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# Energy Support for Firms in Europe

## Best Practice Considerations and Recent Experience

Anil Ari, Philipp Engler, Gloria Li, Manasa Patnam, Laura Valderrama

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**Energy Support for Firms in Europe:  
Best Practice Considerations and Recent Experience**

**Anil Ari, Philipp Engler, Gloria Li, Manasa Patnam and Laura Valderrama\***

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**ABSTRACT:** The surge in energy prices due to Russia's February 2022 invasion of Ukraine significantly increased costs for European firms, prompting governments to introduce a range of support schemes. Although energy prices had eased by early 2023, uncertainty around prices remains unusually large. Against this backdrop, this paper examines the case for government intervention and identifies best practices with a view to improving the design of existing energy support schemes, facilitating exit from those schemes, and preparing policymakers for a downside scenario in which energy prices flare up again. The paper argues that support should be limited in size, strictly temporary in nature, narrowly targeted, and accompanied by strong safeguards and conditionality, while preserving price signals as much as possible to encourage energy conservation. Finally, the paper reviews recent support schemes introduced by European governments in light of the identified best practice considerations.

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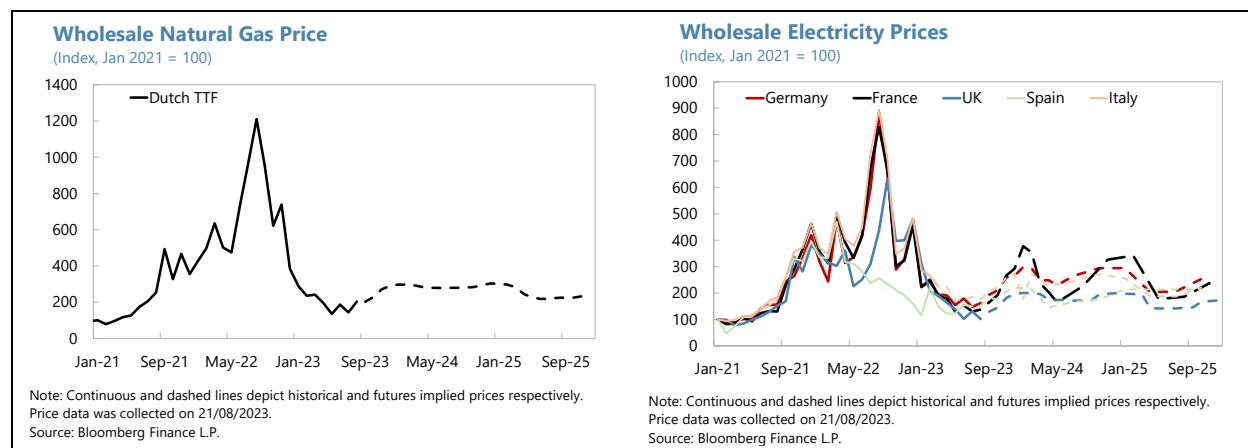
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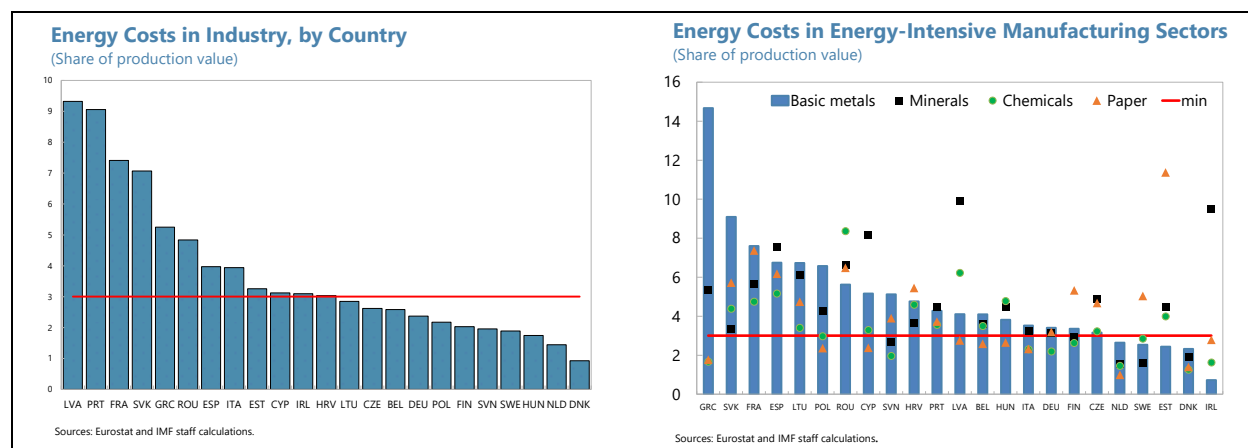
# 1. Introduction

## Wholesale natural gas prices in Europe surged in the aftermath of Russia's invasion of Ukraine.

Electricity prices in many European countries have also seen a historic increase over the same period, as they are linked to the marginal cost of electricity generation, with gas-fired power plants acting as the marginal supplier. Despite the drop in natural gas prices from their peak in mid-2022, futures contracts indicate that wholesale natural gas and electricity prices in Europe will remain more than twice as high as their levels prior to October 2021, when Russia began curtailing gas flows to Europe in preparation for the war (text figure).



European firms were impacted via a sizable cost-push shock, leading to reduced activity, increased business failures, and higher inflation (Annex I). Energy costs amount to over 5 percent of the total production value in some countries (text figure), with greater exposure among small businesses and select sectors. According to the 2022 EIB survey, the share of firms reporting an increase in energy costs as a barrier to investment increased to 87 percent in 2022 from 69 percent in 2021.

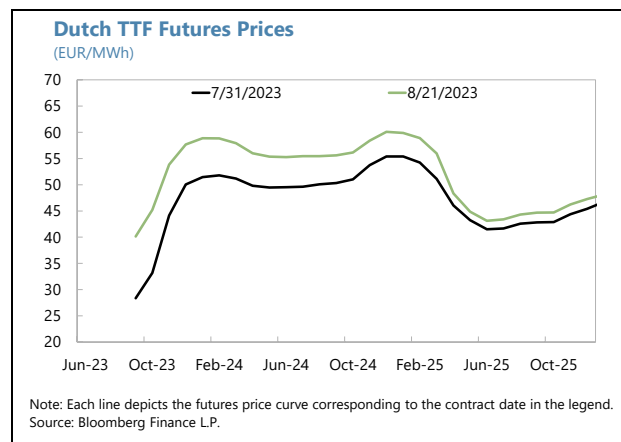


## European governments and the EU introduced a number of support schemes for firms in response.

Several countries launched programs to shield both households and firms from high energy prices. Between the start of the energy crisis in September 2021 and March 2023, over EUR 600 billion was earmarked across the EU to shield consumers from rising energy costs according to Bruegel estimates (Sgaravatti et al., 2023). The toolbox presented by the European Commission in October 2021 has been extensively applied across EU

countries (COM, 2021). The Commission has estimated that the measures adopted in line with the toolbox eased energy bills for several million SMEs by July 2022 (EC, 2022b).

**Energy prices are likely to remain volatile going forward.** Aside from risks associated with the prolongation of Russia’s war in Ukraine and possible energy supply disruptions, numerous structural factors contribute to heightened volatility in European gas and electricity prices. First, over the last decade, natural gas pricing in Europe has gradually shifted from long-term contracts indexed to the price of oil to spot pricing, which are more volatile. Second, as Russia curtailed pipeline gas flows to Europe, an increase in liquefied natural gas (LNG) imports helped make up for the shortfall (IEA, 2022). While reducing risks to energy security from a non-diversified source, the increased reliance on LNG imports has also raised Europe’s exposure to LNG supply or demand shocks abroad (e.g., concerns about labor strikes at Australian LNG facilities in August 2023 raised Dutch TTF futures for the rest of 2023 by 40 percent; see text figure). Third, energy prices may also see a period of higher volatility during the transition from fossil fuels to renewable energy, as forward-looking incentives to disinvest from fossil fuels collide with difficulties in scaling up renewable energy production at a fast pace.



**Against this backdrop, this paper discusses the conditions under which government support to firms facing high energy prices is warranted, and how such support should be designed.**<sup>1</sup> The paper argues that, even when it is warranted, support should be limited in size, strictly temporary in nature, narrowly targeted, and accompanied by strong safeguards and conditionality. The paper also argues for preserving price signals as much as possible, in order to avoid creating distortions in energy markets and to encourage energy conservation. Importantly, the paper takes stock of and reviews design elements of most major country support schemes introduced in response to recent energy crisis, and offers a blueprint for an optimal support scheme which could be introduced in case of future energy price shocks.

**The principles set out in the paper could also guide efforts by the authorities to tighten or exit existing support schemes.** The recent fall in energy prices provides a window of opportunity for countries to phase out support schemes to reduce state-aid dependencies. Thus, at the current juncture, the need for support to help firms weather a temporary price shock is now much lower and firms should be encouraged to begin adjusting to the new steady state. Current support schemes should generally be phased-out as planned, especially those that are untargeted, rather than being renewed or extended, absent large new (temporary) shocks. Alternatively, providing clear sunset clauses that are dependent on the realized path of energy prices or integrating a floor on price support beyond which support would not be deployed could constitute reasonable exit strategies.

<sup>1</sup> Energy support measures targeted at households and structural policies associated with the green transition and energy security are beyond the scope of this paper. This paper also focuses on natural gas and electricity price shocks and does not cover energy supply disruptions, or petroleum and other transport fuels. See Ari et al. (2022), Arregui et al. (2022) and Amaglobeli et al. (2023) on household support measures, Albrizio et al. (2022) and Di Bella et al. (2022) on energy supply disruptions, and Ari and Mulas Granados (2023) for a case study on the impact of, and policy responses to the energy price shock in the UK.

**The remainder of the paper is organized as follows.** Section 2 discusses the suitability of government interventions to protect firms from a surge in energy prices. Section 3 provides an overview of challenges associated with the design of energy support programs targeted at firms and provides a set of design principles aimed at navigating these challenges. Section 4 discusses measures implemented by European governments to cushion the impact of the energy price surge on firms. Section 5 concludes.

## 2. The case for and against government intervention

**The case for broad-based support for firms during energy price shocks is weaker than the case for pandemic support schemes.** Annex II provides a comparison between the recent energy crisis and the pandemic, which highlights two important differences: First, the Covid-19 crisis was extraordinary in that governments forced firms to shut down, while energy price surges constitute supply-side and terms of trade shocks that firms can adjust to (e.g., by investing in energy efficiency or passing through higher energy costs to end users). Second, while the Covid-19 shock was temporary, energy prices are likely to exhibit heightened volatility in the coming years, making such adjustments desirable. These differences are also relevant to future energy price shocks, making the case for government intervention less straightforward than during the pandemic.

**The case for intervention during energy price shocks instead rests on market imperfections.**

Market imperfections can imperil adjustment to higher energy prices and/or worsen the economic scarring associated with it. In a first-best world, the corporate sector would have access to financing to smooth the balance sheet impact of temporary energy price rises over time. Faced with a permanent increase in energy prices, the corporate sector would also be able to adjust through the exit of unviable firms, by passing through higher energy costs to product prices, and by borrowing or raising capital to finance needed energy efficiency investments. But in reality, market imperfections abound: (i) financial frictions may leave some firms which are viable at higher long-run energy prices without access to sufficient financing (mainly a concern for small firms); (ii) some firms that have access to financing may be left with impaired balance sheets (given already high debt levels post-COVID) which could curtail their ability to invest or stay afloat going forward; (iii) market adjustments may not internalize upstream/downstream supply chain externalities, leading to the failure of critically integrated firms and industries; and (iv) market adjustments to the energy mix and energy efficiency investments may not internalize energy security and green transition objectives.<sup>2</sup>

**Notwithstanding the justification for government intervention provided by market imperfections, there are also numerous costs and risks associated with any interventions:**

- *Undermining climate and energy security objectives:* While appropriate support measures could help accelerate the rollout of renewable energy (e.g., by setting requirements related to environmental protection), incorrectly designed measures may impede the green transition and hamper energy

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<sup>2</sup> For example, market adjustments to higher gas prices may take the form of increased reliance on coal rather than renewables, in conflict with climate objectives. Similarly, energy security may have elements of a public good, leading to insufficient investment in gas storage and renewable energy without government intervention.

conservation and security (e.g., providing support to deal with rising energy prices could reduce incentives for firms to invest in energy efficiency and reduce energy demand).

- *Adverse spillovers*: Large support packages and support to trade-intensive firms may distort the level playing field within trade blocs; and trigger retaliatory subsidies and trade measures by trading partners.
- *Tensions with macro policy objectives*: If ill-designed and/or excessive, support measures could conflict with the appropriate policy mix for internal and external balance (e.g., by bringing inflation back to target in a timely manner).
- *Fiscal costs*: Benefits from support policies should be weighed against the economic cost of financing them and further build-up of public debt, after the large increase incurred during the pandemic.
- *Zombie firms*: Viability is difficult to determine in practice,<sup>3</sup> and support to unviable companies delays the necessary re-allocation of resources and raises scarring from the energy shock.
- *Moral hazard*: Providing support may create expectation of future government interventions, and reduce incentives to hedge energy price exposures.
- *Political economy challenges in terminating support policies*: Once introduced, it may be politically difficult to phase out support measures. Repeated interventions may create norms that the government will step in to provide support in response to any shock.

Overall, support policies should be carefully calibrated to address market imperfections, while minimizing associated costs, and governments should only intervene if the benefits from the former outweigh the costs.

### 3. Considerations in the optimal design of energy support for firms

**Scheme design must be guided by clear economic principles as well as practical considerations.** In designing the scheme, governments need to surmount several challenges, such as: identifying firms that are at risk from the energy price spike but are viable in the long run; delivering support to those firms at minimum cost and with minimum distortions; and ensuring that the support is used in the desired way and not to postpone adjustment to the shock. In this context, the following criteria can help guide optimal design.

- *Targeting support to viable firms*: Assessing the amount of support necessary for the stabilization (re-establishing creditworthiness) of viable businesses is a forward-looking exercise that relies on business forecasts. This information is inherently difficult for governments which lack expertise or insider knowledge about firms' financials. In this case, governments could elicit relevant information

<sup>3</sup> These difficulties are in part due to uncertainty about future fossil fuel prices and their implications for viability. Notably, firms that were not viable at low fossil fuel prices might become viable through higher fossil fuel prices while other firms might lose their previous viability.

from better informed investors and creditors (e.g., firm owners and the financial sector). To align incentives of these actors with those of the government would require sharing losses proportionally (between the state and the credit institution) or co-investment (in case of equity support).

- *Preventing moral hazard:* Unconditional support could be diverted to uses unrelated to the energy transition and create expectations of future bailouts that spur excessive risk taking. Public sector expertise in managing individual companies is typically limited and could adversely affect managerial decision-making. Hence, supervision of a support scheme could be delegated to a public sector entity with expertise and at arm's length (e.g., a development bank) or to a private sector entity. Again, a private sector entity would need to contribute financially to the scheme in order to align incentives. Furthermore, support could be made conditional on investments in the energy transition, such as improvements in energy efficiency, substitution out of fossil fuels, or switching to production of less energy intensive goods. Such conditionality would also support the energy transition.
- *Preventing adverse selection:* When support takes the form of equity, financially stronger firms could be less willing to participate compared to weaker firms to avoid equity dilution. At the same time, weaker firms with no upside potential could have an incentive to hide information to be eligible for support. As with moral hazard and, more generally, given the challenges for governments to identify viable firms, private sector involvement and private skin in the game could play a positive role. Where private sector involvement is not possible (for example, for firms with no adequate credit history), the assessment could harness public and private information, such as public registers and tax authority records.
- *Avoiding distortions in international competition:* Support for firms at below market financing conditions in one country may lead to a competitive advantage relative to firms that need to finance the transition at market rates in another country. If uncertainty has tightened financing conditions to an extent that viable firms (especially SMEs) face liquidity shortages that may hamper the continuation of their operations, government support may nevertheless be desirable. In this case, international coordination through a program of best principles (e.g., the Temporary Crisis Framework for State Aid measures in the EU) would help ensure that countries with more fiscal space do not distort the level playing field by deploying larger corporate support packages.
- *Targeting support to minimize risk of rewarding energy inefficient firms:* The least energy efficient firms may require the greatest support. Such support might be regarded as unfair by more efficient competitors who have invested previously in energy efficiency without government support. However, it may be preferable for an inefficient but viable firm to use government funds to improve energy efficiency, facilitate better adaptation of business processes to price signals, and catch up with its peers, than to receive no support, default on its obligations, and trigger inefficient bankruptcy proceedings with cascading effects among its creditors and suppliers. Hence, conditionality of support is key.
- *Ensuring that benefits shield firms from excessive losses rather than raising profits:* Support should be granted to ensure the survival of firms whose activity may be threatened due to exceptionally high energy prices. An increase in profits after receiving support could indicate overcompensation. This calls for support size proportional to the balance sheet damage and claw-back clauses should profits rise above a share of pre-crisis levels (e.g., 90 percent). Governments could also require temporary



restrictions in capital distributions (e.g., dividend payouts or share buybacks) to strengthen firms' balance sheets.

- *Avoiding double compensation:* If both firms and households receive support to compensate them for the same increase in energy prices, support would be provided for the same problem twice. Indeed, if firms can pass on higher production costs to prices, there is no need for firm support. To the extent that firm support results in lower prices, there is no need for household support. At the same time, it is critical to monitor the margin setting practices of intermediate producers, which could potentially increase margins on raw materials sold by firms that were unable to pass on higher energy costs (for instance, due to competitive pressures), and increase the final price for end-consumers.

**In light of these criteria, support should carefully calibrate the following design elements:**

- **Instrument choice.** A first choice would be to identify whether liquidity or solvency instruments should be deployed to address the difficulties faced by firms. In general, solvency instruments should not be used in cases where firms face pure liquidity needs (i.e., short-term liabilities exceed liquid assets) but their balance sheet position is stable (in terms of leverage and profitability), except if compensation for damage due to exceptionally severe increases in energy costs is warranted. In these instances, support through subsidized loans or guarantees, including with grace periods for repayment, could help ameliorate the deterioration in the beneficiaries' cash flow position. Solvency support (e.g., non-repayable advances, equity injection) should preferably target financially vulnerable firms hit by the energy crisis in order to re-establish their creditworthiness so that they can re-gain market access to continue funding their operations. On the other hand, measures that directly or indirectly weaken price signals, including price caps and lower energy taxes should be avoided, as these are poorly targeted, expensive, and can be difficult to reverse (see Box 1 for improvements to the design of price caps that may reduce some of these distortions). For micro firms and small and medium enterprises (SMEs) consideration should be given to the use of grants or hybrid instruments while for larger or listed firms, equity instruments could be preferable (see Ebeke et. al., 2021).<sup>4</sup>

### Box 1: Guidelines to Improve Price Cap Measures

**Policy responses should aim to preserve the price signal.** Measures such as price caps, which do not allow the marginal unit of energy used to be priced at the market price, impede the necessary adjustment to the energy price shock (including through energy-conserving behavior and energy efficiency investments) and are not cost-effective.

**While price caps are generally sub-optimal, their prevalence during the recent energy crisis warrants the provision of guidelines to minimize resultant distortions:**

- Price caps should be **narrowly targeted** (e.g., to micro firms and SMEs), **temporary** in nature, and accompanied with a **pre-announced path for phase out**.
- To **retain incentives for demand reduction**, nominal price caps could apply to energy usage below efficiency benchmarks by sector, and be more subsidized (i.e., set lower) for energy-intensive sectors. This is because firms operating in these sectors are hit by a larger reduction in

<sup>4</sup> In general, equity instruments are more suitable for large firms (given their strategic importance and the greater availability of reliable information), whereas hybrid instruments are more appropriate for SMEs (given the sheer number of firms and the higher monitoring costs). For micro firms, grants or subordinated/convertible loans may be the only option, as they are often non-incorporated entities, with limited reporting disclosures, and for which intermediaries may not have an informational advantage.

earnings which could threaten their viability. This is compounded by lower average operational margins in some energy-intensive sectors (see Annex I for a quantitative example).

- To ensure **burden sharing**, the level of the price cap should be set above the pre-crisis price for electricity and natural gas (e.g., twice the pre-crisis market price).
  - **International coordination** of price caps, at least for large firms would **limit cross-border competitive distortions**. This is especially important for preserving a level playing field within the EU single market (as price caps are not subject to limits on maximum amounts of compensation, unlike the EU Temporary Crisis Framework for State Aid).
- 
- **Targeting.** Support should be narrowly targeted towards firms that have been exceptionally affected by the energy price shock. In practice, targeting could be based on firms' past usage of energy consumption as a share of total costs/turnover. Current energy consumption should not be used for targeting as this could encourage firms to increase energy intensity in order to benefit from aid which is detrimental to energy conservation efforts. If firm-level targeting is complex due to, for instance, lack of timely data, the authorities could instead use a sectoral classification to identify energy intensity.<sup>5</sup> A combination of sector and firm classification (for instance, energy intensive in critically integrated industries) could further narrow the targeting criteria while preserving on public resources. The trade-off between sectors versus individual firms is that the former may appear simpler, while the latter is likely to be more accurate.<sup>6</sup>
  - **Viability assessment.** Aid can be granted to compensate firms for the damage caused by the exceptional circumstances (surge of energy costs, loss of turnover, etc.) or to stabilize the balance sheet of the firm (e.g., due to excessive leverage or significant operational losses). If the latter, a viability assessment of the firm should underpin eligibility criteria. While ensuring beneficiaries are viable in the future can be a sound design principle, the practicalities of assessing this can be cumbersome. Such a forward-looking viability assessment should therefore be reserved for systemic/very large firms where significant public resources are at stake and preferably done in collaboration with development agencies or the private sector.<sup>7</sup> Support to firms in pre-existing financial difficulty (e.g., firms in arrears to the tax authority, or subject to bankruptcy proceedings) should be avoided. In some cases, support for the increase in energy costs will not be enough and the solution may require a broader restructuring (see Araujo et. al., 2022).
  - **Degree of complexity of a scheme.** Countries face trade-offs between simple but imperfectly targeted schemes and complex targeting mechanisms that increase delays, administration costs, and potentially the scope for lobbying and fraud. Governments will also need to decide how much to prescribe in the program and how much flexibility to grant to the administering institutions.

<sup>5</sup> For instance, the EU temporary crisis framework for state aid (EC, 2022) provides a list of energy-intensive undertakings active in a sector or sub-sector. On the other hand, for a firm classification, energy intensity is defined based on purchases of energy products (including energy products other than natural gas and electricity) amounting to at least 3 percent of the production value.

<sup>6</sup> As noted in Ebeke et. al., (2021), targeting firms using crisis related losses can be an effective way of containing costs and may be easier to administer than sectoral targeting, as many sectoral definitions exist, and firms may operate in more than one sector.

<sup>7</sup> Some public institutions such as wealth management funds, industry or public enterprises/ministries/agencies, or development banks could have the necessary expertise. In all instances, however, public authorities can still have a coordinating role in providing common macroeconomic scenario assumptions to serve as inputs for business forecasts.

- **Duration of the scheme and exit strategy.** Intervention instruments must be designed so as to ensure that public support is temporary, state-contingent (i.e., the generosity of the intervention should depend on the evolution of market prices) and accompanied with options and incentives for early redemption or accelerated exit (in the case of equity instruments). From this perspective, the duration of the schemes should be short and clearly defined, possibly as a function of wholesale prices. Open-ended schemes that create an expectation of perpetual support should be avoided. Alternatively, providing clear sunset clauses that are dependent on the realized path of the energy schemes or integrating a floor on price support beyond which support would not be deployed offer good and predictable exit strategies. Direct equity support in the form of ordinary or preferred shares (Ebeke et al, 2021) can be more suitable for large or listed companies where an easy exit is possible.
- **Size of the intervention and burden sharing.** The amount of liquidity support should be linked to liquidity needs caused by the energy crisis, as well as to liquidity needs associated with energy investments. The amount of solvency support to energy-intensive firms should be linked to pre-crisis energy usage, or to current usage but should be accompanied by energy conservation requirements to achieve energy savings. To limit the fiscal cost of the scheme and to address competition concerns, the size of the public intervention should also be capped at the level necessary to ensure the continued viability of the firm as a going concern. This principle can be operationalized in different ways, including by using financial metrics of creditworthiness (e.g., a target level for net debt-to-EBITDA, debt-to-equity ratio, or equity value) under baseline or stressed conditions.
- **Governance.** All support measures should include public disclosure requirements related to the beneficiaries and their amount of support to reduce fraud and increase legitimacy. To further deter fraud, ex-post audits (random and risk-based) should be introduced with large penalties for misuse of funds. Additional restrictions may be necessary to prevent beneficiaries from taking advantage of their strengthened balance sheet to engage in anti-competitive behavior. For solvency support, limits on managerial remuneration, dividends, and share buybacks could be imposed. Alternatively, including claw-back clauses can help recover aid granted on false representation. In the case of large firms that cannot raise sufficient funding in the market, if direct equity support is provided, it should incorporate strong safeguards to ensure that the aid does not create undue distortions and be supplemented with measures to re-organize or restructure the company where necessary (Araujo et al, 2022).
- **Conditionality.** The cost of liquidity support could be increased with the duration of support. For liquidity support, schemes should require intermediating banks to pass on financial benefits to end users. The degree of compensation should be scaled up or (partially) convertible (loans to grants) conditional on investments in energy efficiency and reduction of carbon emissions.

Weighing the pros and cons of government support (Section 2.2) and design challenges, the balance of risks suggests that any government support must be carefully calibrated. Key principles are that support should be limited in size and strictly temporary in nature; price signals should be preserved as much as possible to encourage energy savings; support should be narrowly targeted, avoid overcompensating beneficiaries and be accompanied by strong safeguards and conditionality.

## 4. Review of energy support schemes for firms introduced by European governments

In the backdrop of existing pandemic support schemes, European governments quickly launched a variety of schemes to support firms mitigate the energy price crisis. This section critically examines the several EU-wide initiatives that enabled EU member states to deploy support. It then provides an overview of broad-based firm support schemes from over 35 European countries, delving into their design aspects such as targeting, instruments deployed, burden-sharing, conditionality and budget envelope devoted. The data on national schemes and estimates of their costs are based on a survey of IMF desk economists for the respective countries and supplemented with data from Bruegel (see Sgaravatti et. al., 2023). Subsequently the section will discuss select “best-practice” country schemes and propose a synthetic program design based on good design elements from each of these programs.

### 4.1. EU-wide initiatives

**For EU member states, the EU-level Temporary State Aid Framework together with a few other initiatives (Box 2) provides overarching guidelines for the design of national corporate support programs.** First, the European Commission (EC) published a “toolbox” on energy support measures for both households and firms in early 2022. The toolbox, while allowing flexibility to Member States, provided guidelines for time limited compensation measures to firms that were severely affected by the energy crisis. Second, the EU temporary state-aid framework provides guidelines for liquidity and solvency support to firms as well as aid for investments in renewable energy, increasing energy efficiency, and reducing energy consumption. Finally, the EC emergency intervention for high energy prices allows to raise revenues through caps on inframarginal technologies and a solidarity levy on fossil-fuel profits. The intervention also allows member-states to temporarily price electricity below cost for SMEs.

**The EU-wide umbrella schemes incorporate measures with some desirable elements.** These address several of the issues discussed in the previous section, including targeting, size of intervention, measures on ex-post conditionality, and government exit strategies. However, some measures are less well targeted, discourage energy savings and are administered without explicit conditionality or governance provisions.

- *EU energy toolbox:* While some suggested measures within the toolbox, such as the reduction in tax rates, satisfy well-targeted and closed-ended criteria, other measures (e.g., provisions for reducing energy costs for all end users) are broad-based, with little incentives for energy savings, and open-ended. There is also no cap on support provided and a lack of explicit ex-post conditionality on investments in energy efficiency. Standard governance provisions for the provision of the scheme are also absent.
- *EU temporary crisis framework for State Aid measures following Russia’s invasion of Ukraine:* In terms of targeting, while the intensity of support depends on energy dependency which is a good design element, some aid may be granted to undertakings in difficulty prior to the pandemic/energy shock that pose a risk to public finances. In terms of the size of intervention, liquidity support is rightly tied to future liquidity needs and support is capped as a share of the cost increase. Some ex-post

conditionality provisions apply with grants incorporating demand reduction targets and additional support earmarked for investments in energy efficiency. Schemes are, however, not linked to requirements related to environmental protection although compensation is limited to a share of historical consumption to encourage energy savings. The schemes are temporary, with aid required to be deployed no later than end-2023. The publication of aid above €100,000 and claw-back clauses are consistent with good governance provisions but these could be stronger for solvency support schemes (e.g., requiring restrictions on dividend distributions) and loan guarantee programs (e.g., to ensure that financial institutions pass on financial advantages to firms). At the same time, granular provisions at the sector level can impose a high administrative burden for firms operating in more than one sector (as accounting statements may not capture intra-group transfer pricing across units). This could warrant simplified procedures at the consolidated level.

- *EC emergency intervention*: While the proceeds from the revenue raising measures (see Box 2) are not required to be targeted and can be used to lower electricity prices, the proceeds from a solidarity tax are required to be targeted at energy-intensive industries and are conditional on energy efficiency. All interventions are temporary and meant to expire at end-2023. However, there is no nominal (per-firm) cap on the amount of support which can make the schemes costly and risks distorting competition. There is also a lack of governance and burden-sharing provisions.

### Box 2. EU Initiatives to Support Firms

**The first generation of measures were introduced through the *EU toolbox on energy* in May 2022 with the aim to rapidly mitigate the effects of high energy prices on vulnerable households and firms.** The guidelines in the toolbox allowed Member States to provide time limited compensation measures and direct support to companies or industries (in full compliance with the state aid framework), e.g., through vouchers or by covering parts of the energy bill, financed inter alia from the EU Emission Trading System (ETS) revenues as well as through reduced taxation. Safeguards to avoid disconnections from the energy grid or defer payments temporarily were also permitted. Member States are also encouraged to facilitate a wider access to renewables power purchase agreements beyond large business, including for SMEs, for instance by aggregating end-user demand in compliance with competition rules. The toolbox also suggested some non-selective measures (e.g., reduced natural gas prices) to reduce energy costs for all end users.

**The *EU temporary crisis framework for State aid measures to support the economy* was adopted in March 2022 following the aggression against Ukraine by Russia.** The framework was amended and prolonged in July 2022 and in October 2022. It provides a targeted and proportionate application of EU State aid rules to offer temporary support to firms for which the energy crisis would have severe short-term consequences (e.g., interruption of existing contracts and projects, with the consequent loss of turn-over, disruptions in supply chains, in particular of raw materials and unfinished products), causing a serious disturbance to the economy with immediate social and economic repercussions in terms of loss in activity and jobs. The aid is provided to facilitate the structural adjustments needed in response to the new economic situation caused by the energy crisis. Some key features include:

- **Limited amounts of aid**: Aid may be granted in the form of direct grants, tax and payment advantages or other forms such as repayable advances, guarantees, loans and equity provided the total nominal value of such measures does not exceed the overall cap of EUR 2 million per undertaking.
- **Well targeted and temporary**: Aid should be granted to firms affected by the energy crisis and provided no later than December 2023. In addition, aid granted to undertakings active in the

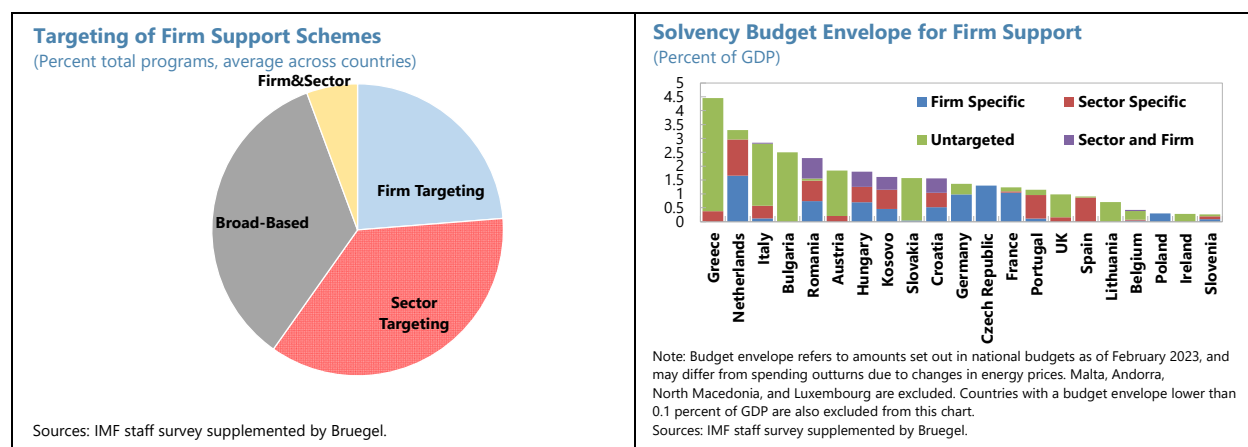
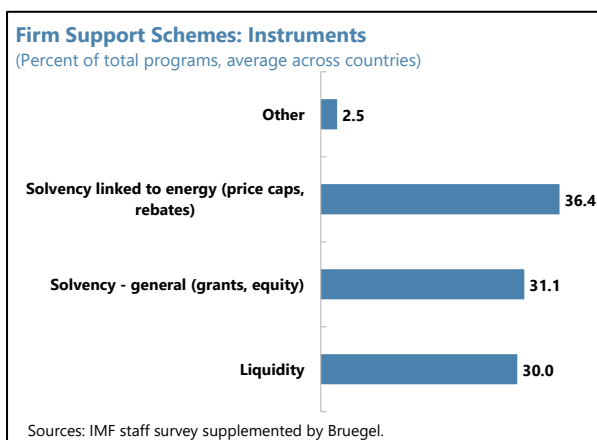
processing and marketing of agricultural products is conditional on not being partly or entirely passed on to primary producers.

- **Liquidity support in the form of guarantees and subsidized loans:** Public guarantees on loans or subsidized loans for working capital or investment needs can be provided for a limited period and loan amount to crisis-affected firms. The overall amount of loans cannot exceed certain thresholds linked to turnover and energy costs (15 and 50 percent, respectively, in the base case). The amount of loan can be increased upon appropriate justification to cover liquidity needs for 12 months (6 months) for SMEs (large firms). Guarantee premiums are set per individual loans at a minimum level, which increases progressively with the duration of the guaranteed loan.
- **Aid for mitigating high energy costs:** Support for compensating exceptionally high energy costs can be provided through direct grants, tax and payment advantages or other forms such as repayable advances, and equity. Such aid should be based on historical energy consumption (with a haircut) to incentivize energy conservation while helping enterprises cope with the consequences of the current crisis. Member states are encouraged to require beneficiaries to provide adequate commitments related to not substantially reduce production activities below what is necessary to realize the targeted energy savings and/or merely shift their consumption elsewhere. The overall aid per beneficiary cannot exceed 50 percent of the eligible costs with a cap of EUR 4 million per undertaking except for firms suffering from a significant reduction in economic performance during the crisis (i.e., for these firms the limit is 40 percent of eligible costs with a EUR 100 million cap). For 'energy intensive' firms with a reduction of EBITDA of at least 40 percent or negative EBITDA, the limit is 65 percent of eligible costs with a EUR 50 million cap; and, for 'highly energy intensive' firms operating in specific sub-sectors, the overall aid has a maximum of 80 percent of eligible costs with a EUR 150 million cap.
- **Aid for accelerating the rollout of renewable energy and decarbonization:** Additional support can be provided to firms for the promotion of electricity from renewable sources, renewable hydrogen etc. as well as to facilitate investments in the decarbonization of industrial activities, notably through electrification and technologies using renewable and electricity-based hydrogen. Similar conditions on capping the amount of aid amount and expiration of the scheme (see above) apply.

**The European Council also launched an *emergency intervention* in September 2022 that dealt with revenue-raising measures together with price regulation for address the problem of high energy prices.** Firstly, Member States would receive the excess revenues of electricity generators that rely on cheaper 'inframarginal' energy technologies. Secondly, fossil fuel producers in the EU would be subject to a solidarity contribution on their excess profits, at a rate of at least 33 percent across the EU. These revenue-raising measures are accompanied by a voluntary target to reduce electricity consumption by 10 percent and a mandatory target to reduce peak electricity demand by 5 percent. These efforts would lower the share of gas in the energy mix and diminish its effect in terms of price setting, especially at peak times. Other measures would temporarily allow price regulation for small and medium-sized enterprises (SMEs) as long as these interventions retain an incentive for demand reduction and are based on annual consumption over the past five years.

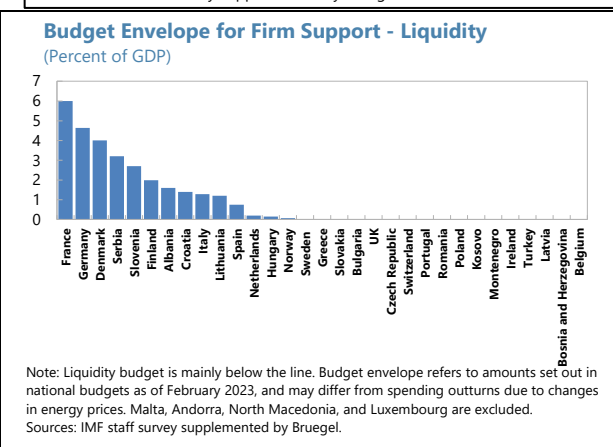
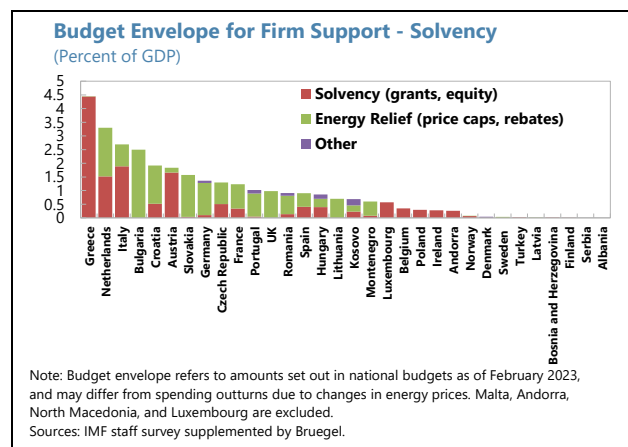
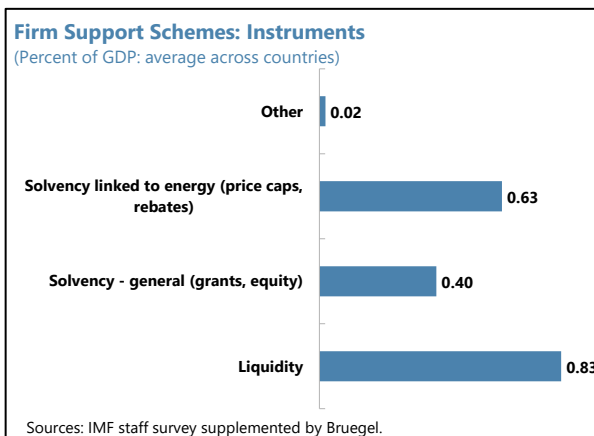
## 4.2. National schemes

This section assesses the wide variety of measures rolled out by European countries to shield firms from the surge in energy prices. Many programs adopted early in 2022 were subsequently extended towards the end of the year despite falling energy prices in spot markets as forward prices remained well above pre-crisis levels. The measures can be classified into four types of instruments: (i) *liquidity* support (accounting for, on average, about 30 percent of the overall budget envelope); (ii) *general solvency* support through grants, investment or equity support (accounting for, on average, about 30 percent of the overall budget envelope); (iii) *energy related solvency* support through price caps, energy bill rebates or tax reductions (accounting for, on average, about 38 percent of the overall budget envelope)<sup>8</sup>; and (iv) *other* measures such as extension of furlough schemes, insolvency law extensions etc. (accounting for, on average, about 2 percent of the overall budget envelope). In terms of targeting, broad-based or untargeted measures account for about two-thirds of countries' budget and include instruments such as price caps, energy bill rebates (solvency) and loan guarantee schemes (liquidity) directed towards all firms. Measures targeted at a subset of firms (about 27 percent of budget envelope) include support to SMEs and energy intensive firms. Measures targeted at a subset of sectors (about 30 percent) include mostly energy intensive sectors, i.e., transportation and agriculture sector. The remaining schemes target both at the level of sector and firm (e.g., SOEs in the gas sector).

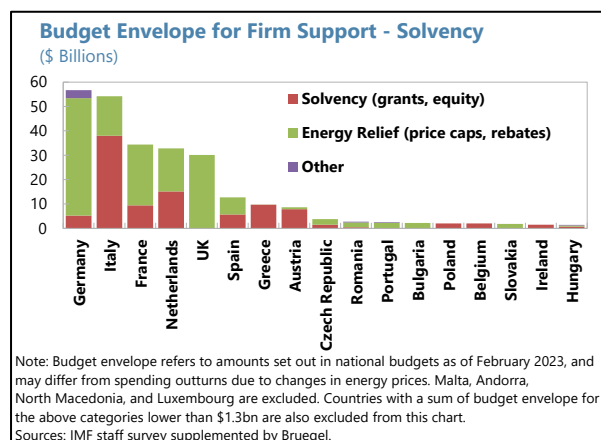


<sup>8</sup> For broad-based schemes such as price-caps, directed both at households and firms, the paper assumes that half of the budget is firm-specific unless it is more narrowly targeted (such as towards micro firms or SMEs) in which case only a quarter of the envelope is assumed.

**Fiscal costs for supporting firms are substantial but could be lower than budgeted given lower than expected energy prices.** Solvency related instruments account for, on average, about 1 percent of GDP with higher envelopes in Greece, Italy and Netherlands. Solvency instruments related to price caps entail significantly higher budgetary costs (on average) compared to those linked to grants and equity. Liquidity support measures are larger, mostly because they reflect contingency support through government guarantees and subsidized loans but take-up has been low so far.



**Large grant-based support packages, especially those targeted at large firms, could tilt the playing field.** Governments in some major EU countries and the UK have provided a large amount of corporate support (in nominal amounts) that could disproportionately benefit local firms. This could perturb the level-playing field, especially within the EU single market, if the take-up of support is sizeable and concentrated towards large firms. However, limitations on the size of support per-firm and the governance provisions laid out in the EU Temporary Crisis Framework could mitigate concerns on anti-competitiveness. It should also be noted that the nominal amount of support also reflects the size of the country's GDP and its energy intensity.



**A few schemes involve burden sharing with the private sector and viability assessments.** Burden sharing with the private sector typically takes the form of financial sector intermediation to provide liquidity support to firms. For viability assessments, liquidity schemes are normally linked to an evaluation of firm's financial health by financial institutions based on the firm's balance sheet and projected cash-flows (or credit reports). Some schemes also incorporate ex-post conditionality related to energy efficiency (see also below), often monitored by public agencies.



**While countries typically employed a range of measures, there are some examples of schemes that incorporate good design elements.** These, typically temporary, schemes generally involve deploying aid to narrowly targeted end-users, low price distortion and involve conditionality and governance provisions.

Examples of such schemes by type of instrument include:

- **Liquidity:** The German response<sup>9</sup> includes a scheme (aid to remedy liquidity shortages) that is targeted at highly affected firms, including energy-intensive ones or energy traders. The support instrument takes the form of guarantees and subsidized loans with guarantees' premiums and credit risk margins increasing with duration. SMEs are offered loans with lower credit spreads over benchmark which can be granted up to December 2023. The scheme has ex-post conditionalities involving dividend restrictions on management bonuses for beneficiary firms and incorporates transparency provisions including the obligation to publish relevant information on each individual aid above EUR 100,000.
- **Energy related solvency (price-caps):** The French scheme on electricity tariff shields (*Amortisseur électricité*) provides compensation to companies that have signed higher energy contracts, with a reinforced unit aid ceiling. This ceiling is defined by an indicator present on invoices and quotes applied by energy suppliers. This aid is well-targeted, towards energy intensive smaller firms (those with less than 250 employees and whose power use is greater than 36 kVA). In addition, it avoids double compensation as firms eligible for the broader energy tariff price shield are excluded from this scheme. This aid is non-fungible and integrated directly into the firm's electricity bill. The scheme is closed-ended and set to expire on December 31, 2023.
- **Energy related solvency (energy bill relief):** The UK scheme targeted at energy and trade-intensive (mostly manufacturing) firms aims at providing a discount on high energy costs. Firms in these targeted sectors will receive a gas and electricity bill discount based on a supported price which will be capped by a maximum unit discount of £40.0/MWh for gas and £89.1/MWh for electricity. To maintain incentives to conserve energy, support is restricted to 70 percent of energy usage volumes. The scheme is time-limited and intended as a bridge to allow businesses to adapt.
- **General solvency (grants):** The Spanish scheme targeted at sectors that use gas intensively (such as the manufacture of artificial and synthetic fibers and ceramics) takes the form of direct grants to compensate firms for high energy costs. The aid is capped at a specific amount per firm and is temporary with a set expiration period. Obligations may be included for the beneficiary companies related to the consumption in part of renewable energies, demanding investments in energy efficiency such as those derived from the recommendations of energy audits, or investments to reduce the consumption of natural gas, for example, through electrification.
- **Solvency (equity):** The Dutch scheme (*energy investment allowance for decarbonization*) aims at offsetting 45 percent of investments in energy efficiency against reductions in corporate income tax to encourage sustainable energy use. This aid is targeted at firms whose investment costs range from €2,500 up to €126 million with the condition that the investment asset should be maintained for at least 5 years. If the firm sells these assets within 5 years and the total value exceeds €2,300, it must repay a

<sup>9</sup> The German government has rolled out many additional schemes, including the "Protective Shield" package announced in September 2022 for EUR 200 billion which includes a 'gas price brake' intended to reduce average gas prices.

proportion of the allowance via the disinvestment surcharge. The Energy Investment Allowance can be claimed for all assets included in the annual Energy List compiled by the Netherlands Enterprise Agency. Those firms eligible for aid under other investment credit schemes are excluded from being a beneficiary.

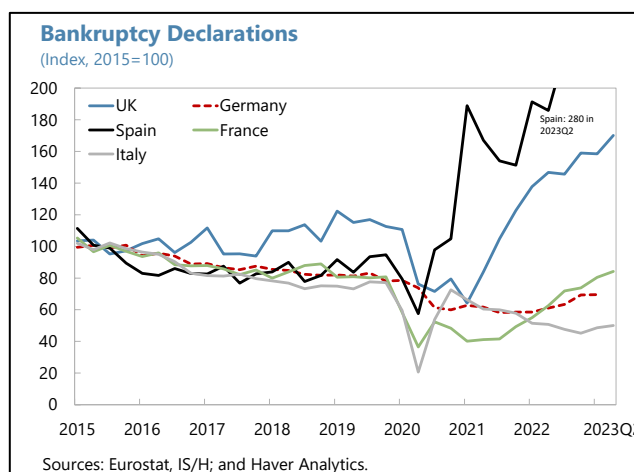
## 5. Takeaways

**This paper presents a set of guiding principles to inform the design of government support programs to shield firms from energy price shocks.** Aid should, first and foremost, be in the form of *liquidity* support to relieve cash flow pressures. For firms highly affected by the energy cost increase and/or loss in turnover triggering a substantial deterioration in creditworthiness, *solvency* support (in the form of grants or equity instruments) may be warranted. To *target at-risk firms*, exclude those that were already in financial difficulty (e.g., were in tax arrears or had initiated bankruptcy proceedings), and focus on those severely affected by the crisis, proxy indicators (e.g. highly affected regions or sectors) could be used as needed. For instance, some schemes could be addressed to firms operating in gas intensive sectors, or in industries where firms are not able to adapt their production processes to severe increases in energy costs in the short-term. The *size* of the scheme should provide for a per-firm cap, to avoid distorting competition. *Ex-post conditionality* could include energy efficiency improvements, including through conversion of loans to grants or equity for firms meeting specific requirements related to environmental protection (e.g., reaching a target of energy consumption with renewable energies). Schemes must include *transparency disclosures*, and ideally have claw back clauses contingent on an earlier-than-anticipated decline in energy prices. Finally, clear *exit mechanisms* should be included given the typically temporary nature of energy price shocks (having time-bound deadlines can be helpful but tying the amount and duration of support to developments in energy prices may enhance cost efficiency).

**While EU and national government support schemes have many desirable properties, some aspects could be enhanced.** There is a lot of heterogeneity across corporate programs, but a welcome takeaway is that the schemes broadly *target* firms or sectors most affected by the energy crisis (and energy producers). Nonetheless, many programs lack such targeting. For example, broad-based price caps are prevalent and other energy relief mechanisms include rebates and reduced taxes. Only a few schemes involve viability tests and/or *ex-post conditionality* which means fiscal burdens may be larger than they need to be. A comforting feature is that the *duration* and *size* of schemes has been capped by the Temporary State Aid Framework across the EU, hence eliminating a race to the bottom across countries. However, size limits could have been more stringent in some cases as the level of aid provided appears highly uneven across types of firms and could distort the level playing field depending on the extent and nature of take-up. For instance, the EUR 200 billion German protective shield package, including a gas price brake, warrants enhanced vigilance to ensure that the level playing field remains intact and that incentives to save energy are preserved. Also, the *amount* of support could be linked to energy efficiency efforts to advance climate targets. The *governance* of schemes is highly uneven, ranging from exemplary to insufficient (the degree of transparency could be increased, for example by reducing the support threshold triggering EU disclosure requirements a notch below the current level of €100,000). Table 1 in Annex III provides a 'synthetic' design scheme for solvency and liquidity support that combines best practice elements from various national schemes.

## Annex I. Corporate health post-pandemic and the impact of the energy crisis

**Corporate bankruptcies are on the rise again.** After remaining muted in the immediate aftermath of the pandemic, partly reflecting the large amount of Covid-19 policy support that was deployed to support firms, insolvencies have begun to trend upwards since mid-2022, particularly in the UK and Spain (text figure). In the UK, corporate insolvencies increased by 57 percent in 2022 (y/y/) and reached a record high since 2009. This came on the back of winding down of pandemic support schemes, energy cost increases and rising interest rates. In Spain, changes to the country's insolvency law, which made it easier for companies to restructure their debt, prompted a surge in court filings of insolvencies, which more than doubled in the second half of 2022. In the EU, sectors that registered the biggest increase in insolvencies were the transport and storage, accommodation, and food services sectors.



**Firms operating in energy-intensive sectors and leveraged firms are particularly vulnerable.** The energy crisis has a very different impact across countries and firms. First, the share of “energy intensive” firms (for which energy costs exceed 3 percent of production value according to EU regulation) differs markedly across sectors (highly affected sectors include agriculture, transportation, basic metals, minerals, and water treatment). Second, within the same sector, there is large cross-country heterogeneity in energy intensity with half of the countries in the EU posting the average ‘Industrial’ firm above the 3 percent energy intensive threshold (Annex I. Figure 1., panel 1). Third, firms operating in sectors with high leverage or hit by a loss of turnover may face liquidity shortages as interest expenses could exceed operational revenue, particularly amid soaring interest rates. Under October 2022 WEO baseline conditions, up to one third of manufacturing firms could become vulnerable ( $ICR < 1$ ).<sup>10</sup> Under adverse conditions, defined by a two-percentage point increase in interest rates and a 10 percent decline in corporate earnings, the share of vulnerable firms in manufacturing could increase by 10 percentage points (Annex I. Figure 1, panel 2).

**Rising energy costs could lead to significant reductions in operational revenue and increase solvency risk.** The average energy intensity - share of the cost of energy relative to sales - of the most affected sectors (Minerals, Basic Metals) is over 4 percent compared to 1 percent in less affected sectors (Pharma) for the median EU country (Annex I. Figure 1., panel 3). To gauge the extent of sector-specific stress, a simulation exercise using sector-specific firms’ EBITDA (earnings before interest, taxes, depreciation, and amortization) is carried out under an illustrative scenario which replicates the threefold increase in natural gas prices in the Title

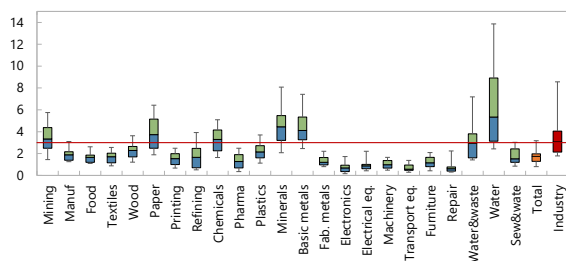
<sup>10</sup> Updating the analysis to April 2023 WEO baseline projections is not expected to significantly impact the results. While financial conditions are projected to be tighter under the revised forecast (short-term rates could increase by an average 3.7 percent in advanced Europe over 2022-23 relative to 2.0 percent under the previous forecast), real GDP growth is projected to increase by an average 5.4 percent in advanced Europe over 2022-23 relative to 4.7 percent under the October 2022 forecast.

Transfer Facility (TTF) market on February-March 2022. Results suggest that the average firm operating in an energy intensive sector (EU definition) could see a decline in its earnings margin of up to 40 percent (Annex I. Figure 1., panel 4). This is because in highly affected sectors, energy consumption represents a large share of firms' production cost, and their profit margins are narrow. A reduction in EBITDA of at least 40 percent could qualify an energy intensive business for a higher share of energy cost compensation under the EU Temporary Crisis Framework.

**Annex I. Figure 1. Heterogeneous Impact of Energy Shock Across Countries and Sectors**

*In half of EU countries, the average energy consumption of the 'industry' sector exceeds the 3 percent 'energy intensity' bar...*

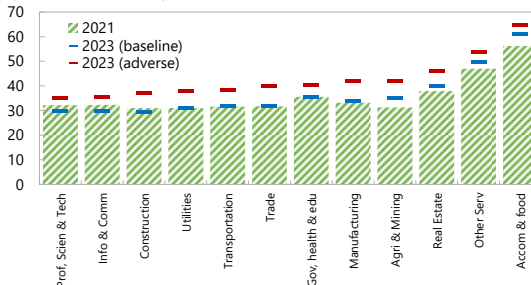
**Energy Costs by Sector, Country Dispersion**  
(Share of production value)



Sources: Eurostat and IMF staff calculations.

*...some affected sectors may face liquidity pressures as interest expenses exceed operational revenue...*

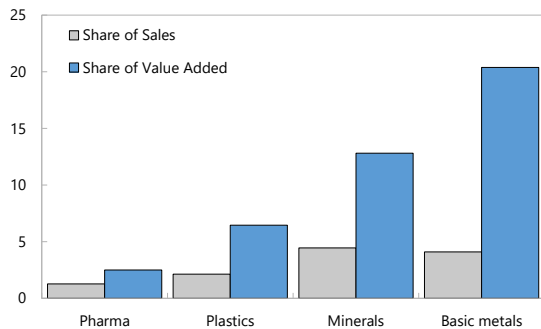
**Share of firms with ICR < 1, by industry**  
(Percent; Share in total)



Sources: Orbis and IMF staff calculations.  
Note: The baseline scenario is based on the October 2022 WEO forecast of interest rates and real GDP growth. The adverse scenario considers a combination of a two percentage points increase in the short-term interest rate and a 10 percent decline in household income and corporate earnings during 2022-2023.

*Firms operating in the manufacture of 'Minerals' and 'Basic Metals' are energy intensive businesses with low revenue buffers...*

**Cost of Energy in Selected Sectors**  
(Percent; median country in the EU)

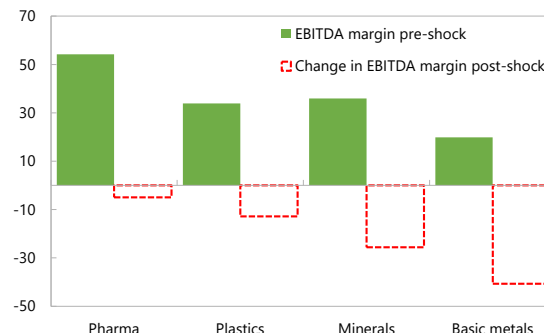


Source: Eurostat and IMF staff calculations.

*...which are subject to large reductions in EBITDA due to the energy crisis.*

**Simulated Impact of Increase in Energy Prices**

(Percent; Shock proxied by increase in natural gas prices in TTF on Feb 21-March 7, 2022)

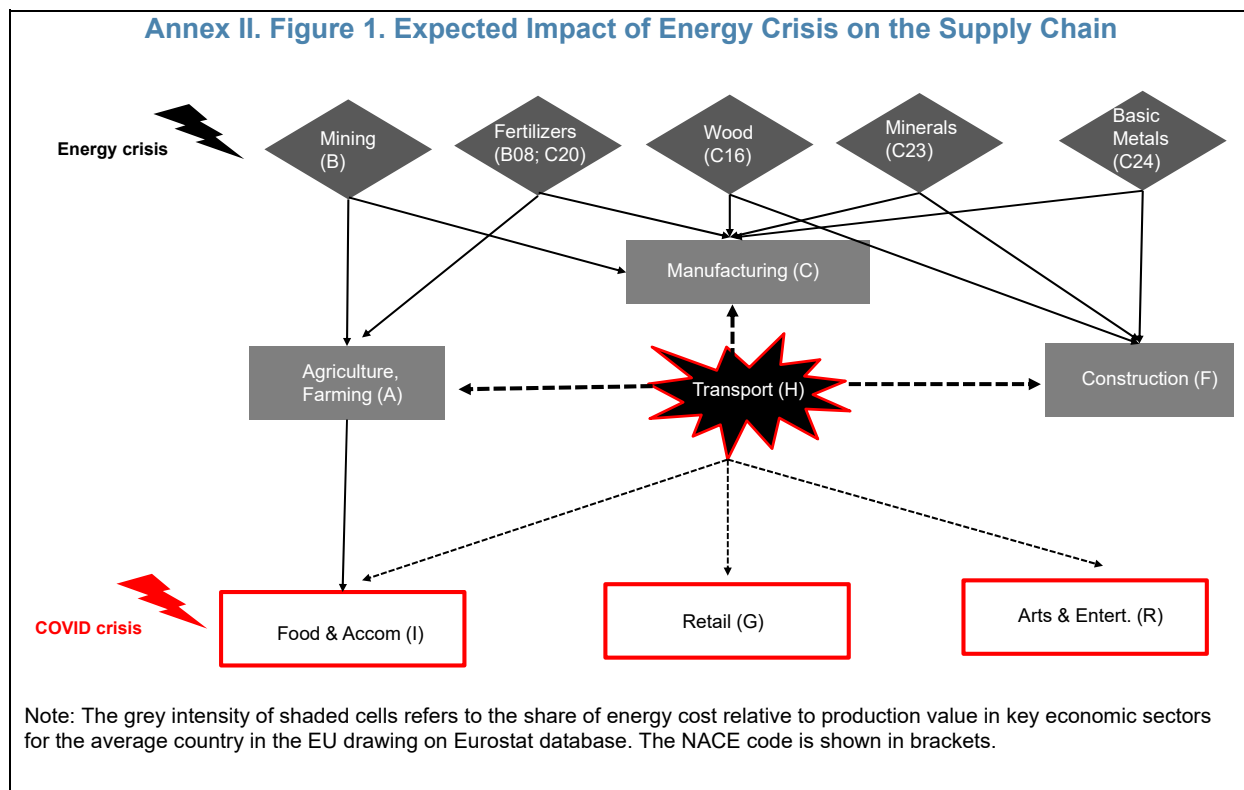


Source: Eurostat and IMF staff calculations.

## Annex II. The case for intervention in the recent energy crisis vis-à-vis the Covid-19 pandemic

**The case for broad-based energy support for firms is different from that made for interventions during the pandemic in three respects.** First, while the Covid-19 shock was temporary, part of the increase in energy prices is likely permanent (also considering climate and energy security externalities), requiring firms to adjust. Second, unlike during the pandemic when shutdowns reduced corporate profits, the energy crisis allows some firms to pass through higher energy costs to end users. Third, the Covid-19 shock was extraordinary in that governments forced firms to shut down while part of the energy price shock is a terms of trade shock (albeit caused by sanctions and countersanctions). And fourth, climate considerations enter the equation differently: unlike the fall in energy prices accompanying the pandemic, the rise in energy prices this time around provide an opportunity to accelerate the green transition.

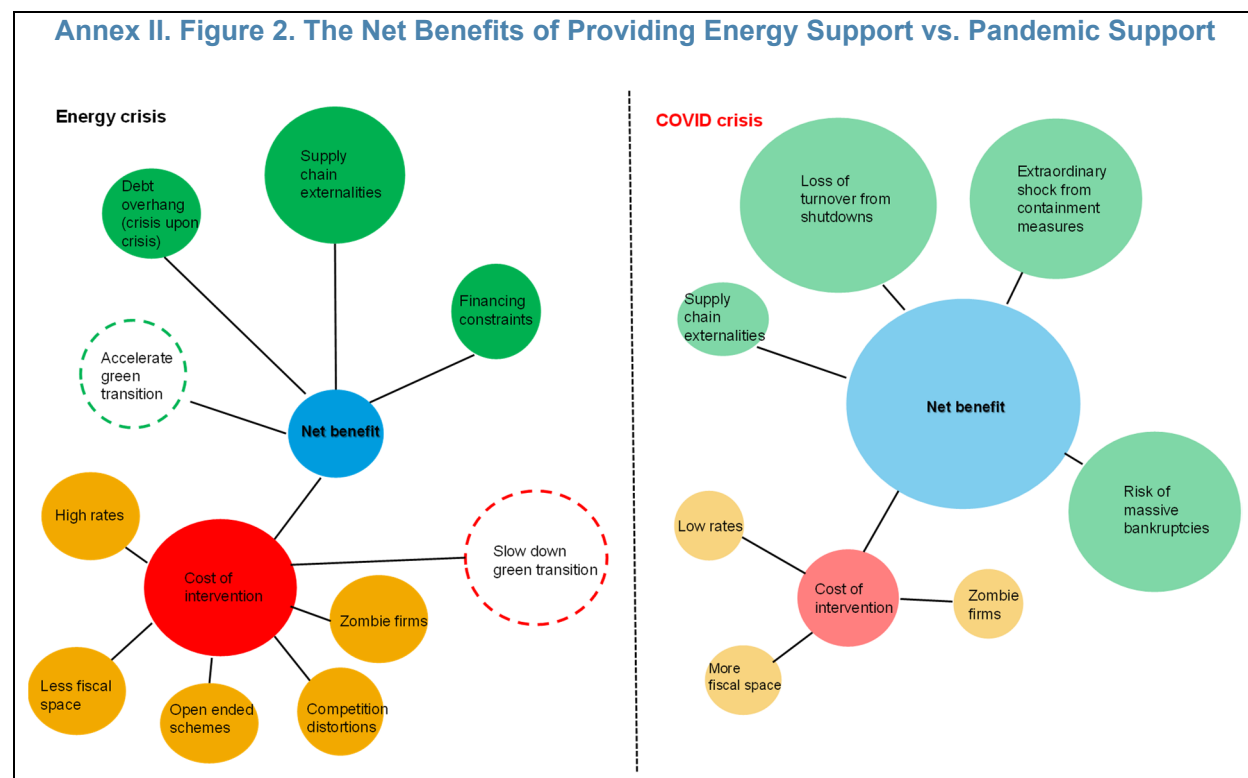
**Unlike the Covid-19 crisis, the energy shock strongly affects firms operating upstream in the supply chain, and in the transport sector.** Upstream firms, which are typically energy-intensive, fall into the mining, fertilizers, minerals, and basic metals sectors; they also provide source raw material inputs to the agriculture sector, manufacturing industry, and construction sector (Figure 1). Firms operating in land/air transport, intermediating between upstream and downstream firms, are also hit disproportionately by high energy prices. More generally, a sharp reduction in purchasing power of vulnerable households could also undermine the viability of other energy-intensive businesses facing higher manufacturing costs.



**The benefits of government intervention are likely to be smaller than during the Covid-19 crisis.** Figure 2 shows a schematic representation of the net benefits associated with government intervention between the two different episodes. The benefits of addressing scarcity of supplies and potential disruptions in supply chains are likely to be more significant during the energy crisis. Firms that were most affected by both the pandemic crisis and by the increase in the cost of energy/other commodities are likely to have their debt servicing capacity impaired in a context of higher interest rates. This could put into question the activity of businesses which otherwise would be profitable, particularly smaller firms with deteriorated creditworthiness from the ripple effects of Covid-19, which are also more likely to face financing constraints amid the current tightening of credit conditions.

**At the same time, lower fiscal space and high interest rates are likely to imply additional costs.** Most European governments have less fiscal space now than they had before they deployed large support packages during the pandemic (notwithstanding the recent unwinding of those packages). This, combined with higher government yields due to central banks rate hikes to fight inflation mean higher borrowing costs on a larger stock of debt (thus a larger interest bill). Costs could also be higher as governments now have to deal with weakened (“zombie”) firms hit by two consecutive shocks, as well as states with deeper pockets providing larger support to their firms and un-leveling the international playing field.

While the benefits are smaller and the costs higher than during Covid-19, there could be some arguments for government intervention in cases where the energy crisis leads to substantial liquidity needs and considerable losses that may put into question the viability of otherwise viable firms, with systemic repercussions in economic activity and employment.



Note: The size of the bubbles refers to the qualitatively judged magnitude of the benefit (in green), cost (in orange and red), and net benefit (in blue); dashed bubbles are potential benefits (costs) that can be triggered (avoided) by conditionality provisions attached to support schemes. Costs of intervention also include indirect costs, e.g., via distortions. There are some similarities and differences in the drivers of financial stress across the two crises. For instance, during Covid, the risk of massive bankruptcies was due to the widespread impact of containment measures, while during the energy crisis, inefficient exit could occur due to the debt overhang built during the pandemic. Supply chain externalities are considered more disruptive in the energy crisis because the firms most affected by the energy crisis operate in upstream sectors (NACE codes: B, C), by contrast to the downstream firms affected by the covid crisis (NACE codes: I, R). The perspective of net benefits of intervention is motivated by the aim to avoid the undue exit of otherwise viable firms.

## Annex III. Best practice considerations

	<b>Resort to Liquidity instruments before considering solvency support</b>	
	<b>Liquidity</b>	<b>Solvency</b>
<b>Goal</b>	Liquidity support for future cash-flow needs	Solvency support for incurred energy costs
<b>Targeting/ Eligibility</b>	<p>Exclude firms in arrears to the tax authorities or subject to bankruptcy proceedings (<i>France</i>):</p> <ul style="list-style-type: none"> <li>Guarantees for SMEs and small mid-caps (<i>Italy</i>)</li> <li>Subsidized loans operating in highly affected regions (<i>Poland</i>)</li> </ul>	<p>Exclude firms in arrears to the tax authorities or subject to bankruptcy proceedings (unrelated to the crisis):</p> <ul style="list-style-type: none"> <li>Firms in high energy intensive sectors (<i>Portugal</i>) or high turnover losses due to the energy crisis (<i>Italy</i>)</li> <li>Beneficiary operates an energy management system in line with international standards (<i>Germany</i>)</li> <li>To alleviate cost burden of livestock farmers and greenhouse food producers and maintain food security in the EU (<i>Sweden</i>)</li> </ul>
<b>Ex-post conditionality</b>	Liquidity instruments convert into grants conditional on energy efficiency investments or banks to pass on financial benefits to borrowers	Share of compensation linked to accelerated rollout of renewable energy/decarbonization
<b>Duration</b>	Limited duration: program runs up to December 2023, and should be adapted as energy prices fall, or comes with sunset clauses (most programs)	
<b>Size</b>	Amount covers longer period of future liquidity needs for SMEs than large firms ( <i>most programs</i> )	Nominal amount capped and differentiated across sectors depending on energy/gas intensity of the sector and scaled by firm size ( <i>Spain</i> )
<b>Governance</b>	<ul style="list-style-type: none"> <li>Banks need to prove that guaranteed loans carry more favorable conditions (<i>Poland</i>)</li> <li>Guaranteed are linked to a 'shortage of certainties' requirement (the loan would not be provided otherwise) (<i>Netherlands</i>)</li> <li>Ex-post audits (random selection and risk-based)</li> </ul>	<ul style="list-style-type: none"> <li>Restrictions on management remuneration (<i>Germany</i>)</li> <li>Restrictions on dividend distribution and share buybacks</li> <li>Beneficiaries need to submit financial audits and claw back provisions apply (<i>Germany</i>)</li> <li>All aid must be disclosed (for e.g., <i>EU currently requires disclosure over €100,000</i>)</li> <li>Ex-post audits (random selection and risk-based)</li> </ul>



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# PUBLICATIONS

**Energy Support for Firms in Europe: Best Practice Considerations and Recent Experience**

Working Paper No. WP/2023/197