Bond Blog

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Winter is Coming: A Q&A on Europe's Energy Crisis

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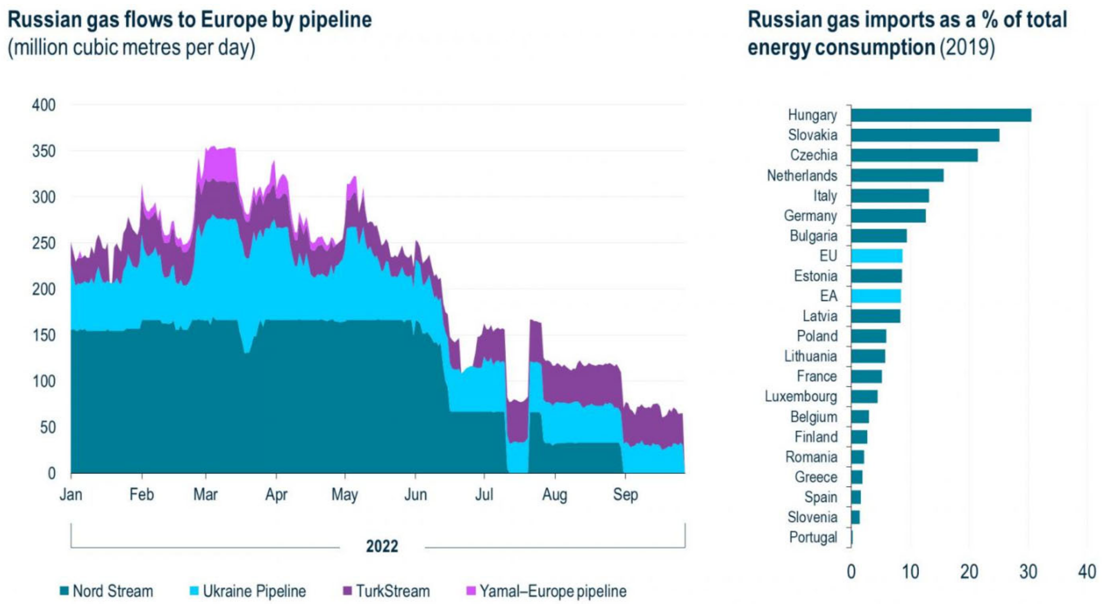
Winter's arrival will intensify Europe's energy crisis and the consequent economic ramifications. The following includes the key points that we've provided to clients regarding the effects from Europe's precarious situation.

Q: How much Russian Gas is Europe currently receiving, and which countries are the most exposed to the shortfall?

A: Prior to the start of the war in Ukraine, about 25% of the European Union's energy came from Russia. About 40% of the Russian supply consisted of about 155 billion cubic metres (bcm) of natural gas. Europe's imports of Russian gas are down by about 50% since the war began, exacerbated by Gazprom's announcement in early September that it would suspend gas flows through the Nord Stream 1 pipeline (Figure 1a). The recent, multiple leaks discovered in the pipeline do not affect Europe's current gas supply as the pipeline was not in use at the time, but they serve as another stark reminder of the continent's logistical and infrastructure challenges.

Europe's exposure to Russian natural gas is highly asymmetric, with Germany and Italy being the most vulnerable of the Big Four economies. There are also regional pockets of vulnerability in small Central and Eastern European economies, such as Hungary and Czechia (Figure 1b). Spain and France are less directly exposed, but will be affected by higher energy prices.

FIGURE 1: Russian Gas Flows into Europe and Gas Storage Levels and Consumption



Source: ENTSOG as of August 31, 2022, Eurostat as of December 31, 2019.

Q: How will the shortage of energy supplies affect the European and global economies?

A: We're anticipating EA GDP to slow markedly into this winter and to contract by 1.4% in 2023. The current energy situation is another in a series of crises that will keep GDP growth below trend levels and contribute to a cumulative shortfall of nearly 15% of GDP by 2023 (Figures 2a and 2b).

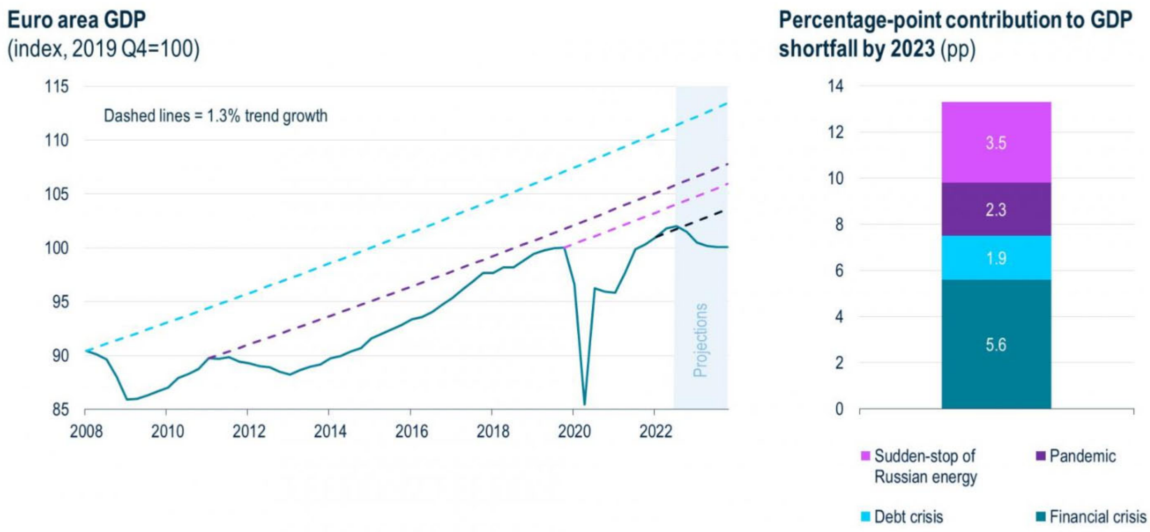
The shortage of energy in Europe has led to high energy-driven inflation, which has reduced households' real incomes. Furthermore, the pending rationing in industrial gas usage will reduce industrial production. Alongside these direct effects, record-low consumer confidence and a pessimistic outlook for businesses will further amplify the negative economic impact via reduced consumption and investment.

Government policy can help reduce these amplification effects by capping energy prices and providing certainty to businesses and households. However, capping energy prices affects energy transition and saving incentives and does not address the issue of shortages. Therefore, the appropriate policy response will also involve reduction in gas demand.

Global spillovers will move through various channels. For example, those countries most intertwined with the EU, such as North Africa and non-EU Eastern European countries, will feel the EU recession through reduced demand for their exports. Currency pairings represent another transmission channel. EUR/USD is the main FX pair in the world, so a weaker EUR leads to stronger USD demand which generally hurts emerging markets. There are also indirect effects that will come from global political realignments and interventions such as the potential G7 oil price cap.

For some countries though, this may present an opportunity as the EU will be seeking alternative energy sources. For example, Algeria and Azerbaijan will be increasingly important to the EU's gas supplies.

FIGURE 2: Euro Area GDP and Effect on GDP Shortfall



Source: Macrobond.

Q: How much is the energy crisis expected to cost the European economy?

A: Prior to the war in Ukraine, we expected Euro Area GDP about 5% above the pre-pandemic level by the end of 2023. We now expect it to be at the pre-pandemic level by the end of 2023. Therefore, we see the cost of this crisis to be around 5% of EA GDP.

Q: What are your expectations of the effect on the European financial markets?

A: The shortage of energy supplies to Europe are a clear negative supply shock to the European economy, and it is reasonable to assume that the region will experience a recession in 2023 along with persistently high inflation, which we expect will end 2022 and 2023 at 8.4% and 2.8%, respectively. We expect the ECB to continue raising interest rates to about 1.5% by year end before they peak slightly above 2.0%, which is our high-end estimate of the neutral rate. The severity of the recession and the inflation shock will depend largely on exogenous factors, such as the winter weather and the evolution of Russia-Ukraine war.

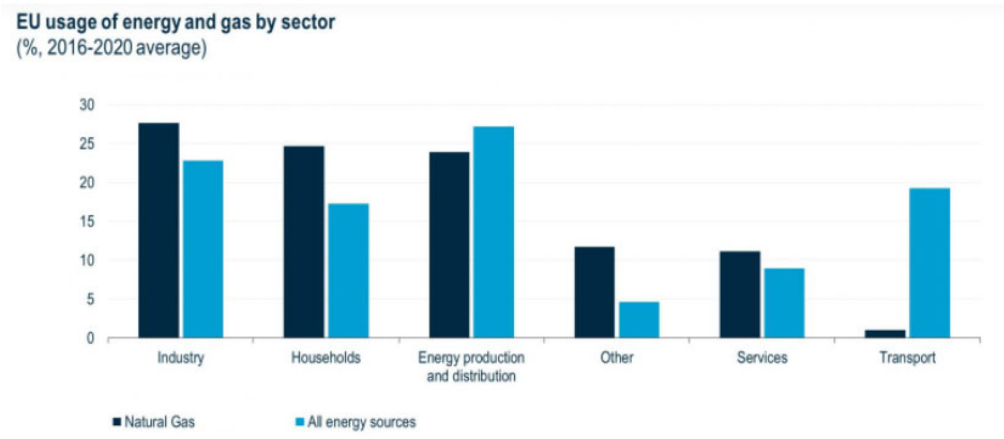
While the economic outlook is challenging and uncertainty remains high, asset prices in the euro area are already reflecting this grim outlook. The Eurostoxx 50 index is down 20% YTD, the euro is down 13% vs. USD, IG and HY corporate spreads are 108bp and 244bp wider YTD, respectively. The difficulty in predicting the Russia-Ukraine conflict and the winter weather means that the outlook for risky assets still presents two-sided risks. However, for long-term investors, valuations on these assets certainly appear attractive. But we are cognizant of the fact that short-term uncertainty will likely involve high volatility and poor information ratios.

Q: What are the main uses of gas in the EU, and what is the rationing outlook as winter approaches?

A: The main uses of the 400 billion cubic metres of gas previously consumed and exported by the EU consist of residential heating, electric power generation, and industry (Figure 3a). Households and essential social services, such as hospitals, are exempt from any rationing measures. With industry and services using about one third of the supply, they are likely to comprise the bulk of the rationing this winter, which is expected to be about 15%, and the EC has published a set of principles to guide prioritization. Furthermore, by the end of September, each Member State is required to update is existing national emergency plans setting out demand reduction measures to reach this target.

However, uncertainty regarding supply and demand - particularly if the weather is severe - means that the rationing could be significantly higher. The average winter temperature falls below 3°C in approximately one third of winters, which increases the demand for gas by about 10-15%. Therefore, a cold winter could make the gas shortfall far worse as the following table indicates (Figure 3b).

FIGURE 3: EU Usage of Energy and Gas by Sector and PGIM Fixed Income’s Scenarios



	Plausible best case	Plausible worst case
Russian imports pre-invasion	155bcm	155bcm
Russian imports 2022	70bcm (assumes late-August flows until year end)	50bcm (assumes zero flows until year end)
Increased alternative gas supplies (e.g., Norway, Algeria, U.S. LNG, Qatar LNG)	30bcm	30bcm
Alternative fuels (e.g., oil, coal, nuclear)	25bcm	25bcm
15% rationing	60bcm	50bcm
Winter temperature	Average	Colder than average 30bcm
Surplus/shortfall	30bcm surplus	0-10bcm surplus, 30bcm shortfall in worst case

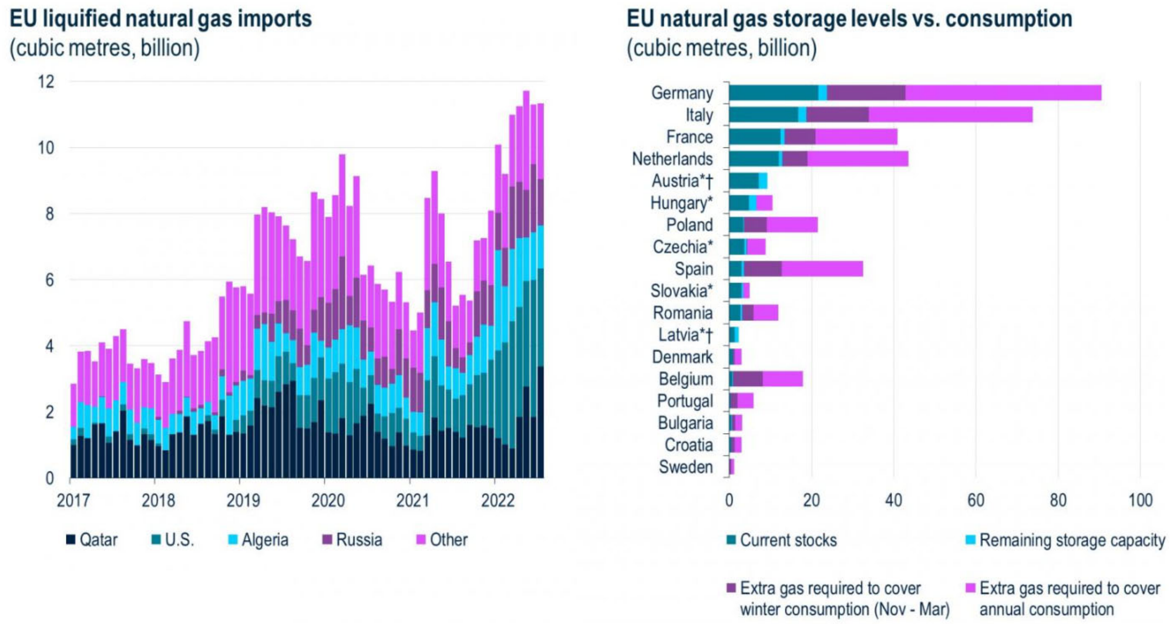
Source: Eurostat as of 2020, PGIM Fixed Income.

Q: To this point, how has Europe compensated for the reduction in Russian gas supply?

A: Europe has significantly diversified its gas supply in a short period of time, with liquified natural gas (LNG) imports doing the heavy lifting (Figure 4a). However, LNG does not appear to be a sustainable strategy beyond this year amidst limited global supplies and infrastructure constraints.

For example, the pipeline infrastructure across the EU was largely designed to flow from east to west and from north to south - not vice versa. While gas storage levels have reached target levels of 80%, they remain far less than the coming winter's demand needs (Figure 4b).

FIGURE 4: EU Liquified Natural Gas Imports and European Natural Gas Storage Levels vs. Consumption



Source: Eurostat, Macrobond. *Full Storage> Winter Consumption. †Full Storage < Annual Consumption.

Q: Given the logistical challenges of LNG imports, what are some of Europe's longer-term energy options?

A: Figure 5a outlines the challenges and potential solutions to the EU's existing energy plans. Renewables are certainly part of the solution, but those will take years to supplant the use of natural gas. In the interim, conservation and demand reduction in industries will receive greater emphasis. And running conversely to its net zero ambitions, Europe can switch gas use to oil and coal as well as delay nuclear plant closures (Figure 5b).

FIGURE 5: Europe's Existing Energy Plans and Its Demand Reduction Options

The plan	The challenge	Possible solution
Diversify gas supply via alternative pipeline, LNG	Limited global supply	Domestic fracking; Nuclear energy
Increase biomethane and hydrogen	Long lead times mean difficult to scale up in the short run	Public/private partnership together with non-EU allies to supercharge technology and scale
Increase efficiency savings	Price intervention will discourage savings	Allow price discovery to incentivise desired behaviour; compensate vulnerable firms and households
Increase renewables target from 40% to 45% by 2030	Increase from ~20% of energy supply from renewables to 45% in 8 years looks overly ambitious	Public/private partnership together with non-EU allies to supercharge technology and scale

Source: PGIM Fixed Income.

In general, Europe's developing energy model requires an EU-wide fiscal package that builds on the RePower EU initiative and is complemented by private investment, which would be facilitated by a continent-wide banking union.

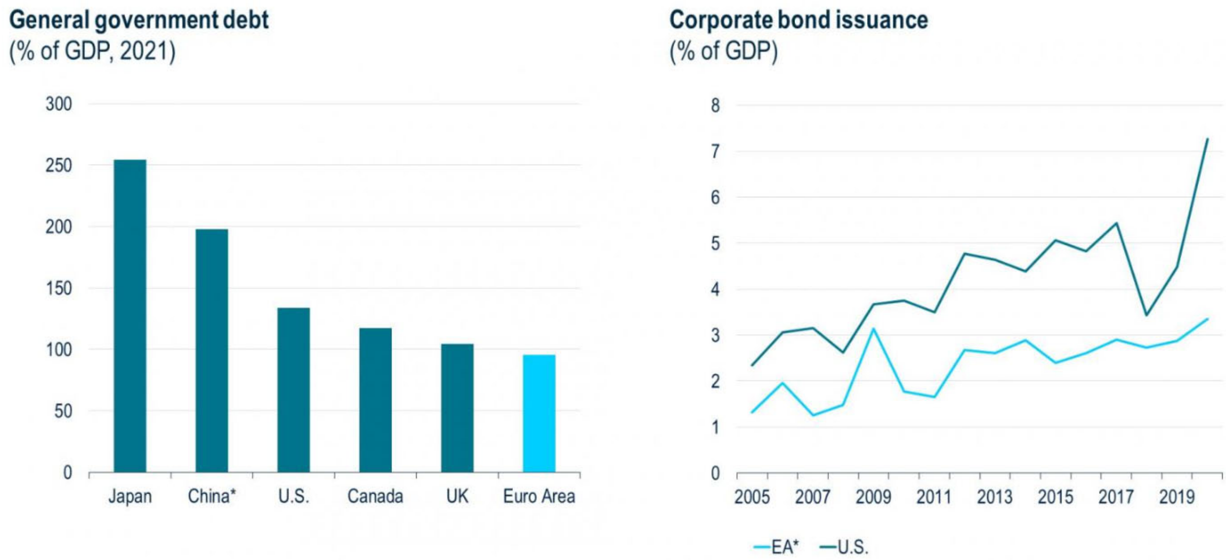
Q: Following Germany's nationalisation of Uniper, do you anticipate additional nationalisations or bailouts? How much additional debt is expected to be issued by European governments to finance energy support schemes?

A: At this point, we do not expect other European investment-grade rated companies in our coverage universe to be nationalised (barring any unforeseen circumstances) as companies have generally coped with the current crisis. However, German gas company VNG, which is 74% owned by the German utility ENBW, is facing similar issues to Uniper, but on a smaller scale. The company is said to face about €1.6 billion in losses this year due to its exposure to Russian gas contracts. ENBW and VNG are now in negotiations with the German government for support, which we expect to be forthcoming (VNG is critical to the security of Germany's gas supply and is structurally important for Saxony and East Germany).

It is difficult to estimate the amount of debt that will be issued by European governments in relation to their energy support schemes. Governments have yet to clarify how these programmes will be funded, and rather than directly issuing debt, they often provide loan guarantees to banks, meaning that the government only has to provide cash in the event of a borrower default (many COVID-business support schemes worked this way). It is likely that energy companies would have to shoulder some of the cost through windfall taxes and/or temporary power price caps that would lead to clawbacks of revenues in excess of the cap. In addition, we believe the level of required funding would also partly depend on market prices for gas and power, which are difficult to anticipate.

For a general sense of indebtedness, EA debt levels are relatively low compared to other, large economic regions as indicated in Figure 6a. Similarly, corporate bond issuance in Europe remains notably below the volume in the U.S. (Figure 6b). That said, the energy crisis is another reminder of the inherent risks of the "doom loop" between European banks and national governments whereby banks' heavy investments in domestic sovereign bonds create vulnerability to weak governments and national governments are similarly vulnerable in a respective bank failure or default.

FIGURE 6: General European Government Debt and Corporate Bond Issuance



Source: Macrobond, PGIM Fixed Income, Eurostat. *GDP-weighted average of Germany, France, Italy & Spain.

Thus far, systemic risk has been addressed through government actions, which we expect to continue for large, systemic players. If this support were to be unexpectedly withdrawn, there may be some systemic risk, but we see this as an unlikely scenario.

Q: How are margin calls and liquidity challenges affecting energy companies?

A: High power and gas prices have led to significant margin calls related to the hedging activities of power generators and energy suppliers. For instance, Equinor, the Norwegian state-owned oil and gas company, has recently estimated that margin calls related to energy trading in Europe amount to at least $1.5 trillion. While these margin calls have stretched the utility sector's liquidity positions, most of the investment grade companies under our coverage are coping with this challenge. We found that, since the beginning of the year, companies have been proactive in increasing their liquidity buffers (through new credit lines, bond issuance, etc.), while also seeking non-cash alternatives for collateral, such as standby letters of credit, liquidity swaps, and guarantees. They have also looked to shift away from hedging on the exchanges towards bi-lateral contracts, which typically do not require collateral posting. Some electricity generators have also stopped (or reversed) hedging the future output of their gas-fired plants given the risk of gas rationing this winter.

In addition, for integrated utilities, hedging often create offsetting impacts (for instance, positive margin calls in gas partially offset the electricity collaterals). Uniper was facing liquidity pressures that were significantly higher than the sector in general, and it was consequently nationalised. Governments throughout Europe (so far, Germany, Sweden, Finland, the UK, Austria and Denmark) have made liquidity packages amounting to double-digit billions of euros available to domestic utilities. These have consisted of credit lines, short-term loans, and guarantees to be used for collateral demands. These packages should alleviate concerns that smaller players on the European energy markets could create counterparty risks.

Q: What is the impact of margin calls and liquidity squeeze on the banking sector?

A: We have discussed this with a number of banks as well as with the operator of Europe's largest derivatives exchange (Deutsche Boerse). Deutsche Boerse's energy exchange typically holds €3-5 billion of margin collateral in a given day - this balance is currently €65-69 billion. This is clearly a huge liquidity call on market participants. However, European banks are not major participants in this market and are not expected to face significant margin calls. The bigger risk is via trading houses, which is limited, as well as energy suppliers, and we see some exposure to energy companies, especially at large commercial banks. This being said, governments (Germany, Sweden etc.) have been supportive of their energy companies with liquidity being provided to meet margin calls. So, we think credit losses should be limited to smaller borrowers and should not materially damage the creditworthiness of banks' loan books. At a system level, energy-related lending makes up only 1.3% of Eurozone bank's lending books.

Q: Do you expect any defaults by European banks or government agencies?

A: No. The European banking system is well capitalized and is starting to see better revenue momentum as rates rise, while liquidity remains at near record levels. Some impairments are likely as prices rise and the economy deteriorates, yet we believe that this is unlikely to materialize until 2023. That being said, rate related revenue improvements should more than offset this headwind, especially as precautionary loan loss provisions remain on balance sheets post COVID and are available to absorb an initial round of defaults.

Source(s) of data (unless otherwise noted): PGIM Fixed Income, as of September 29, 2022

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