Looking through higher energy prices?
Monetary policy and the green transition

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EU carbon price increased sharply in 2021, accelerating the green transition

Emissions Trading System (ETS) spot price developments (units in legend)

ETS spot price (EUR/t CO2 equivalent, left-hand scale)
ETS price changes (yoy percentage change, right-hand scale)
100 USD/t equivalent (EUR/t CO2 equivalent, left-hand scale)

Source: Eurostat and ECB staff calculations.
Notes: Daily observations. Last observation is 06/01/2022 for ETS spot prices. The horizontal read line represents a price level of 100 USD/t CO2 equivalent (using Jan-Nov 2021 average exchange rates).
Financial markets as a corrective device, with high emissions implying higher credit risk

Impact of transition risk metrics on credit ratings vis-a-vis leverage
(y-axis: percentage of a credit notch)

<table>
<thead>
<tr>
<th>Disclosed scope 1-2 GHG Intensities</th>
<th>Disclosed change in Scope1-2 int.</th>
<th>Disclosure Emissions Dummy</th>
<th>Disclosure Target Dummy</th>
<th>Leverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated impact of a one standard deviation change in environmental metrics</td>
<td>Estimated impact of disclosure dummies</td>
<td>Estimated impact of a one standard deviation change in financial controls</td>
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<td></td>
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</tbody>
</table>


Notes: The first two columns represent the estimated magnitude of a one standard deviation increase in disclosed Scope 1 and 2 GHG intensities and disclosed changes in Scope 1 and 2 GHG intensities, respectively. The third and fourth columns reflect the impact of the decision to disclose GHG emissions and make a forward-looking commitment, respectively. The fifth column shows the impact of a one standard-deviation increase in leverage. The coefficients are obtained via a panel regression of credit ratings on environmental variables, firm-level, sectoral and country controls as well as time fixed effects. Ordered logit estimators lead to similar results.
Oil production is responding more slowly to rising oil prices.

**Oil price and US shale production**
(lhs: USD per barrel, rhs: number of oil rigs)

- **Oil price**
- **Number of US oil rigs (rhs)**

**Response of world crude oil production**
three months after oil demand shocks
(percent)

- 90% confidence interval
- Median response

Sources: Bloomberg and Baker Hughes.
Latest observation: 06/01/2022 (oil price), 31/12/2021 (rig count).

Sources: Bloomberg, Refinitiv, IEA and ECB staff calculations.
Latest observation: August 2021.
Gas and electricity prices may stay elevated as green transition accelerates

Wholesale and future prices for electricity and natural gas in the euro area
(units in legend)

Wholesale electricity prices, EUR/MWh (lhs)
Euro area natural gas spot price, EUR/MMBtu (rhs)

Sources: Bloomberg for electricity and gas futures, OMIO, Gestore Mercati Energetici, Fraunhofer ISE and ENTSOE for wholesale electricity prices.
Note: Cut-off date for futures is 06/01/2022. Electricity wholesale prices is a weighted average of electricity prices in Germany, France, Spain, Italy and the Netherlands.
Latest observation: November 2021 for electricity wholesale prices and December 2021 for gas spot prices.
Energy price inflation reached record high in 2021

HICP energy and components
(annual percentage changes; percentage point contributions)

Source: Eurostat and ECB staff calculations
More than half of the recent rise in HICP inflation reflects higher energy price inflation.

**Energy contribution to HICP**
(annual percentage changes; percentage point contributions)

Source: Eurostat and ECB staff calculations.
Past and projected HICP inflation
(annual percentage changes)

Source: Eurostat, Eurosystem staff projections (December 2021) and ECB staff calculations.
Notes: Quarterly values are reported until 2021Q4, annual values from 2022 onwards. The vertical line indicates the start of the projection horizon.
Consumer price expectations hit record high in 2021

Euro area expected consumer price trends over next 12 months (percent balance)

Source: European Commission
Revenues from higher carbon price are expected to increase measurably.

Average expected annual revenue from ETS auctions in the EU

(EUR billion)

Source: ECB calculation based on European Commission impact assessments.
Note: Low stands for the lower bound of the estimates, high indicates the additional revenue for the upper bound of the estimates.
Energy transition does not necessarily weigh on growth and inflation in the medium term.

**Impact of energy transition**

(% deviations from baseline, EUR 50 per CO₂ ton, with border carbon adjustment tax)

- **GDP**
  - Reduce social security contributions
  - Transfer to households

- **Inflation**
  - Reduce social security contributions
  - Transfer to households

- **Private Consumption**
  - Reduce social security contributions
  - Transfer to households

Thank you for your attention!