance on Russian gas by about two-thirds (the "REPowerEU" plan [5]). To offset its reliance on Russian gas, it plans to increase its imports of liquefied natural gas from countries like the United States and Qatar. Pipelines from nations like Norway might supply an additional 6% of gas. Some nations in the Euro Area find it particularly challenging to find alternatives to gas as an energy source since the necessary infrastructure to tap into other providers is lacking. That's why nations like Germany and Italy have been trying to build up the necessary infrastructure by increasing their regasification capacity and signing gas arrangements with other alternative suppliers.[6] A combination of low demand due to mild weather and the EU countries' efforts to substitute Russian gas resulted in a large increase in European gas inventories, which in turn helped to cut prices. Russia withheld gas supplies to Poland, Bulgaria, Finland, Denmark, and the Netherlands in April and May 2022 as retaliation for their refusal to pay in Roubles as per Russian demand. Following the takeover of a German Gazprom company in April by the country's energy network regulator, Russia put sanctions on the Polish portion of the Yamal-Europe pipeline in May 2022.

2.4 Energy Commodity Prices

Higher Energy Commodity Prices Intensified the Pressure on Consumer Energy Prices in February and March 2022. Inflation as measured by the HICP energy component peaked at 32% in February, then 44% in March, 38% in April, and 39% in May (Fig. 4, A).[8] Up until March, prices rose due to a combination of buoyant commodity markets around the world and higher refining margins. This led to increases across the board for the three primary energy commodities.[9] In the field of energy, by comparing the European energy concept with the Russian energy concept, we find that there is an agreement in the two concepts in the part related to the need for the continuation of the flow of energy supplies between them, but there is a difference in each of the volume of these supplies, their continuity and methods of transportation, and therefore energy occupied a pivotal role in European relations. The Russian Federation, where it played an important role in determining the course of the relationship between them, and the relations between them confirm that the European Union is one of the major economic and commercial partners of the Russian Federation, as its share in Russian foreign trade reaches 50%, and energy resources represent the main and most important axis of relations between the two parties, and the countries of the Union depend. The European Union supplies Russian energy by no less than 30% of its needs, and in some European countries it reaches its total energy needs, in addition to Russia's control of approximately 154 thousand kilometers of gas pipelines in the European continent, and the European Commission summarized in May 2014, Europe's dependence on Russian gas as follows:

- Six member states of the European Union depend on Russia only as a sole external resource for their imports of natural gas, including three countries that depend on the use of natural gas to meet more than a quarter of their

- energy needs, meaning that the European Union countries depend heavily on Russian energy supplies, which makes them more dependent on supplies Russian energy.
- On the other hand, Russian energy supplies are highly dependent on the European energy market, as more than 80% of Russian production of oil and gas goes to the market, while Russia imports more than half of its oil and gas extraction technology from the European Union.
 - According to Russia's strategy launched in 2010, Europe remains the main destination for Russia's energy exports until 2030. Thus, it can be said that Russia needs the European energy market to drain its production, while the European Union countries need Russian energy supplies to meet their needs, which creates "dependency." An exchange cap between the two parties”, and its features appear in several points:
 - The European Union countries are linked to long-term supply contracts with the Russian company Gazprom, which include the European Union importing 200-180 billion cubic meters of gas, on its part. Most of these contracts extend beyond 2025, and some beyond 2030, which makes the European Union countries More closely linked to Russian energy supplies, at the same time Gazprom relies on the European market for 70% of its gas export revenues.
 - The European Union countries receive more than 50% of Russian energy supplies through Ukraine as a transit country, and in light of the successive Ukrainian crises, the concern of the Union countries increases about the unsustainability of energy supplies to them, and the disruption of these supplies will be costly for Russia and has immediate economic effects, and as a result of the above, the degree of The interdependence between European countries and Russia is very high, which led to the development of clear strategies for energy security. Each country simulates its energy requirements considering the increasing threats to which the producing countries are exposed. Naturally, the energy strategies of the consuming and developed countries are more visionary of the future compared to the producing countries that it lacks strategic planning to manage its resources, which leads to the dimensions and determinants of energy security having a direct impact on building its policies and strategies.

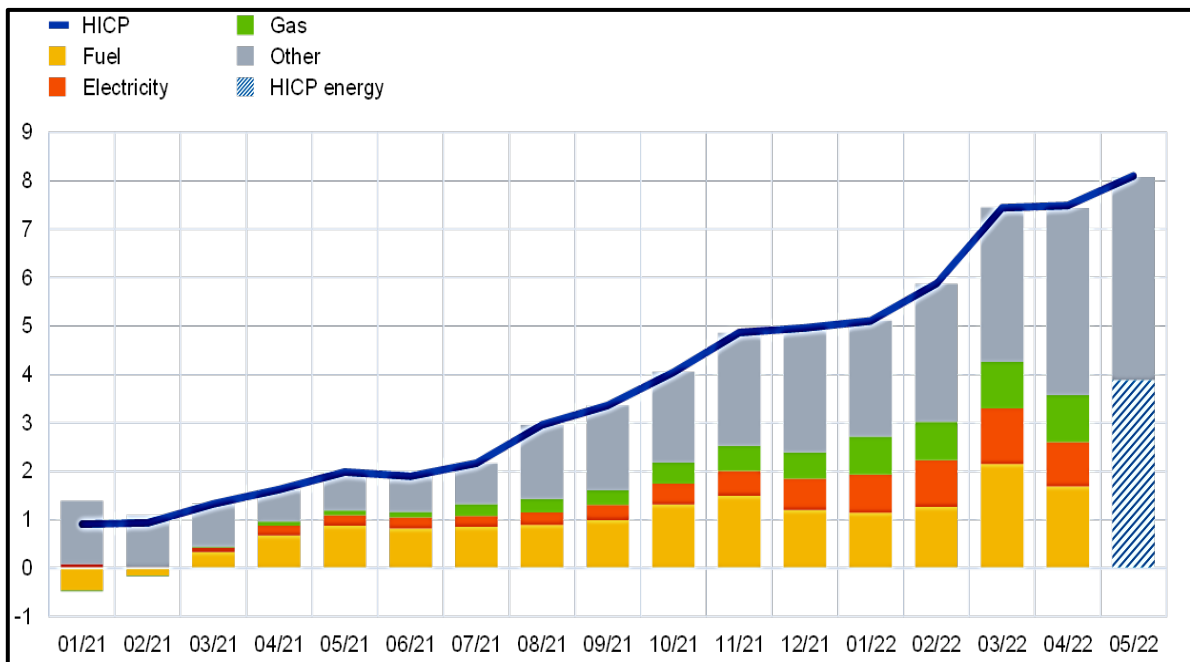


Figure: 5 Rising HICP energy inflation curbed by government tax measures.

A: Contribution of HICP energy components to overall developments in the HICP (%).

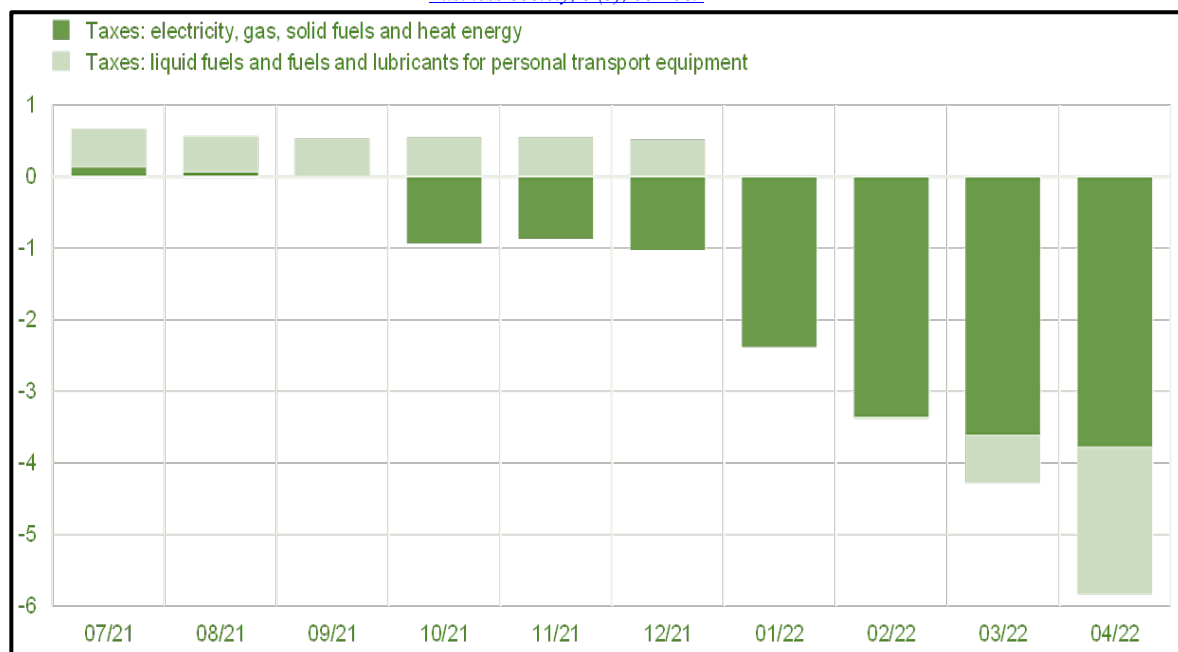


Figure: 6 B: Contribution of tax measures to reducing HICP energy inflation (%).

2.5 HICP Energy Inflation

HICP energy inflation remained high in April and May 2022, although pressures eased owing not only to the developments in energy commodity prices, but also to Governments' Mitigation Measures. As a result of the high cost of energy, many governments in the Euro Area have granted subsidies to their citizens. Most of these governments also enacted price reductions by lowering excise charges and value added tax rates.[10] Inflation related to energy fell by about 4.3 percentage points in March 2022 (Fig.4, B) and 5.8 percentage points in April 2022 (Fig.4, B) as a result of changes to indirect taxes imposed in numerous countries beginning in autumn 2021.[11]

3. Conclusion

Although the recent energy crisis that emerged in the current Russian-Ukrainian war is somewhat more severe, as it pushed oil and gas prices to rise to record levels, it had another face as it revealed the weaknesses of global energy systems years and decades ago, so markets were exposed to supply reduction factors. The increase in demand and the lack of investments in oil and gas assets led to a rise in energy prices to record levels, and based on the above, it is unlikely for Russia to cut off energy supplies to European countries due to the strong dependence between the two parties, and Russia realizes that this step is tantamount to declaring the outbreak of a third world war. Although there are several future scenarios, some of which we have previously reviewed, indicating that this war does not draw any fair scenario for the Russian and Ukrainian sides. Rather, all scenarios are related to energy relations between Europe on the one hand and Russia on the other, to find that Ukraine will remain alone as a victim of the situation, especially by demonstrating the difficulty The fourth scenario, which is the loss of Russia and the fall of Putin, has come true. On the other hand, in our study, we have discussed European energy security in the aftermath of the Russian-Ukrainian war, and it is difficult to cover its geopolitical security with the same research. Therefore, we hope that our research will be a first building block for future research that discusses European geopolitical security in all possible scenarios in the Russian-Ukrainian war.

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