SPEECH

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

Remarks by Isabel Schnabel, Member of the Executive Board of the ECB, at a panel on “Climate and the Financial System” at the American Finance Association 2022 Virtual Annual Meeting

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In 2021 the global economy was shaken by a major energy crisis. Prices for oil, gas and electricity surged as our economies reopened after the shutdowns imposed in response to the coronavirus (COVID-19) outbreak.

Though last year’s events were extraordinary on many levels, spikes in energy prices are a common phenomenon. Since the 1970s, sharp movements in energy prices have been a recurring source of economic dislocations and volatility.

And yet, the roots of today’s shock are likely to go deeper. While in the past energy prices often fell as quickly as they rose, the need to step up the fight against climate change may imply that fossil fuel prices will now not only have to stay elevated, but even have to keep rising if we are to meet the goals of the Paris climate agreement.

In my remarks today, I will discuss the challenges that such prospects pose to both fiscal and monetary policymakers in an environment in which the supply of cheaper and greener sources of energy will only gradually be able to meet rapidly rising demand.

I will argue that governments will need to push the energy transition forward, while at the same time protecting the most vulnerable members of society from energy poverty.

Central banks, in turn, will have to assess whether the green transition poses risks to price stability and to which extent deviations from their inflation target due to a rise in the contribution from energy to headline inflation are tolerable and consistent with their price stability mandates.

I will explain that there are instances in which central banks will need to break with the prevailing consensus that monetary policy should look through rising energy prices so as to secure price stability over the medium term.

Fast rise in carbon prices helps accelerate the green transition

The world economy will have to undergo a far-reaching transformation to be able to live up to the Paris agreement to limit the increase in the global average temperature to 1.5° Celsius above pre-industrial levels.

At the heart of these efforts is the need to radically cut greenhouse gas emissions.[1] According to the United Nations, global emissions would need to drop by 7.6% each year between 2020 and 2030 to reach the Paris target.[2] By way of comparison, in 2020, when global economic activity came to a virtual standstill, emissions fell by only 5.8%.[3]

There is broad agreement that meeting these ambitious targets requires putting a global price on carbon, and it requires doing so swiftly.[4] At present, only 21.5% of global emissions are covered by carbon pricing instruments and only 4% are covered by a price of more than USD 40.[5]

According to a recent survey, most climate economists think the price of carbon should be above USD 75 to reach net zero emissions by 2050.[6] The median response of USD 100 is consistent with what Nicholas Stern and Joseph Stiglitz recently estimated to be the carbon price in 2030 necessary to achieve the goals of the Paris Agreement.[7]

In the EU, prices under the Emissions Trading System (ETS) have recently started to rapidly approach these levels, in part reflecting expectations that the EU is committed to delivering on the clean energy transition (Slide 2).[8]

In early December, ETS prices reached a new record high of nearly €90 per tonne of carbon, almost three times as high as at the beginning of 2021, and a multiple of their level a few years ago.

The measurable rise of carbon prices will help accelerate the green transition. If persistent, it strongly disincentivises new investments in fossil fuel energy carriers.

Two parallel developments are reinforcing the effects of a higher carbon price.

One is the European Commission's Fit for 55 package – an ambitious set of reform proposals, which was presented in July last year.

It includes a recommendation to significantly strengthen the ETS and widen its scope, which currently covers only around 40% of the EU's greenhouse gas emissions. The Fit for 55 package also proposes a review of the EU Energy Taxation Directive, with the aim of raising the minimum tax rate for inefficient and polluting fuels, and lowering those for efficient and clean fuels.

The second development is the ongoing transformation in financial markets.

Sustainable investment is no longer a "nice to have" policy but has become an essential ingredient in most investor portfolios. Many institutional investors have started to materially reduce their exposures to fossil fuel energy producers and have redirected capital to more environmentally acceptable low-carbon alternatives.

ECB analysis shows that financial markets are increasingly serving as a corrective device.

It finds that market prices have started to reflect the premium demanded by investors for exposures to climate-related risks. There is a positive relationship between the greenhouse gas emissions resulting from a firm's operations and credit risk estimates, as measured by credit ratings and market-implied distance to default.

The magnitude of the effect is economically relevant. On average, it is comparable to that of traditional determinants of credit ratings, such as leverage (Slide 3). The analysis also finds that disclosing emissions and emission reduction targets helps lower credit risk premia.[9]

Since financial markets are global, these developments seem to have started to produce tangible climate-related effects even in countries that do not yet have a national carbon price, such as the United States.

Last year's strong economic expansion, for example, was characterised by an atypically slow response of US shale oil production to rising oil prices, as such investments may no longer prove profitable to investors over the medium term − at least not to the same extent as they have done in the past, or as returns may become even more volatile (Slide 4).

In other words, even in the absence of a global carbon price, which remains essential, there are growing signs that the green transition is accelerating around the globe.

Transition phase may bring protracted period of higher energy inflation

While such relative price changes are desirable and intended, they may weigh on the economy if firms and households cannot substitute more expensive carbon-intensive energy with greener and cheaper alternatives.[10]

Higher carbon prices work in part by stimulating investments and innovation in low-carbon technologies. But these investments will take time. At present, renewable energy has not yet proven sufficiently scalable to meet rapidly rising demand.

In the EU, renewable energies currently account for only around 20% of energy consumption. The Fit for 55 package proposes increasing this share in the EU to 40% by 2030.

The combination of insufficient production capacity of renewable energies in the short run, subdued investments in fossil fuels and rising carbon prices means that we risk facing a possibly protracted transition period during which the energy bill will be rising.

Gas prices are a case in point.

Last year's adverse weather conditions, which constrained the production of renewable energy, have led to significant demand and supply imbalances in the gas market as global growth accelerated, pushing gas prices to new record highs (Slide 5).

The green transition may reinforce these imbalances in the future. In many countries, especially in Asia but also in the euro area, gas − being half as polluting as coal − is seen as a stopgap solution in the secular shift to a greener energy system.[11]

In the EU, rising gas prices have a direct and immediate impact on wholesale electricity prices, which are linked to the short-run marginal costs of gas-fired power plants.[12]

In November, wholesale electricity prices in the euro area reached €196 per megawatt hour, nearly four times as much as the average in the two years preceding the outbreak of the pandemic (Slide 5).

As a result, energy price inflation in the euro area, as measured by the energy sub-index of the harmonised index of consumer prices (HICP), reached a historical high in November last year, with electricity and gas jointly accounting for more than a third of the total increase, also a new historical high (Slide 6).

Energy, in turn, has been the prime factor behind the sharp rise in overall consumer price inflation in the euro area, with the HICP standing at 5.0% in December 2021 according to Eurostat's flash estimate, which was the highest level recorded since the euro was introduced in 1999 (Slide 7). Between April

and December 2021, energy contributed, on average, more than 50% to HICP inflation.

Governments need to advance the green transition and protect the most vulnerable

These developments pose significant challenges to policymakers – both governments and central banks.

On the fiscal side, many governments have responded to rising energy prices by imposing tax cuts, price caps or rebates to shield the most vulnerable households from the sharp rise in gas, fuel and electricity prices.

Because energy expenditures are typically highly inelastic and constitute a particularly large share of income for less well-off households, carbon taxes tend to be regressive.[13] Already in 2020, 8% of the population in the European Union (EU), or around 36 million people, said that they were unable to keep their home adequately warm.[14]

Energy poverty is a serious threat to the cohesion of our society and to the support for climate-related policies. Compensation measures are therefore important.

But such measures need to be designed in a way that does not reduce the incentives to lower carbon emissions.

It would be a serious mistake if governments, faced with rising energy prices, would backtrack from their commitment to reduce emissions. Governments should also not slow down the pace of the transition or delay the phasing out of fossil fuel subsidies.

Two recent proposals by the European Commission go in the right direction.

One is the introduction of the Social Climate Fund, which aims to address the social impact of higher energy prices resulting from the proposed broadening of the scope of the ETS towards the building and transport sectors, both of which will affect households in particular.

The other is the proposed system for EU countries to jointly procure strategic reserves of gas that can be released in the event of supply shortages. At present, capacity utilisation of gas storage facilities in Europe is just under two-thirds, almost 20% below seasonal norms. Energy buffers will help limit the volatility of gas prices.

Green transition poses upside risks to medium-term inflation

For central banks, the challenges are equally profound.

In the past, central banks have typically looked through energy shocks, for good reasons.

Most of the time, such shocks have been short-lived, meaning that a policy response would have amplified the negative effect of rising energy prices on aggregate demand and output and, given the long lags in policy transmission, exerted downward pressure on inflation at a time when the shock is likely to have already faded.

Temporary supply-side shocks therefore typically warrant a deviation from the target in the short run, provided price stability is restored over the medium term and inflation expectations remain anchored.

This insight also motivates our policy response today. In our baseline scenario, the current energy shock is expected to fade over the projection horizon.

The Eurosystem staff projections are based on gas and oil futures prices, which suggest that energy prices should decline measurably this year, thereby significantly contributing to the projected decline in HICP headline inflation over the medium term (Slides 5 and 8).

Such technical assumptions, however, are surrounded by significant uncertainty. In the past, futures prices have often significantly under- or overpredicted energy price inflation. These risks are arguably even larger today.

To see this, it is enough to look at the profile of the projected inflation path: the decline of headline inflation to levels below 2% at the end of the projection horizon hinges on the assumption, derived from futures curves, that in 2023 and 2024 energy is not expected to contribute to headline inflation.

History suggests that such a profile would be unusual. Since 1999, energy has contributed, on average, 0.3 percentage points to annual headline inflation. Sensitivity analysis conducted by Eurosystem staff suggests that it is enough for oil prices to remain at November 2021 levels for HICP inflation in 2024 to reach our target (Slide 8).

The scale of the energy transition, and the political determination behind it, implies that these estimates could be conservative.

Potentially protracted supply and demand imbalances related to “transition fuels”, such as gas, as well as the fact that carbon prices are likely to rise further, and to extend to more economic sectors, mean that the contribution of energy and electricity prices to consumer price inflation could be above – rather than below – its historical norm in the medium term.

The energy transition therefore poses measurable upside risks to our baseline projection of inflation over the medium term.

At our Governing Council meeting in December, such risks were one factor in deciding on a step-by-step reduction in the pace of asset purchases over the coming quarters.

The pace of the adjustment, with net purchases under our asset purchase programme (APP) falling back to €20 billion by October, is consistent with what Alan Greenspan previously called a “risk-management approach” to monetary policy.[15]

It prescribes that central banks should not only consider the most likely future path of the economy, but the entire distribution of risks around that path with a view to keeping sufficient optionality to address all inflation contingencies.

Rising energy prices may require a departure from a “looking through” policy

The question, then, is: if energy inflation were to prove more persistent than currently anticipated under our baseline scenario, at what point could we no longer afford to look through such a shock?

I see two scenarios where monetary policy would need to change course.

A deanchoring of inflation expectations

The first would occur if we were to detect signs that inflation expectations have become deanchored. Consumer price expectations are particularly susceptible to changes in the prices of goods that we purchase frequently. Energy, and petrol in particular, are part of this basket of goods.

Over the past year, consumer price expectations for the next 12 months have increased sharply (Slide 9). In October, when energy accounted for more than half of the rise in measured inflation, they reached the highest level since the euro was introduced in 1999 and have remained close to record highs since then.

The experience of the 1970s, when rising energy prices triggered a harmful price-wage spiral, emphatically demonstrated that allowing inflation expectations to drift away from the target makes it significantly costlier to bring inflation back to target, both in terms of lost output and higher unemployment.

So far, however, there are no signs of broader second-round effects. Wage growth and demands by unions remain comparatively moderate. But in an environment of large excess savings and protracted supply disruptions, the energy transition may lead to inflation remaining higher for longer, thereby potentially raising the risks of inflation expectations destabilising.

In this case, monetary policy would need to respond to, rather than look through, higher inflation to preserve price stability over the medium term.

Not all energy shocks are alike

The other scenario in which policy would require adjustment is if the nature of the shock were to change.

More than a decade ago, the seminal paper by Lutz Kilian established that not all oil price shocks are alike. Their effects on the economy critically depend on the underlying source of the shock.[16]

Rising oil prices due to stronger aggregate demand, for example, are associated with an increase in real economic activity, calling for a different monetary policy response than if oil prices were to rise in response to supply disruptions in the oil market.

A carbon tax may share some of the characteristics of an adverse oil supply shock. Higher energy prices could weigh on economic activity and thereby put downward pressure on consumer price inflation in the medium term.[17] In this case, monetary policy should “look through” temporary deviations of inflation from its target.

But a carbon tax differs from an adverse oil supply shock in two fundamental ways.

One is that the transformation of our economies through large-scale public and private investment programmes and the subsequent adoption of more efficient and greener technologies is expected to boost, rather than weigh on, economic growth and thereby support wages and aggregate demand.

The second aspect is that, for an energy-importing economy such as the euro area, oil supply shocks are negative terms-of-trade shocks, raising inflation and transferring wealth abroad. But a carbon tax is ultimately a domestic levy that shifts financial resources from the private to the public sector.

In the EU, for example, the coming years are expected to see significant increases in ETS revenues. ECB calculations, based on European Commission data, suggest that they will rise from €14 billion in 2019 to up to €86 billion annually in the period 2026-30 (Slide 10).[18]

The proposed carbon border adjustment tax, which will put a carbon price on selected imports, as well as higher minimum tax rates on fossil fuels and other national tax initiatives, will further raise revenues.

Eurosystem economists show, based on the example of Spain, that what governments would do with such revenues will shape the response of the economy to the energy transition.[19]

For example, lump-sum transfers to households and electricity bill subsidies, as currently implemented by many governments, can largely cushion the negative short-term effects of rising energy prices on consumption and GDP (Slide 11).[20]

Alternatively, if revenues are used to cut other distorting taxes, such as social security contributions, thereby reducing the labour tax wedge, a carbon tax may in fact boost economic activity, even in the short term. And since new activity will likely arise in greener sectors, part of the increase in GDP will be permanent, potentially raising inflation both over the short and medium term.

These findings are not just hypothetical. An emerging strand of empirical evidence finds no robust negative effects of carbon taxes on GDP growth and employment.[21] If anything, the evidence is consistent with a modest positive impact.

As such, if the future path of energy prices threatens to push headline inflation above our target in the medium term, and if growth and demand prospects remain consistent with firm underlying price pressures, monetary policy needs to act to defend price stability.[22]

Conclusion

Let me conclude.

Carbon prices in the EU and elsewhere increased sharply last year, reinforcing efforts to reduce carbon emissions as fast as possible and accelerating investments in green technologies.

As the shift in the energy mix towards cheaper and less carbon-intensive fuels will take time, a rising carbon price, higher tax rates across a range of fossil fuels, and relatively inelastic energy demand may lead to continuous upward pressure on consumer prices in the transition period.

These developments pose challenges to both fiscal and monetary policy.

Governments will have to protect the most vulnerable parts of society from higher energy prices in a way that does not delay the green transition. Monetary policy, for its part, cannot afford to look through energy price increases if they pose a risk to medium-term price stability.

This could be the case if prospects of persistently rising energy prices contribute to a deanchoring of inflation expectations, or if underlying price pressures threaten to lift inflation above our 2% target as rising carbon prices and the associated shifts in economic activity boost rather than suppress growth, employment and aggregate demand over the medium term.

Thank you.

Annexes

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Slides

ENGLISH

1. EU countries have jointly pledged to cut emissions to net zero by 2050, with an interim target of reducing them by 55% by 2030, compared with emissions produced in 1990.

2. UN Environment Programme (2019), Emissions Gap Report 2019.

3. International Energy Agency (2021), Global Energy Review: CO2 Emissions in 2020, 2 March.

4. Andersson, J. (2019), "Carbon Taxes and CO2 Emissions: Sweden as a Case Study", *American Economic Journal: Economic Policy*, Vol. 11, No 4, pp. 1–30; Martin, R., De Preux, L. and Wagner, U. (2014), "The impact of a carbon tax on manufacturing: Evidence from microdata", *Journal of Public Economics*, Vol. 117, pp. 1–14; Känzig, D. (2021), "The unequal economic consequences of carbon pricing", *London Business School Working Paper*, Social Sciences Research Network.

5. World Bank (2021), State and Trends of Carbon Pricing.

6. Reuters (2021), "Carbon needs to cost at least $100/tonne now to reach net zero by 2050: Reuters poll", 25 October.

7. Stern, N. and Stiglitz, H. (2021), "The Social Cost of Carbon, Risk, Distribution, Market Failures: An Alternative Approach", *NBER Working Paper Series,* No 28472.

8. Part of the increase is likely to also reflect growing demand due to the reopening of the economy.

9. Although the credibility of forward-looking emission reduction targets may be questionable, there is evidence that firms disclosing such commitments lower their carbon footprint by more than non-committing firms.

10. On the macroeconomic consequences of the green transition, see also Pisani-Ferry, J. (2021), "Climate Policy is Macroeconomic Policy, and the Implications Will Be Significant", Policy Brief 21-20, Peterson Institute for International Economics.

11. For example, the European Commission has proposed to consider natural gas as necessary for the transition towards renewable energies in the EU taxonomy for sustainable activities.

12. Wholesale electricity prices in most European markets are based on the most expensive electricity production technology in the mix, which are usually gas-fired power plants. As gas-fired power plants emit CO_2 when producing electricity, a higher ETS price also contributes to higher electricity prices.

13. Känzig, D. (2021, op.cit.).

14. European Commission (2021), State of the Energy Union Report.

15. See Greenspan, A. (2004), "Risk and Uncertainty in Monetary Policy", *American Economic Review*, Vol. 94, No 2, pp. 33–40. See also Schnabel, I. (2021), "Reflation, not stagflation", speech at a virtual event organised by Goldman Sachs, Frankfurt am Main, 17 November.

16. Kilian, L. (2009), "Not All Oil Price Shocks Are Alike: Disentangling Demand and Supply Shocks in the Crude Oil Market", *American Economic Review*, Vol. 99, No 3, pp. 1053-69.

17. Konradt, M. and Weder di Mauro, B. (2021), "Carbon Taxation and Inflation: Evidence from Canada and Europe", *CEPR Discussion Paper Series*, No 16396; and Känzig, D., op.cit.

18. This raises the contribution to public revenue collection from 0.09% of EU GDP to about 0.3-0.5%.

19. Estrada, A. and Santabárbara, D. (2021), "Recycling Carbon Tax Revenues in Spain. Environmental and Economic Assessment of Selected Green Reforms", *Banco de España Working Paper Series*, No 2119. Their analysis is based on a price of 50€ per CO_2 ton, a broad economy-wide coverage and the assumption of a carbon border adjustment tax.

20. In this case, the energy transition would look more like an inflationary price mark-up shock that may require a policy response.

21. Metcalf, G. E. and Stock, J.H. (2020), "The Macroeconomic Impact of Europe's Carbon Taxes", *NBER Working Paper Series,* No 27488; Metcalf, G. E. and Stock, J.H. (2020), "Measuring the Macroeconomic Impact of Carbon Taxes", *AEA Papers and Proceedings*, Vol. 110, pp. 101–06; Metcalf, G. E. (2019), "On the Economics of a Carbon Tax for the United States", *Brookings Papers on Economic Activity Series,* 49 (1), pp. 405–58; Bernard et al. (2018), "Effects of B.C.'S Carbon Tax on GDP", *USAEE Research Paper Series*, No 18, p. 329; and Yamazaki, A. (2017), "Jobs and Climate Policy: Evidence from British Columbia's Revenue-Neutral Carbon Tax", *Journal of Environmental Economics and Management*, Vol. 83, pp. 197–216.

22. Otherwise, monetary policy would fall victim to "green dominance". See Schnabel, I. (2021), "From green neglect to green dominance?", speech at a virtual event organised by the Cleveland Fed, 3 March.

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