

War in Ukraine and rising international tension: What impact on GDP?

By [Raul Sampognaro](#)

The invasion of Ukraine launched by Russia on 24 February 2022[1] dealt a major shock to the European economy, which was already suffering from other constraints (supply problems[2], recruitment difficulties, rising energy prices, inflation). Beyond the massive impact on the economies of the countries directly affected by the war, in particular the aggressed country itself (human losses, destruction of capital, diversion of resources from production, among others), the rise in geopolitical tensions can have economic effects even in countries not (directly) involved in the fighting. In the face of this, these countries may boost their military spending, adopt wait-and-see investment behaviour, increase precautionary savings, or suffer unanticipated shocks to import prices and capital flows (in or out). In a study [available online](#) [in French], we have attempted to quantify the effects of these ongoing tensions on GDP growth in the six economies most closely followed by the OFCE: France, the United States, the United Kingdom, Germany, Italy and Spain. In addition, we have tried to measure the impact on world trade and global industrial production.

[Caldara and Iacoviello \(2022\)](#) have recently proposed a [quantitative indicator of geopolitical risk](#). The authors construct an indicator for the level of tension at the global level, which they have developed for 43 countries, including the main players on the international scene. The study also

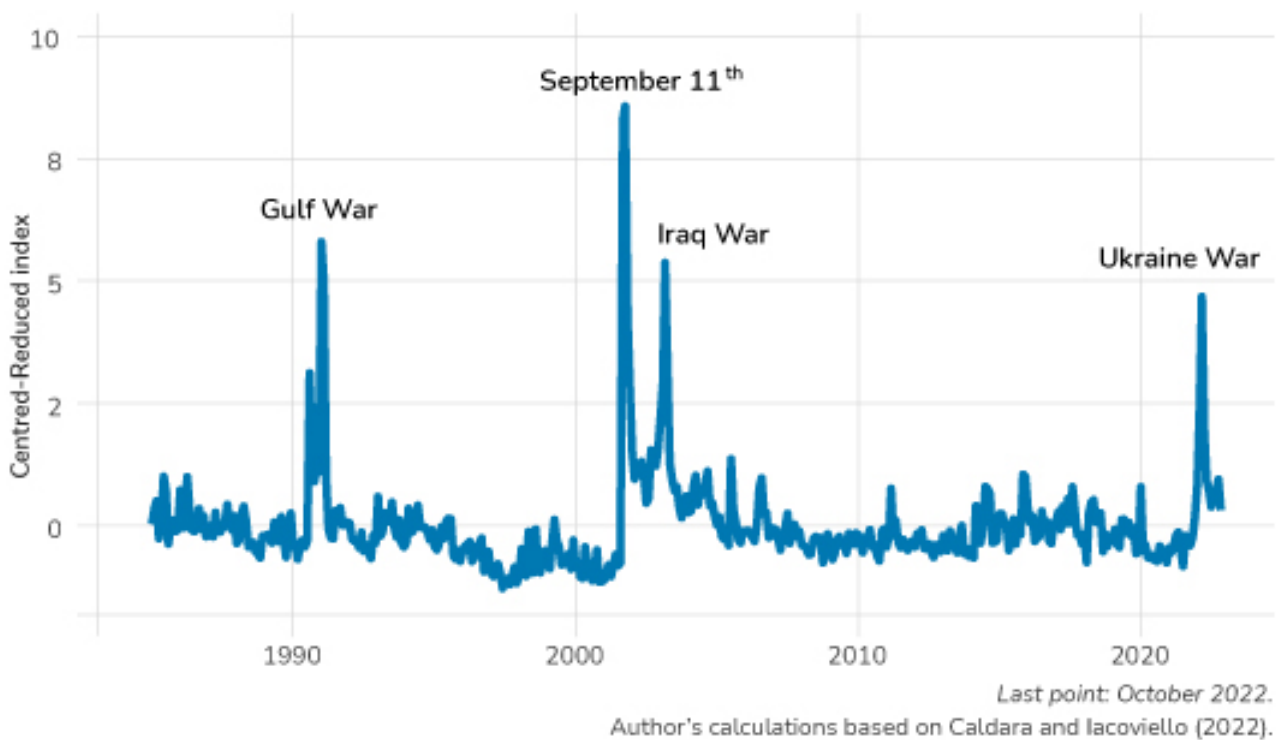
sets out the statistical method used to quantify the causal impact of the developments observed in 2022. This publication comes at just the right time for the forecaster.

2022: A historic year for international relations

For Caldara and Iacoviello (2022), *geopolitical* risk is associated with the impact of international crises, and more specifically with violence that affects the peaceful course of international relations. According to the authors, geopolitical risk refers to threats, or materializations of threats or the escalation of a pre-existing conflict. Such conflicts may be related to war, terrorism or any other type of tension between states or political actors. It should be noted that the term risk used by the authors for this type of phenomenon has a broad meaning that goes beyond the measurement of uncertainty or the probability that a random event will occur. The geopolitical risk index measures not only potential conflicts (which is consistent with a probabilistic definition of risk) but also conflicts that are actually taking place[\[3\]](#).

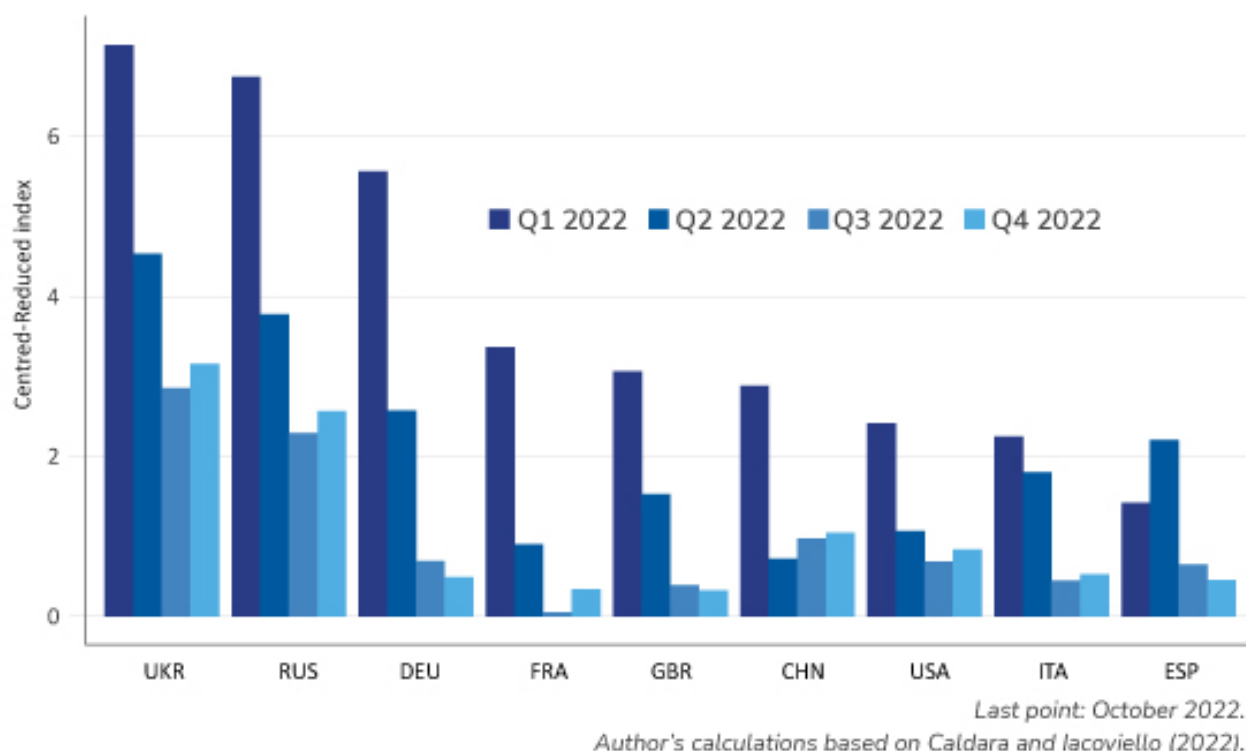
Since the 1980s, this index exhibits major changes, notably during the Gulf War, September 11th, the war in Iraq and more recently the invasion of Ukraine (see [Figure 1](#)). Moreover, between 2003 and 2022, there were occasional peaks in tension following the various terrorist attacks that took place in Europe (with France in the front line) but also in the United States, as well as other conflicts (war in Libya, for example).

Figure 1. Geopolitical Risk (GPR) Index



Of course, shocks do not affect all countries equally. [Figure 2](#) shows recent changes in the geopolitical risk index in a selection of countries since the beginning of 2022. Unsurprisingly, the risk rose the most in Ukraine and Russia. In the wake of the invasion of Ukraine, geopolitical risk has risen sharply in Germany, which is especially dependent on Russian hydrocarbons. The other European countries seem – logically – more exposed to the current tensions than China and the United States.

Figure 2. Quarterly changes in the Geopolitical Risk Index in several countries in 2022



Germany's growth strongly affected by the rise in tension

The study estimates the responses of several economic variables (GDP, investment, interest rates, market capitalization) caused by a geopolitical risk shock^[4]. In our main results, the geopolitical shock induces an endogenous fall in oil prices and interest rates. In this context, a geopolitical risk shock operates as a demand shock. When this negative effect on energy prices occurs – which is not the case for all countries – we have neutralized this endogenous effect, which does not seem to be operational in the current context, particularly in Europe, in order to make more robust quantitative assessments.

According to our estimates, if the global geopolitical risk index remains at its October 2022 level until the end of the year, the rise in geopolitical tensions observed in 2022 will have accounted for a 0.7 point drop in world merchandise trade (in volume terms) and a 0.6 point drop in world industrial production. In addition, Germany will have lost up to 1.1

percentage points of GDP in 2022 due to the year's rising geopolitical tensions. Elsewhere, the effects are smaller but significant: between 0.4 and 0.5 points of GDP in France, and 0.3 and 0.4 points in the US, Italy and the UK. Finally, Spain's GDP loss would be about 0.2 points (Table 1) [\[5\]](#).

These results provide a basis for reflection but should be taken with caution. Each international crisis is unique, and it is difficult to assess one exclusively in terms of a quantitative indicator. In particular, the current crisis has major consequences for Europe's energy supply, especially in terms of gas, which produces a different crisis from what would spontaneously emerge from a statistical model based on observations in the past [\[6\]](#).

Table. Impact of the invasion of the Ukraine on the GDP of six advanced economies in 2022

	Impact on GDP in 2022 if the GRP stays at its October 2022 level...		...and if the impact on Brent is neutralized
	...until October 2022	...until December 2022	...until December 2022
France	-0.4	-0.4	-0.5
United States	-0.3	-0.3	-0.4
Germany	-1.0	-1.1	-1.1
Italy	-0.2	-0.3	n.p.
Spain	-0.2	-0.2	n.p.
United Kingdom	-0.3	-0.3	-0.3

In the last column, it is not pertinent (n.p.) to neutralize the endogenous reaction of Brent prices to the shock of a geopolitical risk – and its impact on GDP – since this variable is not included in the models used for Italy and Spain.

Source: Author's calculations based on Caldara and Iacoviello (2022).

[\[1\]](#) Caution: When it is said that Russia's invasion of Ukraine dates from 24 February 2022, this is done for ease of language. It should not be forgotten that parts of Ukraine's territory, including the Crimea, have been under Russian control since 2014. What we are currently experiencing, far from being the beginning of a conflict, is above all the crossing of a milestone in a conflict that has persisted for many years.

[2] See [Dauvin \(2022\)](#) for an analysis of the impact of a supply shock on GDP growth in the six advanced economies.

[3] The reader interested in a more comprehensive presentation can refer to the original article for greater detail.

[4] The estimates are made using the local projection method of Jordà. See Òscar Jordà, 2005, "Estimation and Inference of Impulse Responses by Local Projections", *American Economic Review*, vol. 95, no. 1, pp. 161-82. <https://doi.org/10.1257/0002828053828518>.

[5] Obviously, while most of the increase in international tension can be attributed to the consequences of Russian decisions, it is not possible to exclude other sources of international tension, particularly in connection with the future of Taiwan and Sino-American relations.

[6] [Geerolf \(2022\)](#) discusses the implications of modelling an energy supply shock specifically in the context of a Russian cut-off of the gas supply.

How do rising interest rates impact French economic growth? An overview of macroeconometric models

By [Elliot Aurissergues](#)

The year 2022 was marked by a sharp inflationary surge in the United States and the euro zone. At the end of October, the inflation rate hit 7.7% over one year in the US, 10.6% in the

euro zone and 7.1% in France, i.e. between 5 and 8 points above the inflation targets of the US Federal Reserve (Fed) and the European Central Bank (ECB). In response, the two central banks significantly tightened monetary policy. The Fed raised its key interest rate from 0% in March 2022 to 4% in November 2022. While the ECB's key rate hike has been more measured for the moment, long-term rates on public debt in European countries have risen sharply, gaining between 250 and 300 basis points in one year in France and Germany, and even more in euro zone countries where the risk on public debt is perceived as higher. This increase is close to what is anticipated for short-term rates in 2023. The OFCE thus forecasts that the ECB's key rate will reach 3% in the third quarter of 2023[\[1\]](#).

It is not easy to estimate the impact this tightening will have on economic activity. There is a very rich literature on the transmission of a monetary shock to the rest of the economy, using methods that, while conceptually similar or even equivalent, in practice lead to a wide variety of results. We are particularly interested here in the impact of a rate shock using macroeconomic models of the French economy. For this overview, we chose three models: the *Mésange* model co-developed by the French Treasury Dept and the INSEE statistics agency (see Bardaji *et al.*, 2017), the *FR BDF* model of the Banque de France (see Lemoine *et al.*, 2019, and Aldama and Ouvrard, 2020, for the notebook on variants), along with the OFCE *e-mod* model used in Heyer and Timbeau (2006).

What is a macroeconomic model?

Macroeconomic models are the oldest class of macroeconomic models. They combine accounting relationships (or equations) with estimated behavioural equations in order to make predictions about an economy's response to shocks. The major

macroeconomic variables (wages, prices, household consumption, investment, employment) are expressed in the form of error correction equations. In the long run, these converge towards a certain target, which is determined by economic theory. Thus household consumption expenditure will converge on a certain fraction of household disposable income in the long term. In contrast, short-term behaviour is left much freer in order to achieve a good forecasting performance. The interest rate is essentially a long-term factor. The impact of a rate shock is limited initially and becomes more important as the gap between the variables and their long-term targets closes.

The *Mésange* model

We consider the variant published in Bardaji *et al.* (2017). The results are summarised in Table 1. A monetary shock of 100 basis points (or 1%) results in a fall in GDP of 0.2% after one year, 0.8% after three years and 3% in the long run. This decline is due in particular to a sharp drop in investment: -2.7% after 3 years (-3.4% for the GFCF of non-financial companies) and -5.5% in the long term, but all components of aggregate demand are hit, including exports, which fall by 3.3% in the long haul. Surprisingly, monetary tightening is reflected in higher prices in the *Mésange* model. Value-added market prices rise by 0.1% after one year, 0.8% after three years and more than 6% over a longer period! This price increase makes the economy less competitive, hence the fall in exports. Two transmission channels are at work. The first is the direct negative impact of higher interest rates on business investment. In the *Mésange* model, the demand for capital and therefore investment depends in the long run on the cost of capital. The intuition is in line with standard microeconomic theory: companies choose the combination of capital and labour that maximises their profit. A rise in the cost of capital leads firms to substitute labour for capital and pushes down investment. The user cost of capital is composed of the depreciation of capital, the long-term

interest rate on government debt and the terms of the risk premium between government bonds and corporate loans, while the long-term elasticity of investment to this user cost is estimated to be 0.44. Assuming a 10% capital depreciation rate, initial nominal rates at 0, and ignoring any risk premia, a 1% increase in the interest rate translates in the long run into a 5% decrease in investment. The second, much less intuitive channel plays a key role in this variant and explains in particular the response of prices and exports. An increase in the cost of capital means higher production costs for business. Firms pass on these higher costs in their selling prices, leading to higher inflation and lower competitiveness. Portier, Beaudry and Hou (2022) recently explored this positive impact of a rise in interest rates on prices via the cost of capital channel. Note that this effect is difficult to detect using more agnostic empirical methods (unrestricted VAR models, local projections). While these sometimes show positive effects in terms of how a rise in rates impacts prices, the effect is usually either insignificant or clearly negative over longer time horizons (see for example Miranda-Agrippino and Ricco, 2021).

The *FR-BDF* model

Compared to *Mésange*, one of the important features of the *FR BDF* model is the way it treats agents' expectations. This specificity explains why two interest rates intervene in the dynamics of the model. The short-term interest rate, determined by the European Central Bank, affects agents' expectations, while the long-term interest rate on public bonds affects the long-term demand for production factors. The long-term elasticity of investment to the cost of capital is 0.5, which is slightly higher than in *Mésange*. The *FR BDF* model does not incorporate systematic relationships between long and short rates. To generate the effect of a rate shock in the model, it is therefore necessary to add two distinct analytical variants, the first simulating the impact of a

permanent rise in the short-term rate, the second the impact of a rise in the long-term rate. These two variants are available in Aldama and Ouvrard (2020). The effects of a rate shock are much weaker than in *Mésange*. After 3 years, real GDP decreases by 0.3%, against 0.9% in *Mésange*. This is due in particular to a much smaller reduction in GFCF (-1.9% compared to -3.4% after 3 years in *Mésange*). The effects on prices are more in line with the usual Keynesian intuition, with a 0.2% fall in the GDP deflator after 3 years. The resulting improvement in competitiveness leads to an increase in exports of 0.2% after 3 years (compared to a 0.2% decrease in *Mésange*). There are two main reasons for these differences. First, the transmission channel of the cost of capital to prices is neutralised in the FR BDF model. While value-added prices are determined by the cost of production factors and a constant markup, as in *Mésange*, the cost of the capital factor that enters the price equation is not the user cost of capital but the marginal return to capital. Second, investment reacts much less strongly in the short term to the growth in value added in *FR-BDF* and is characterised by greater inertia. The negative investment shock therefore spreads more slowly.

Table. Impact of an interest rate hike of 100 basis points

% difference from central account

Impact at 3 years	<i>Mésange</i> model	FR-BdF	<i>e-mod.fr</i> model
GDP	-0.9	-0.3	-0.4
Investment of NFCs	-3.4	-1.8	-1.2
GDP deflator	0.5	-0.2	-0.1
Household consumption deflator	0.8	-0.2	-0.1
Unemployment rate	0.4	0.2	0.2

OFCE calculations.

The *e-mod* model

The impact of a rate shock in the version of the *e-mod* model developed by Heyer and Timbeau (2006) is closer to the results of *FR BDF* than to *Mésange*. However, the economic mechanism is

different. The interest rate shock is transmitted via a fall in asset prices, particularly property prices, which leads to a reduction in consumption via a wealth effect. After 3 years, real GDP falls by 0.4%, a fall that is driven by the reduction in household spending (consumption and investment) (-0.6%) and, to a lesser extent, in business investment (-1.2%) [\[21\]](#). As in *FR-BDF*, the rate shock negatively impacts prices. The GDP and household consumption deflators fall by 0.1%.

What does this overview tell us?

The main transmission channel of a rate shock in macroeconomic models involves the user cost of capital and business and household investment. The magnitude of this negative effect on investment depends on the long-run elasticity of the demand for capital to its user cost. These models estimate this elasticity econometrically. While criticisms can be made of the estimation methods, the value ultimately adopted (on the order of 0.5) seems plausible relative to other estimation methods (for example, a meta-study by Gechert *et al.*, 2022, estimates it at 0.3) and implies moderate substitutability between production factors. It is also possible that the rate shock impacts household consumption via wealth effects, even if this channel remains controversial. In addition to these primary effects on aggregate demand, there are multiplier and accelerator effects that also vary between the models, adding to the uncertainty. We find the channel of production costs, which has a certain importance in the dynamics of the *Mésange* model, implausible. This leads us to retain in this paper the results of Aldama and Ouvrard (2020) and Heyer and Timbeau (2006).

The impact of monetary tightening on economic activity will depend not only on the response of the economy to a generic shock but also on the size of the current shock. In the October 2022 OFCE forecast, the one-year interest rate hike is projected to be 300 basis points, but this hike cannot be used as is. First, this rise is not coming as a complete surprise.

Interest rates fell to very low levels during the Covid-19 crisis, and normalisation was expected to start by 2022, albeit at a very gradual pace. Second, this is a rise in the *nominal* rate. The relevant interest rate for the transmission channels of monetary policy as they appear in macroeconomic models is the *real* rate. This would not pose a problem if the rate hike were a pure monetary policy shock, i.e. if the central bankers had decided overnight to raise rates without any reason. But the rise that we are experiencing is a response to an inflationary shock, a shock that is affecting real interest rates independently of any changes in the nominal rate. The solution adopted by the OFCE in its October 2022 forecasts [\[3\]](#) was to retain the change in the real rate using certain measures of inflation expectations. This leads to a rate shock of around 2%.

On the basis of the two variants that we have chosen, a rate shock of around 2% could, all else being equal, cause French GDP to fall between 0.6% and 0.8% by 2024/2025. The impact on prices would be negative but modest, between 0.3% and 0.4%. This estimate obviously remains very uncertain. As explained in the previous paragraph, calculating the magnitude of the shock itself requires making major assumptions. The models used are estimated with limited information and therefore have potentially broad confidence intervals. More generally, the validity of this estimate of the effects of a rate shock is contingent on the validity of the models used.

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[1] See Table 2 in Appendix 1 of the OFCE forecast in the section [*Tour du monde de la situation conjoncturelle*](#), [Overview of the economic situation], OFCE Forecasting and Analysis Department, under the direction of E. Heyer and X. Timbeau.

[2] These figures are obtained by dividing the results presented in Heyer and Timbeau (2006) by two, as the authors simulated an interest rate rise of 200 bps. As the e-mod model is not completely linear, the results are an approximation.

[3] See Box 2 in [*Perspectives 2022-2023 pour l’économie mondiale et la zone euro*](#), [2022-2023 Forecast for the Global Economy and the Euro Zone], E. Heyer and X. Timbeau (dirs.).

How effective are economic sanctions?

By [Céline Antonin](#)

This topic was the subject of a conference entitled “Sanctioning a country’s economy – A solution?” on 16 November 2022 as part of Lyon’s Focus on the economy days (Journées de l’économie – Jéco):

<http://www.touteconomie.org/conferences/sanctionner-leconomie-dun-pays-une-solution>

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The idea of using economic instruments to influence political objectives dates back to antiquity, but it was not until after the First World War that sanctions were legally codified in the Charter of the League of Nations. The victors in the First World War believed that measures like this would act as a deterrent and help to secure peace by avoiding armed confrontation^[1].

Russia’s military intervention in Ukraine and the many rounds of sanctions that have been imposed by the West since then (the United States, the European Union, etc.) have revived the debate on sanctions. What is their political purpose? Can they be effective, or, in a globalized economy, can the sanctioned country find ways around them? What conditions are needed for sanctions to succeed?

History of sanctions

For several centuries, economic sanctions were intended to complement military action in wartime. In the 20th century, a paradigm shift occurred with the idea that sanctions could be an effective substitute for military action, as reflected in the Charter of the League of Nations (Article 16). Keynes himself said he was “sure that the world greatly underestimates the impact of economic sanctions”. History has, however, proved Keynes wrong: for example, sanctions by the League of Nations against Italy or Japan on the eve of the Second World War failed to prevent that global conflict.

After the Second World War, the idea of sanctions as an alternative to armed confrontation gained traction, and sanctions came into long-term use. The 1990s saw a return in force of sanctions, following the Cold War period when they were used less often, to the point where the period is referred to as the “decade of sanctions”. Voices were nevertheless raised challenging their effectiveness and highlighting the suffering of civilian populations. At the dawn of the 21st century this led to the notion of targeted sanctions, known as “SMART” sanctions (specific, measurable, achievable, realistic, time-bound).

Definition and objective(s)

What exactly is meant by the term sanctions? Askari et al. (2003) [\[2\]](#) define sanctions as “coercive measures, imposed by one country or group of countries on another country, its government or individual entities, aimed at inducing a change in behaviour or policy”. Sanctions can be general or targeted, bilateral or multilateral, trade and/or financial.

When assessing sanctions, it is common to assign them a single objective, but the reality is much more complex. There are actually a plurality of objectives, as Barber (1979) [\[3\]](#) shows: primary objectives, aimed at changing the behaviour of the *target* country; secondary objectives, aimed at satisfying *domestic* political forces; and tertiary objectives, aimed at

promoting the defence of certain values. Thus, sanctions are also a form of punishment of actors whose behaviour is deemed “deviant” from the dominant moral order, and they reflect a desire to extend national sovereignty, as exemplified by US extraterritoriality laws.

As a consequence, the effectiveness of sanctions cannot be judged solely on the basis of their primary objective. Moreover, the objectives actually sought sometimes differ from the objectives declared: in the case of sanctions against Iran, beyond the stated objective of the United States to prevent Iran from becoming a nuclear power, there is in reality also an objective of regime change, which has been pursued since 1979 (Coville, 2015[\[4\]](#)).

Debatable effectiveness

Among the attempts to assess the effectiveness of sanctions, one school of thought, considered “pessimistic”, has generally concluded that they are ineffective. This line of thought began with Galtung’s seminal study (1967)[\[5\]](#), which, using Rhodesia as a prime example, concluded that sanctions have contributed to the strengthening of political power. A second stream of research starting in the 1980s offers a more “optimistic” view of the effectiveness of sanctions; this approach was initiated with a study by Hufbauer, Schott and Elliot (HSE, 1985)[\[6\]](#): based on a sample of 103 cases of trade and financial sanctions implemented between 1914 and 1985, the authors concluded that 36 per cent of the sanctions achieved their objective. A third stream of research then developed out of criticisms of the HSE methodology. As Coulomb and Matelly (2015)[\[7\]](#) point out, recent studies suggest an average success level of 30% for targeted sanctions (Targeted Sanctions Consortium, 2012[\[8\]](#)). Some political scientists disagree, such as Robert A. Pape (1997)[\[9\]](#), who criticises the causality established between sanctions and political objectives and estimates the effectiveness of sanctions “in the strict sense” at around 4%.

Worse still, sanctions are sometimes charged with even being counterproductive. In the country sanctioned, they may provide additional legitimacy to the leadership and render the population more vulnerable to radical ideologies. They can also worsen the situation of the civilian population (access to basic needs, medical care and services, basic food, etc.) and lead to the development of a parallel economy, hurting the most vulnerable in particular. Sanctions can also have strong repercussions in the countries implementing them. They can lead to counter-sanctions, as we are currently seeing as Russia targets European countries. Furthermore, if sanctions are bilateral, they can disadvantage companies in the countries implementing them and create a windfall effect for their competitors who do not apply sanctions: both China and India are currently benefiting from a sharp discount on Russian oil, while European business is having to bear higher fuel costs.

Performance over effectiveness

As the PERSAN report (2017) cited above shows, measuring effectiveness is not in fact sufficient to determine whether sanctions are appropriate. Rather than measuring their effectiveness, the authors argue for measuring the sanction's "performance", using a triptych of relevance-effectiveness-efficiency. While the notion of effectiveness measures only the adequacy between objectives and results, the notion of relevance evaluates the adequacy between means and objectives. If a country's economy is highly integrated globally and has possibilities to circumvent bilateral sanctions, then the sanction will lose its relevance. On the other hand, effectiveness measures the relationship between means and results, in other words, it takes into account the effect of the sanctions on the country implementing them. The ideal sanction is thus one that maximises the potential cost to the sanctioned country while minimising the cost to the implementing country.

It is worth noting that the vulnerability of EU countries to sanctions is comparable to the level of the United States, if intra-regional trade is excluded. Indeed, the rate of openness to international trade, measured as the sum of a country's exports and imports of goods in relation to GDP, comes to 18% in the European Union (51% if intra-EU trade is taken into account) compared to 19% in the United States in 2019[\[10\]](#). But the level of dependence varies from one European country to another: small, very open countries such as Slovenia and Bulgaria have an openness rate of 35% (excluding intra-EU trade), whereas the openness rate in France and Portugal is only 14%. Moreover, the degree of dependence varies according to the product: for example, Guinea and Sharma (2022)[\[11\]](#) draw up a list of 233 products for which the European Union is highly dependent on the outside world, highlighting the importance of China, India and Russia.

EU sanctions against Russia: Self-defeating?

The question of how sanctions perform has importance today, especially in the case of Russia. In response to Russia's invasion of Ukraine, six successive waves of sanctions have been approved by the European Union. The first four rounds of EU sanctions targeted trade with Russia, but carefully exempted energy products and banks heavily involved in the energy sector. This changed with the fifth round of sanctions imposed by the EU Council on 8 April 2022, which banned the import of Russian coal and other solid fossil fuels to the EU from August 2022. The sixth set of sanctions decrees a total halt to imports of Russian oil within six months and to refined products by the end of 2022. Russia has responded to these measures with counter-sanctions: it has obliged foreign creditors to pay for their imports in roubles, and it has suspended gas deliveries to several European countries via the Yamal pipeline.

In terms of effectiveness, it is still early to judge the effect of the sanctions on the Russian economy, but the

provisional balance sheet appears mixed. In its October 2022 forecast, the IMF expects Russian GDP to contract by 3.4% in 2022, which is less than the 6% expected in July 2022. True, half of the country's foreign exchange reserves are frozen, several major banks have been cut off from the international payment system, and Ural crude oil is trading at a discount of about \$20 per barrel. However, Russia's economy seems to be holding up better than expected. The central bank has imposed capital controls and raised interest rates sharply, pushing the rouble up steeply. The trade balance has improved: higher world oil and gas prices have offset the "Russian discount", and increased sales to China and India appear to have partially offset the decline in exports to the EU. Thus, the existence of third countries claiming to be neutral, in a context of globalization, largely weakens the power of sanctions and raises questions about their relevance. Some countries, such as Turkey, play a major role in circumventing sanctions, as illustrated by the project discussed by V. Putin and R. T. Erdogan that aims to create a gas hub in Turkey intended to supply Russian gas to European countries[\[12\]](#).

Furthermore, the EU's heavy dependence on Russian oil and natural gas also calls into question the sanctions. Changing producers may be possible in the case of oil, because of the relative simplicity of transporting oil; sanctions would then imply a reworking – not without cost – of the trading network. In the case of natural gas, however, the very nature of the transport infrastructure limits the possibilities for substitution, as the bulk of European gas trade is based on a network of pipelines coming from Russia. Moreover, Europe's countries are unevenly dependent on Russia, with the easternmost European countries appearing to be the most vulnerable (Antonin, 2022[\[13\]](#)). In response to the sanctions, Russia has drastically reduced its gas deliveries to the European Union, which could have a strong impact on EU countries' growth (Geerolf, 2022[\[14\]](#)). But if the cost to the implementing country outweighs the cost to the sanctioned

country, then the sanctions will be counterproductive. The challenge for the implementing country is therefore to reduce the impact on its own economy, for example by providing the best possible support to the domestic entities that are most directly affected by the sanctions.

Defining the conditions for successful sanctions

It is impossible to predict the conditions required for sanctions to succeed, as each situation needs to be analysed in specific detail. However, certain conditions seem favourable for maximizing their performance. Although empirical studies based on the data of Hufbauer et al. (already cited) show that unilateral sanctions have a higher success rate than multilateral sanctions, there is no consensus on this result: based on new data covering 888 cases of sanctions – with a higher proportion of sanctions not involving the US – Bapat and Morgan (2009)[\[15\]](#) show that multilateral sanctions are more likely to succeed than unilateral sanctions, *provided that* there is either a single grievance against the targeted country or (if there are several grievances) that the sanctions are orchestrated by an international institution. Indeed, because of the presence of an international institution, each implementing country loses its ability to enter into a side agreement with the target country and to participate de facto in a strategy of circumvention. As a result, the target country is more likely to take the threats seriously and offer a compromise. In addition, multilateral sanctions have the advantage of conferring strong political legitimacy on the sanctions.

Furthermore, it is important to ensure that the final political objective is in line with the intermediate economic objective, so that the country issuing the sanctions is confident of its ability to maintain the sanctions over time (Lettre Trésor-éco, 2015[\[16\]](#)). Finally, sanctions should be limited to the most effective measures, and sanctions that have a display objective – whose performance has not been

proven – should be prohibited. The sanctions regimes that have a high success rate are those where the main measure targets a key export sector of the target country – without the implementing country being overly affected: the *Lettre Trésor-éco* (2015) estimates a success rate of 54% when the main measure of the sanctions concerns one of the main export resources of the target country, compared to an average success rate of 18%, all sanctions combined[\[17\]](#). Finally, it is important to ensure that the final objective is clear so as not to fuel the idea that sanctions are an instrument of imperialism; otherwise there is a risk of leading the population of sanctioned countries to harbour a sense of being subject to unjust aggression and to reinforce their rulers' legitimacy – which would be completely counterproductive.

[\[1\]](#) For a more detailed discussion of the performance of sanctions, the reader may wish to refer to the report [Matelly S., Gomez C., Carcanague S. \(2017\). Performance des sanctions internationales, Typologie : étude de cas. Rapport final PERSAN, June 2017, IRIS, CSFRS](#) [The performance of economic sanctions – A typology and case study], which has generally inspired and nourished the production of this text.

[\[2\]](#) [Askari H., Forrer J., Teegen H. and J. Yang \(2003\). Economic sanctions: examining their philosophy and efficacy. Greenwood Publishing Group.](#)

[\[3\]](#) [Barber J. \(1979\). "Economic Sanctions as a Policy Instrument". International Affairs, 55\(3\).](#)

[\[4\]](#) [Coville, T. \(2015\). "Les sanctions contre l'Iran, le choix d'une punition collective contre la société iranienne?". \[Sanctions against Iran – Choosing collective punishment of Iranian society?\], Revue internationale et stratégique, 97\(1\).](#)

[\[5\]](#) [Galtung J. \(1967\). "On the Effects of International Economic Sanctions, With Examples from the Case of Rhodesia". World Politics, 19\(3\).](#)

[6] Hufbauer G. C., Schott J.J., Elliott A. K., 1985, *Economic Sanctions Reconsidered: History and Current Policy*, Washington, Peterson Institute for International Economics.

[7] [Coulomb, F. and Matelly, S. \(2015\). "Bien-fondé et opportunité des sanctions économiques à l'heure de la mondialisation". \[The reasonableness and appropriateness of economic sanctions in a time of globalization\], *Revue internationale et stratégique*, 97\(1\).](#)

[8] Targeted Sanctions Consortium, 2012, *Designing United Nations targeted sanctions. Evaluating impacts and effectiveness of UN targeted sanctions*, The Graduate Institute – Watson Institute for International Studies, August.

[9] [Pape, R. A. \(1997\). Why economic sanctions do not work. *International security*, 22\(2\).](#)

[10] Data source: World Bank for the United States, Eurostat for the European Union (27 countries excluding Malta).

[11] [Guinea, O. and Sharma, V. \(2022\). Should the EU Pursue a Strategic Ginseng Policy? Trade Dependency in the Brave New World of Geopolitics. *ECIPE Policy Brief*, April 2022.](#)

[12] [La Tribune, *Erdogan et Poutine s'accordent pour bâtir un « hub gazier » de l'Europe en Turquie*, \[Erdogan and Putin agree to build a European 'gas hub' in Turkey\], 13 October 2022.](#)

[13] [C. Antonin \(2022\). "Dépendance commerciale UE-Russie : les liaisons dangereuses", \[EU-Russia trade dependence : A dangerous liaison\] *OFCE Blog*, 4 March 2022.](#)

[14] [Geerolf F. \(2022\). "The "Baqaee-Farhi approach" and a Russian gas embargo – some remarks on Bachmann et al.". *Sciences Po OFCE Working Paper*, no. 14/2022.](#)

[15] [Bapat, N.A. and Morgan, C.T. \(2009\). Multilateral versus unilateral sanctions reconsidered: A test using new data.](#)

[*International Studies Quarterly*, 53\(4\).](#)

[\[16\] Ministère de l'Économie, de l'Industrie et du Numérique \(2015\). « Sanctions économiques : quelles leçons à la lumière des expériences passées et récentes ? ». \[Economic sanctions : What are the lessons in the light of past and recent experience?\], *Lettre Trésor-Éco*, no. 150.](#)

[\[17\] *Lettre Trésor-éco* \(2015\), cited above, Table 2.](#)

Reforming the Growth and Stability Pact: The Commission has fallen on the debt

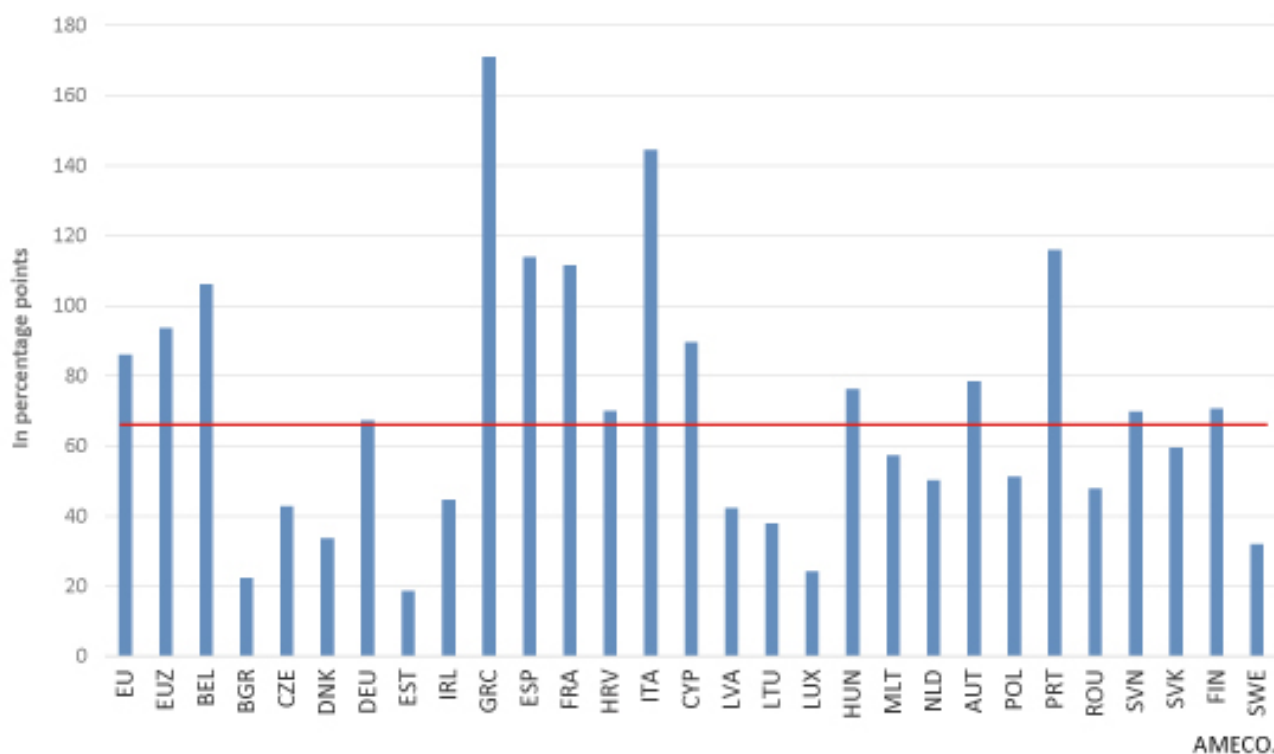
By [Jérôme Creel](#)

In its communication of 9 November 2022, the European Commission outlined the contours of the new European fiscal framework that should, in its words, be simplified and adapted to Member States' specific needs in order to ensure that they remain solvent and to allow for necessary reforms and investments. The new framework should also take better account of economic imbalances, including those relating to trade, and, finally, it should be better applied. A vast programme!

The goal of ensuring the Member States' solvency, which is reiterated by the Commission, reflects that a significant number of Member States have excessively high public debt-to-

GDP ratios within the current European fiscal framework: 12 Member States out of the 27 will have a public debt-to-GDP ratio that exceeds the 60% threshold at end 2022 (Figure 1).

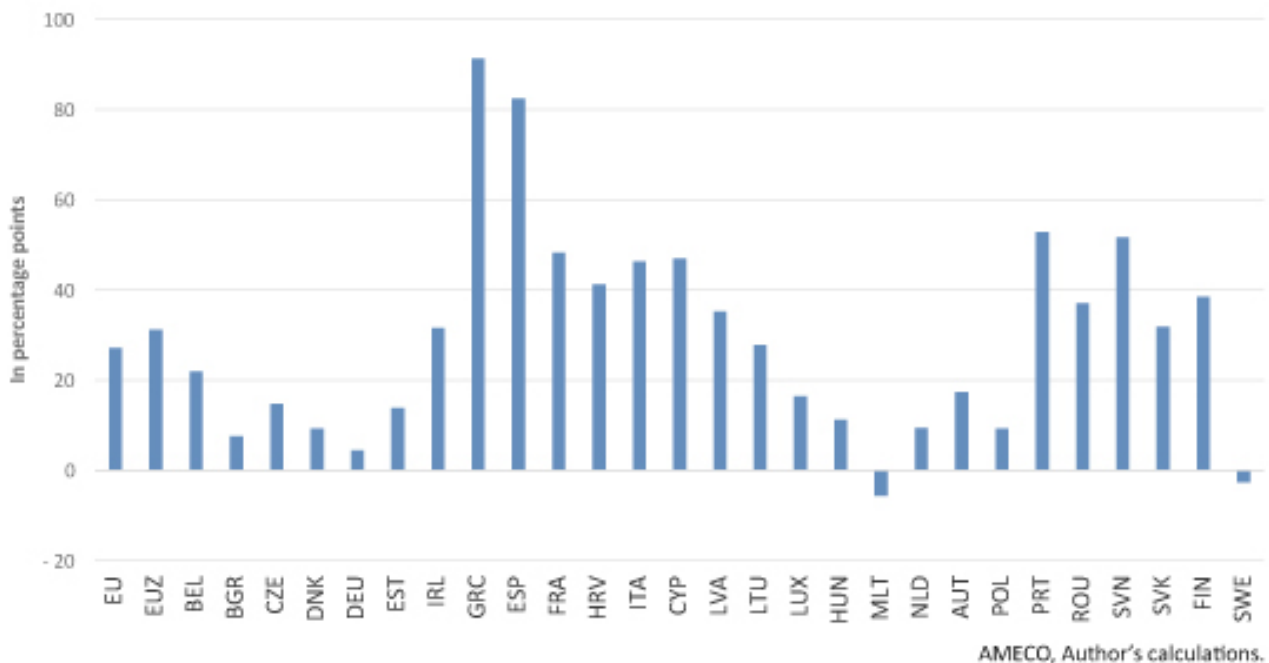
Figure 1. Ratio of public debt / GDP forecast for end 2022



These high levels of public debt are the consequence of the series of economic, financial and geopolitical crises that have hit Europe since 2007. Between end 2007 and end 2021, public debt rose by almost 30 percentage points of GDP on average, with a dispersion of around 23 points. As Figure 2 shows, some EU Member States (recall that the Stability and Growth Pact that the Commission is planning to reform applies to all of them, not just those in the euro zone) have experienced debt increases of almost 50 points (France, Italy, Cyprus, Portugal) or even much higher (Greece, Spain). Others, like Germany, have seen their debts increase only slightly, or even decrease (Malta, Sweden). In this context, it would be difficult if not impossible to apply fiscal rules in a homogeneous or undifferentiated way, as this would require major efforts from Member States that are gradually emerging from the pandemic and are continuing to suffer from the energy

crisis that is severely hurting public finances[\[1\]](#).

Figure 2. Variation in the ratio of public debt / GDP between end 2007 and end 2021



The Stability and Growth Pact, which has been in force since the creation of the euro zone in 1999, aims to ensure fiscal discipline among EU countries by preventing excessive government deficits and debts or by correcting them through fiscal policies that limit spending and boost tax revenues. As the Pact is not applied mechanically, its application depends on how the States and the Commission interpret what is meant by the “excessive” nature of deficits and debts. Although numerical criteria have been appended in a Protocol to the Treaty on the Functioning of the European Union – the well-known criteria of 3% of GDP for the deficit and 60% of GDP for the debt – there are exceptional circumstances that allow for temporary exemptions. So when a serious crisis occurs, as was the case in 2020 with the pandemic, the derogation clause relating to the suspension of the preventive arm of the Pact can be activated. As a result, the Pact will have been put on hold from 2020 to the end of 2023. In the Commission’s view, what should happen after that?

The Pact’s two numerical criteria would be retained, but the

main tool for meeting the criteria would be changed. Fiscal sustainability^[2], i.e. the reduction of public debt, would now be assessed on the basis of a single indicator: primary expenditure, i.e. public spending net of discretionary income, excluding interest charges on the debt and expenditure on unemployment benefits. The reference in the current fiscal framework to the annual reduction in the debt (one-twentieth of the difference between the current debt and the 60% of GDP target) would be dropped, as would the reference to a minimum reduction in the cyclically adjusted government deficit. The one new indicator would replace two, and hence in the Commission's view constitute a simplification.

The primary expenditure target should ensure a plausible path for reducing the public debt towards the 60% of GDP target over 10 years. This does not imply that the debt will necessarily have reached its target after 10 years, but rather that it will be on a trend towards that at a pace deemed satisfactory.

Member States are to present the Commission with a "national medium-term fiscal and structural plan" consistent with their commitment to fiscal discipline. The primary expenditure target established in close coordination between the Member State and the Commission should therefore be consistent with the expenditure deemed necessary by both parties to ensure structural reforms and investments. The precise nature of these is not specified. The primary expenditure target could therefore differ from one country to another, in accordance with likely differences in their needs for reform and investment.

Primary expenditure in line with this fiscal discipline would be planned over a period of 3 to 4 years, engaging the State's responsibility during this period. If unforeseen economic circumstances prevented the public debt from falling at the desired pace (the State's commitment is accompanied by a growth scenario over the same horizon) or if the reforms and

investments fail to produce the anticipated results, mainly economic growth, the adjustment in primary expenditure could be extended by up to 3 more years: the State would then have a maximum of 7 years to reduce its public debt towards the 60% of GDP target at a satisfactory pace. This would tend to greatly expand the notion of the medium term in the current version of the Stability and Growth Pact.

Since 2011, the European Union has equipped itself with instruments for monitoring macroeconomic imbalances (the overheating of wages, trade imbalances, excessive private debt, etc.), which have so far not been connected to the European fiscal framework. The Commission is proposing to integrate these into the framework. By better monitoring these imbalances, the Commission would adjust its recommendations for reforms and investments to ensure that the Member States enjoy sustainable growth and gradually reduce their debt.

Finally, the Commission is giving serious emphasis to the need for Member States to respect their commitments – the application of the Stability and Growth Pact has not always been very scrupulous – and for national bodies to more closely control these (in France, the High Council for Public Finances, the HCFP). These bodies would be responsible for organising a national debate on the relevance of the multiannual public finance assumptions made by governments.

So this is the reform project. What do we think of it?

First of all, the reform project, if adopted, would give the States greater manoeuvring room than in the current rules: reducing the debt more slowly, maintaining spending on unemployment benefits, and taking investments into account. There would be no immediate fiscal austerity.

However, adjusting primary expenditure over several years to ensure debt sustainability while taking account of the reforms and investments deemed necessary does not really seem much

different from the situation prevailing today. Flexibility would be enshrined in the new draft whereas it is more a matter of improvisation in the current framework. But in practice how much does this really change? The States are by now used to modifying their fiscal policies to finance reforms and investments while ensuring their solvency. The hearings before France's High Council on Public Finance are already supposed to stimulate the national debate on the short and medium-term orientation of public finances. On this point, too, it is rather difficult to see how the Commission's proposal is innovative.

The *a priori* coherence between a potentially more flexible target for primary expenditure and the continuing need to meet the public deficit criterion is not self-evident. How much manoeuvring room will States with deficits in excess of 3% of GDP really have? They will definitely need to find new resources to reduce their deficit and maintain their primary expenditure capacity in order to finance reforms and investments. This is a major challenge, especially if macroeconomic conditionality is applied for the availability of EU funds (cohesion policy, funds from the Recovery and Resilience Facility of the Next Generation EU programme) when the public deficit is deemed excessive: the granting of EU funds may be suspended.

The major role played by the Commission in the proposed fiscal process is another significant factor. The Commission imposes the path for adjusting expenditure, and if the States fail to implement their fiscal plans and reforms on time, it may magnanimously grant them a little extra time to do so. And, in what is considered an intelligent proposal for sanctions [\[31\]](#), it plans to systematically require the finance ministers of countries that have not met their commitments to explain this before the European Parliament. In this fiscal process, should the role of Europe's only democratic assembly really be limited to systematically humiliating those at fault? This

provision does of course already exist, but it is not applied systematically. There are undoubtedly other ways of involving the European Parliament in the new fiscal framework.[\[4\]](#) But it is true that the Commission has a strong penchant for technocratic bodies, such as fiscal committees or high councils for public finance.

As for better integrating the tools for monitoring macroeconomic imbalances, the intention to ensure the overall coherence of the Commission's recommendations is laudable. It remains to be seen however whether countries that exceed the maximum threshold for their trade surplus – which is likely to happen again once energy costs have fallen – will actually implement the recommendations. Germany's governments have thus far never taken these into account.

Finally, there is something very mechanical in the vision of fiscal policy that this reform project conveys. Over a three- to four-year horizon, ministry officials will continue to do what they have been doing since the Stability and Growth Pact was first put into place, i.e. to calculate expenditure trajectories compatible with reducing the public debt. And, contrary to what the proposal tries to imply, the controversial notion of the output gap, i.e. the gap between unmeasurable potential GDP and actual GDP, has not disappeared from the European fiscal framework. It will remain crucial to separate the cyclically-adjusted deficit from the cyclical deficit, and the primary structural balance (the cyclically-adjusted government balance excluding interest charges) remains the benchmark for analysing debt sustainability.[\[5\]](#) Given the series of economic crises that we have been going through for the last 15 years and the rising debt they have generated, it is not clear that these exercises have been very useful.

[\[1\]](#) See the [forecast for the world economy](#) [in French]

recently conducted by the OFCE's Analysis and Forecasting Department.

[2] On the sustainability of the debt, see the special issue of the [Revue d'économie financière](#) from last month.

[3] The characterization as intelligent appears in column 3 of Figure 2 of the Commission Communication.

[4] This is the subject of my [contribution](#) to the aforementioned special issue of the *Revue d'économie financière*.

[5] See pp. 11-12 and p. 22 of the Commission Communication.

United States: Slowdown or recession?

by [Christophe Blot](#)

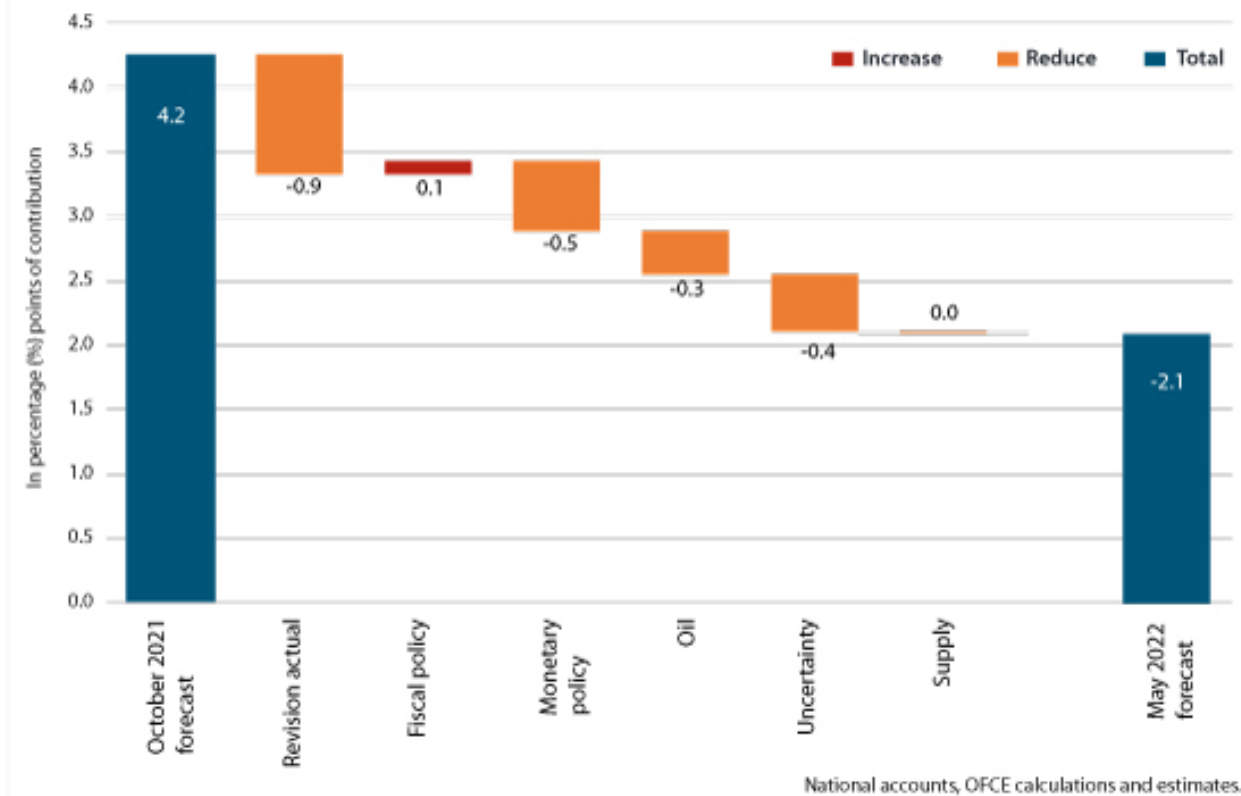
In the first quarter of 2022, US GDP fell by 0.4%, ending the recovery that had begun in the summer of 2020. The international economic environment had deteriorated significantly due to a combination of negative shocks. The global economic recovery has been accompanied by supply difficulties and a sharp upturn in energy prices, amplified since February 2022 by Russia's invasion of Ukraine. The conflict has led to heightening geopolitical tensions and fuelled greater uncertainty[1]. Finally, rising inflation has led central banks, particularly the Federal Reserve, to raise interest rates. So is the decline in US GDP at the beginning of the year a sign of a recession, or will it simply put the brakes on growth?

After the steep downturn observed in 2020, the US economy rebounded sharply, and by the second quarter of 2021 GDP exceeded the level of activity seen at the end of 2019. Growth for 2021 as a whole stood at 5.7% and was strongly driven by domestic demand, in particular household consumption, which shot up by 7.9%[\[2\]](#). The support plans implemented first by the Trump administration and then by Biden more than compensated for the loss of primary household income due to the pandemic, and generally boosted consumption, particularly of durable goods[\[3\]](#). The dynamism of demand in the US and globally then ran up against supply constraints as new waves of COVID transmission struck. Although the spread of the virus in most countries was not accompanied by the kind of strict prophylactic measures taken in the spring of 2020, the situation nevertheless worsened, clogging up global supply chains and holding back labour supply[\[4\]](#). This contrast between US demand, supported by highly expansionary fiscal policies, and constrained global supply has pushed prices up. In the US, the consumption deflator excluding energy and food prices rose to 3.3% in 2021, with much higher increases for some goods: 13.2% for cars, for example. Another sign of the imbalance in US growth: the sharp increase in import volumes (+14% over the year compared with a 4.5% increase in exports) has led to a deterioration in the trade balance in goods and services, with a deficit of \$1,280 billion in 2021 (or 5.6% of GDP) compared with \$905 billion (4.2% of GDP) two years earlier. The contraction of GDP observed in the first quarter of 2022 could be the manifestation of an overheating economy, as domestic demand has remained buoyant: +0.5 points. It is foreign trade's negative contribution (-1 point) that accounts for the 0.4% fall in GDP.

The rest of 2022 will be marked mainly by more negative shocks. While our October forecast anticipated growth of 4.2%, this figure had to be revised downwards significantly (Figure 1) to 2.1%. Although the US is an oil producer, the rise in price nevertheless is having a negative effect due to

reduced household purchasing power and higher production costs for business[5]. Assuming that geopolitical tensions remain at the level observed in April until the end of the year, the uncertainty shock will cut growth by 0.4 points[6]. As for supply constraints, these should not have a major recessionary impact in the United States but will undoubtedly contribute to maintaining pressure on prices. The reduction in the growth forecast is also due in part to a stronger-than-expected tightening of monetary policy. Indeed, in the October 2021 scenario, we anticipated that inflation would gradually fall back to the Federal Reserve's target, implying a much slower normalisation of monetary policy. In the face of the larger and longer-lasting inflationary shock, the Federal Reserve has tightened monetary policy. The last three meetings of the Federal Open Market Committee(FOMC) have resulted in consistent rate hikes, from 0.25% in January to 1.75% in June. This should continue in the second half of the year, with the rate increasing by 1.5 points on average over the year, which would have an effect on growth of up to 0.5 points from 2022. In total, these shocks should therefore cut the forecast for growth by 1.2 points. This effect is being compounded by the fact that actual growth in the third and fourth quarters of 2021 was less strong than we had anticipated: 0.6% and 1.7% respectively, compared with the October 2021 forecast of 1.4% and 2.3%. Finally, these shocks will not be offset by fiscal policy[7].

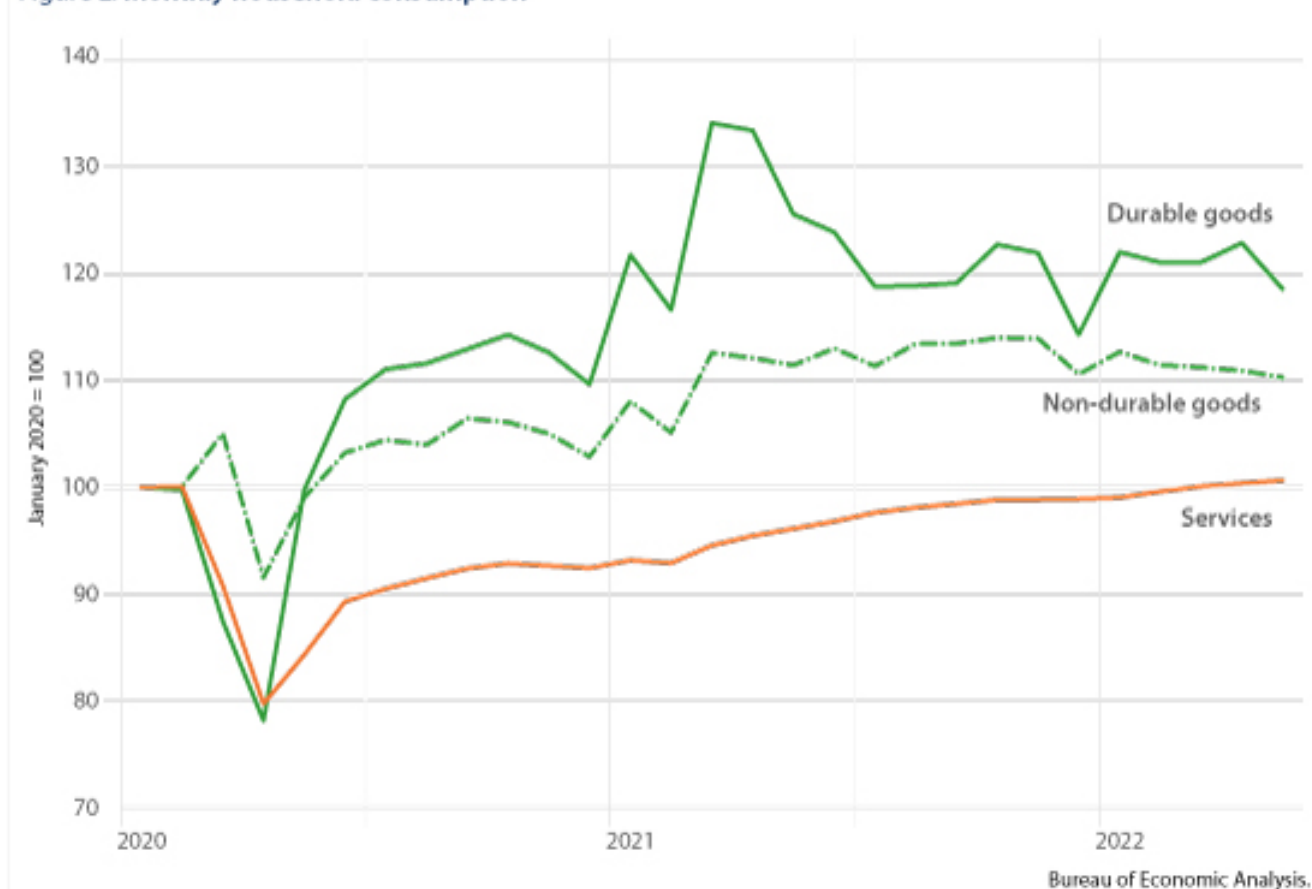
Figure 1. Impact of shocks on US growth in 2021



Given the figure for growth in the first quarter of 2022, quarterly growth during the following three quarters of around 0.3-0.4% should be compatible with annual growth of 2.1%[\[8\]](#). The economic indicators for the months of April to June confirm a slowdown in US activity in a context of still high inflation. The monthly figures for household consumption, which rose in April (+0.3%) but fell in May (-0.4%), already suggest further slowing. This performance once again continues to be driven by purchases of durable goods, which peaked in March 2021 and have since fallen by 5.6% (Figure 2). Business confidence surveys have confirmed the slowdown, but levels are still above long-term averages. Moreover, industrial output continued to rise in April and May. Finally, on the employment and unemployment front, the figures for June provide a good picture of the second quarter. The unemployment rate stagnated at 3.6%, after having fallen by more than 11 points between April 2020 and March 2022. Employment in turn has risen on average from the first quarter, but the level in June 2022 was lower than in March. These elements therefore point to moderate or even negative growth, particularly if the

contribution of foreign trade is again negative. At worst, however, this would be a technical recession[9].

Figure 2. Monthly household consumption



[1] See “[L'économie mondiale sous le\(s\) choc\(s\)](#)” [The world economy in the face of shock(s)], *OFCE Review*, No. 177, for a detailed analysis.

[2] Total GFCF increased by 7.7%.

[3] See “[Europe / États-Unis, comment les politiques budgétaires ont-elles soutenu les revenus?](#)” [Europe / United States, how have fiscal policies supported incomes?], *OFCE the Blog*, 26 October 2020.

[4] China was a notable exception because of its “zero Covid” strategy, resulting in local lockdowns.

[5] A recent review of the literature does suggest that higher oil prices reduce household consumption and investment. See A.

M. Herrera, M. B. Karaki & S. K. Rangaraju, 2019, "Oil price shocks and US economic activity", *Energy policy*, No. 129, pp. 89-99.

[6] See Table 3 on page 32 of "[L'économie mondiale sous le\(s\) choc\(s\)](#)", *Op. cit.*

[7] The estimate of the impact of fiscal policy reflects the revision of the fiscal impulse compared to the scenario envisaged in October 2021. The fiscal impulse was negative due to the end of various one-off measures enacted to address the health crisis. The revision is mainly due to the analysis of the measures included in the 2022 budget by the Biden administration.

[8] The performance in Q1 may well already partly capture the impact of the various shocks.

[9] A technical recession refers to a situation when GDP declines over two consecutive quarters. However, a recession depends on a set of indicators.

Can the US Federal Reserve bring inflation back to 2%?

by [Christophe Blot](#)

At the monetary policy meeting on 16 March 2022, the Federal Reserve raised its interest rate by a quarter point to 0.5%[\[1\]](#). With the strong increase in inflation observed in the United States since the spring of 2021, there is little doubt that this movement will continue. Indeed, Jerome Powell recently confirmed this and envisaged a half point increase at

the meeting on 4 May. Beyond that, expectations from futures contracts on the federal funds rate suggest that the interest rate will rise to at least 3% by year's end. Will the US central bank succeed in bringing inflation back to its target? Put another way, can the nature of the imbalances that are pushing up prices be corrected by monetary policy? And how high should interest rates rise to curb the current inflationary surge?

After settling at 1.2% in 2020, inflation, measured by the consumer price deflator, reached 3.9% in 2021 on an annual average, i.e. a level well above the Federal Reserve's 2% target[\[2\]](#). Furthermore, contrary to the expectations formulated by the members of the Federal Open Market Committee (FOMC) in mid-2021,[\[3\]](#) inflation picked up steam and by February 2022 exceeded 6%, the highest level since 1982[\[4\]](#). As [Jean-Luc Gaffard and Francesco Saraceno](#) point out, inflation is necessarily the result of sectoral market imbalances, which have their source in either insufficient supply or excess demand. The appropriate policy response must therefore be based on as complete a diagnosis as possible of the causes of the inflation, which results in social costs[\[5\]](#). However, given the Fed's mandate, tightening monetary policy seems unavoidable[\[6\]](#). In the case of the United States, this is a dual mandate since, according to the Federal Reserve Act, the aim of US central bank policy is to promote both price stability and maximum employment. With the unemployment rate at 3.6% in March 2022, the Fed logically considers that it is further from its price stability objective than from its full employment objective. Besides the unemployment rate, other indicators such as the resignation rate or the ratio between the number of unemployed and job openings also confirm the existence of tensions on the labour market[\[7\]](#).

The main question is therefore how much tightening is needed

to bring inflation back to target. The answer to this question depends in particular on the transmission of monetary policy to prices. How does inflation react when the central bank decides to raise its interest rate? Remember that the central bank only sets a very particular rate, a very short-term money market rate. Changes in this rate are then transmitted to market and bank rates, and on to financial and property prices. Monetary policy therefore influences the totality of financing conditions and, through this, household consumption and household and business investment[\[8\]](#). When the central bank tightens its monetary policy, demand is reduced and unemployment rises, which has an impact on prices, i.e. the prices of goods and services and wages. The impact of monetary policy on inflation can be quantified by estimating the effect of higher interest rates on unemployment and the link between inflation and unemployment.

A recent analysis by Silvia Miranda-Agrippino and Giovanni Ricco (2021) suggests that a one percentage point hike in the interest rate set by the central bank pushes up the unemployment rate by 0.3 percentage points after 12 months.[\[9\]](#) All else being equal, Ball and Mazumder (2011) suggest that, using a standard Phillips curve estimate, an additional 1 percentage point of unemployment would reduce inflation by 0.5 percentage points. So raising the rate from 0.25% to 3% by the end of 2022 would result in a 0.4 percentage point reduction in inflation. The tightening scenario envisaged for monetary policy therefore seems largely insufficient to bring inflation back to its 2% target. In other words, the only way the Fed could hope to reduce inflation would be by raising the interest rate even further. This is not, however, a reasonable prospect.

First, reducing inflation by 4 points – from 6% to 2% – implies such a steep rate hike that it would push the US economy into a violent recession and a brutal rise in unemployment. This was the path chosen by Paul Volcker, Fed

Chairman between 1979 and 1987, who pursued a highly restrictive monetary policy at the beginning of his term in order to reduce US inflation, which exceeded 10% at the end of 1979 (Figure 1). The result was a sharp rise in the unemployment rate, to its highest level since 1951[11]. There are, however, important differences with the current inflationary situation. Inflation today is partly the result of supply factors that, according to Reifschneider and Wilcox (2022), are temporary[12]. Monetary policy would not be effective in countering a shock to energy prices or global supply constraints, since these do not really depend much on the US macroeconomic situation. The point is to focus action on the contribution to inflation arising from domestic factors, and in particular tensions on the labour market, which have been fuelled in part by the fiscal stimuli of Donald Trump in 2020 and then of Joe Biden in 2021[13]. However, it is clear that, like many other forecasters, the Fed was off in its belief that this inflationary episode would not last long and that supply factors would ease relatively quickly. Since then the war in Ukraine has put further pressure on energy prices and hence on inflation.

At the same time, it seems apparent that inflation expectations are probably better anchored around the Federal Reserve's inflation target than they were in the late 1970s. According to the Michigan Household Survey, long-term inflation expectations – five years ahead – have risen but appear to have stabilised around 3% since May 2021. In particular, they are lower than they were in the late 1970s and early 1980s (Figure 2). And these inflation expectations do play a role in the dynamics of inflation. Indeed, the more households or companies anticipate a high level of inflation, the more they will ask for wage increases or set their prices at a higher level, which will result in a spiral in which inflation expectations feed inflation, which in turn pushes expectations a little higher. It is therefore also in order to avoid this type of runaway so-called second-round effects that

the Fed is deciding to accelerate its monetary tightening. The aim is to maintain this anchorage. Recent work has shown that this channel for transmitting monetary policy onto expectations is significant[\[14\]](#).

It therefore seems that the current situation justifies monetary tightening in the US. The difficulty facing the central bank is to distinguish between supply and demand factors. The objective of the tightening initiated by the Fed must be mainly to limit the tensions observed on the labour market and to influence agents' expectations so that these expectations don't take off. It should at the same time be relatively moderate so as not only to avoid pushing the economy into recession but also to avoid a sharp rise in long-term interest rates, which would lead to destabilising pressures from the weight of the public debt. While the supply factors driving inflation are temporary, the Fed's response will allow inflation to gradually converge towards its target. In this respect, it is worth noting that the average inflation targeting strategy gives the Fed greater manoeuvring room, as it can in fact tolerate inflation above 2%. Since 2008, inflation has mostly been below 2%, so even with 5% inflation in 2022, the path of the price index would still be lower than the shadow path that would have been observed if inflation had risen by 2% per year since 2009 (Figure 3). Finally, if the supply factors prove to be long-term, the appropriate economic policy will not be to curb demand through an overly restrictive economic policy but rather to stimulate supply through an investment policy that can raise production capacity to the appropriate level.

Figure 1. Inflation, unemployment and monetary policy

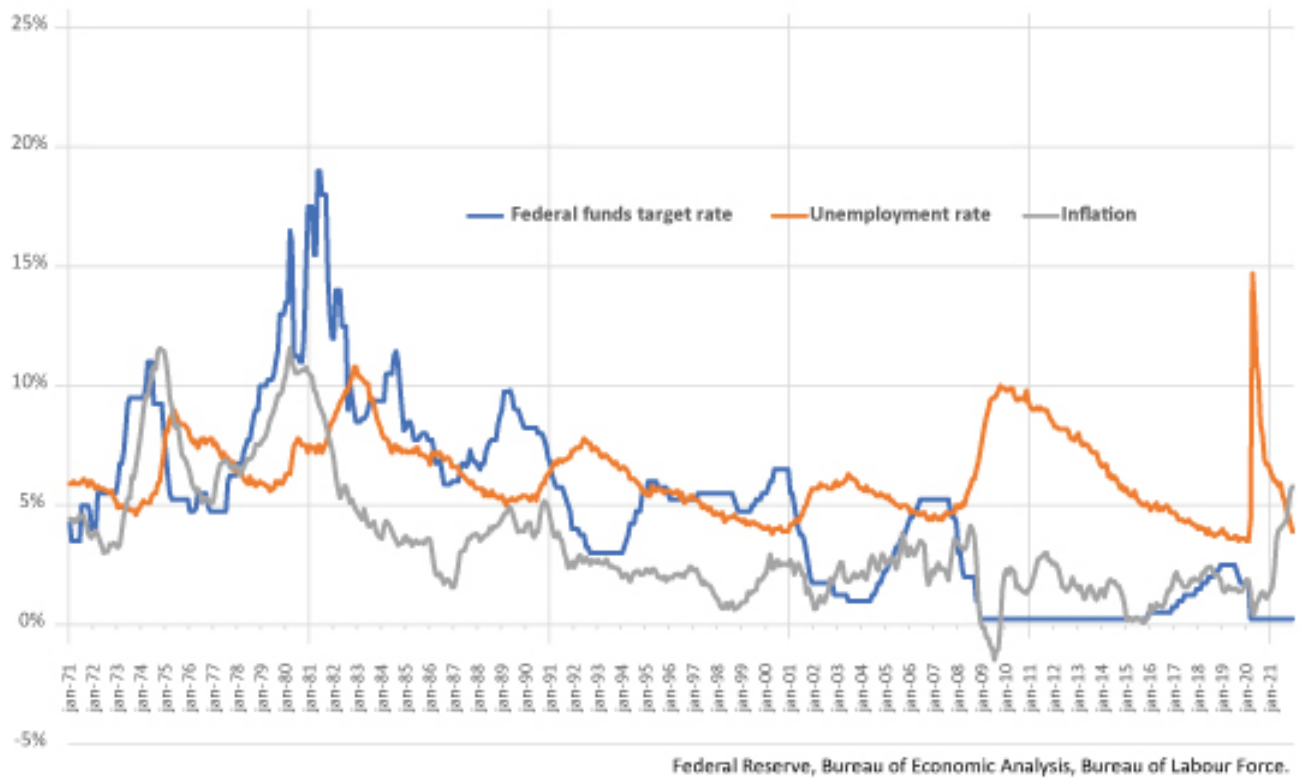


Figure 2. Inflation expectations of American households

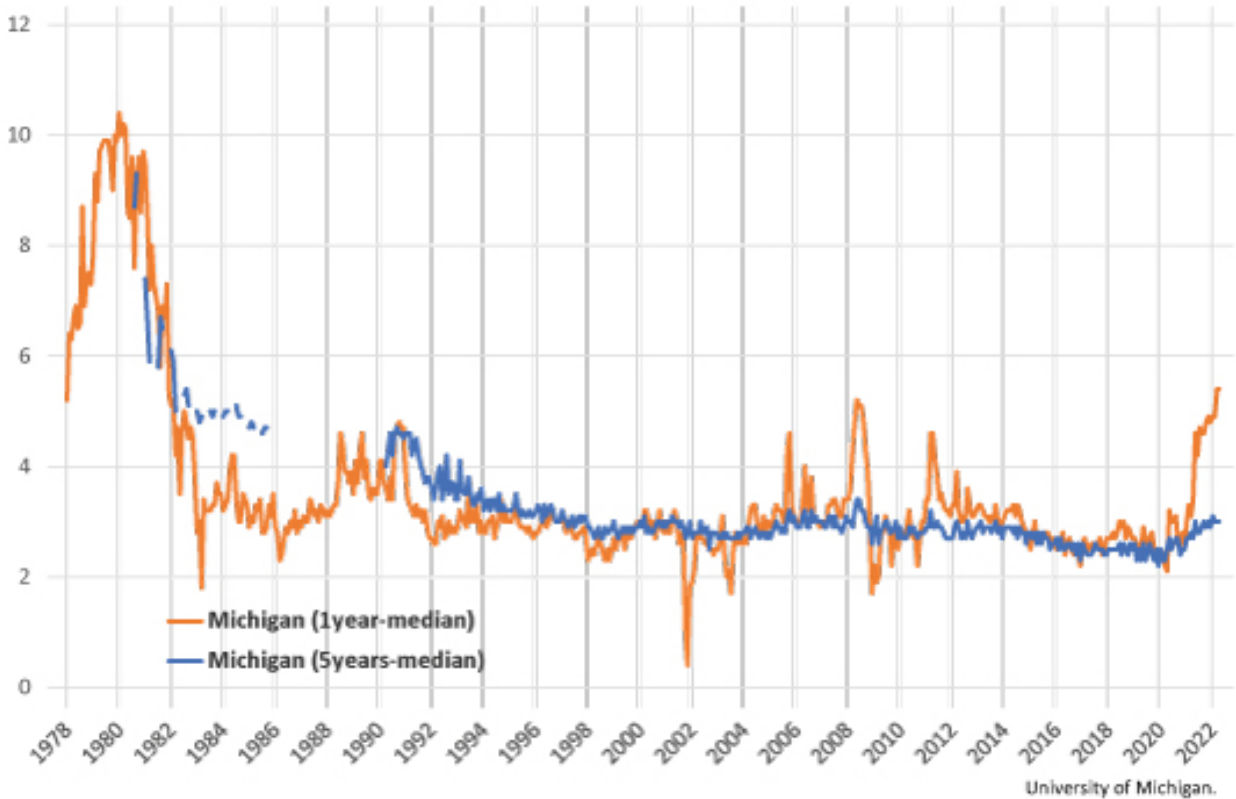
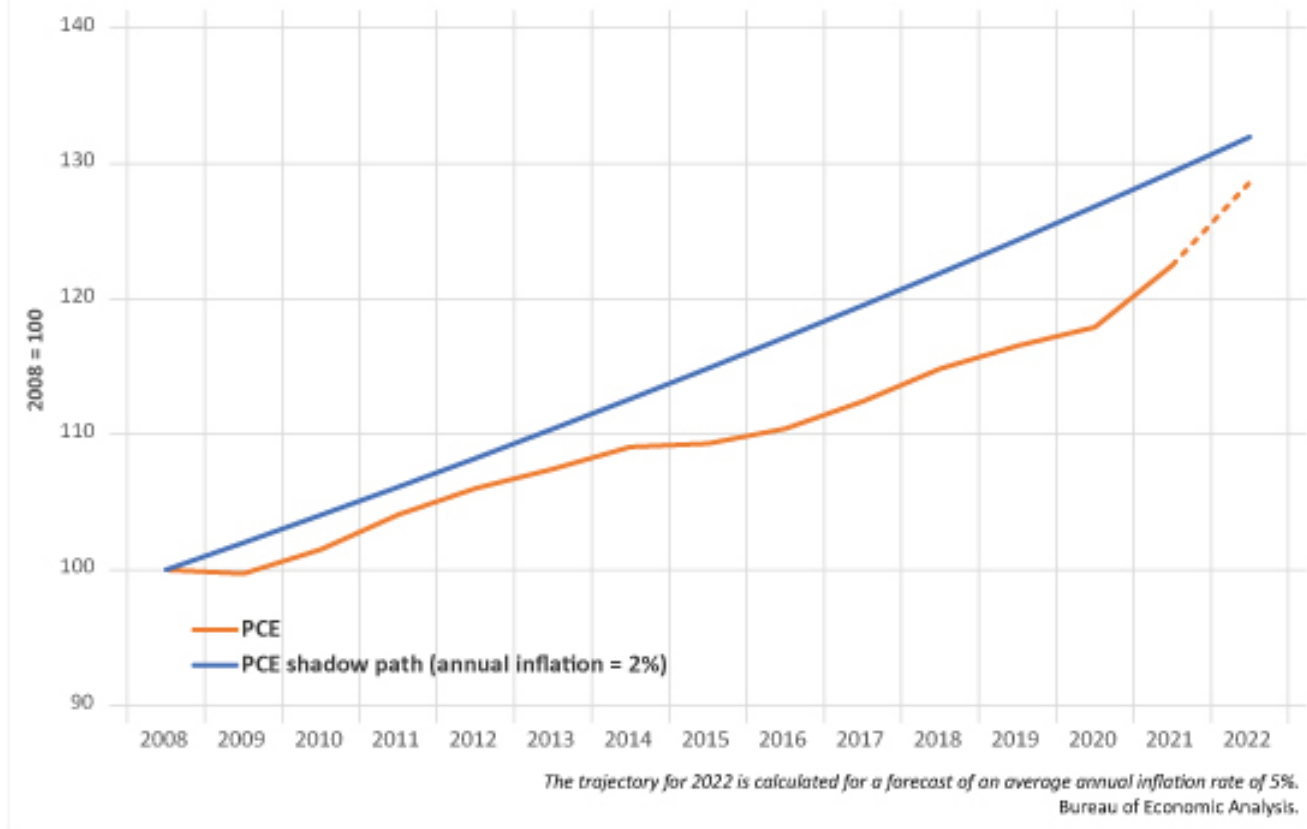


Figure 3. Trajectory of the consumer price deflator



[1] In the United States, the Federal Reserve's policy rate corresponds to the target for the rate at which commercial banks exchange federal funds, which are the deposits they hold with the local Federal Reserve.

[2] See [Blot, Bozou and Hubert](#) (2021) for a discussion of central bank inflation targets and the reformulation proposed by the Fed in August 2020.

[3] Projections by FOMC members in June 2021 suggested inflation of between 1.9% and 2.3% at the end of 2022, with a median of 2.1%: see [here](#).

[4] Inflation measured by the consumer price index even exceeded 8.5% in March 2022. Note that the inflation indicator used by the Federal Reserve is the consumer price deflator.

[5] Even if wages are growing faster in the US, they are not currently compensating for inflation, which is resulting in a

loss of purchasing power for US households.

[6] Basically, the central bank's mandate does not specify that its monetary policy response should be differentiated according to the causes of inflation, which implicitly suggests that long-term inflation can only be a monetary phenomenon.

[7] See this [analysis](#) or [this one](#).

[8] Monetary policy also influences foreign trade through its effect on the exchange rate.

[9] See Miranda-Agrippino S., & Ricco G. (2021). [The transmission of monetary policy shocks](#). *American Economic Journal: Macroeconomics*, 13(3), 74-107. The effect on unemployment is obtained by considering a monetary policy shock such that the one-year interest rate rises by one percentage point. Although the Federal Reserve does not directly control this rate, it is nevertheless influenced by the central bank's decisions.

[10] See Ball L. M. & Mazumder S. (2011). [Inflation dynamics and the great recession](#). *Brookings Papers on Economic Activity*, Spring, 337-381.

[11] This record of 10.8% in November 1982 was only exceeded in April-May 2020 during the pandemic. In 2009, the peak for the unemployment rate rose to 10%.

[12] See <https://www.piie.com/sites/default/files/documents/pb22-3.pdf>. Their optimism is, however, debatable.

here:

<https://www.piie.com/blogs/realtime-economic-issues-watch/what-needed-tame-us-inflation>

[13] See Aurissergues, Blot and Bozou (2021), "Les États-Unis vers la surchauffe? [Is the US overheating?]" [Policy Brief of](#)

[14] See Diegel M. & Nautz D. (2021), “Long-term inflation expectations and the transmission of monetary policy shocks: Evidence from a SVAR analysis”, *Journal of Economic Dynamics and Control*, 130, 104192.

Jean-Paul Fitoussi, brilliant economist and public intellectual, by Xavier Ragot

Born on 19 August 1942 in La Goulette (Tunisia), died on 15 April 2022 in Paris

The economist Jean-Paul Fitoussi passed away on 15 April in Paris. He began his career as a professor at the University of Strasbourg and then at the European University Institute in Florence, before joining Sciences Po and becoming President of the Observatoire Français des Conjonctures Économiques (OFCE) from 1989 to 2010. Officer of the Legion of Honour and Doctor Honoris Causa at many universities, Jean-Paul Fitoussi's work has been recognised by numerous international prizes. He has contributed to institutions throughout France and Italy, where he also taught and where he commanded widespread respect.

Jean-Paul Fitoussi was a great economist but also a public intellectual. He understood that our economies generate serious instabilities. High inflation in the 1970s, mass unemployment in the 1980s, high interest rates in the 1990s

due to convergence on the euro, the financial crisis of 2008, the Covid pandemic, and then the current geopolitical and energy crisis: economic instability is the norm, hitting the most vulnerable, and public intervention must be a constant. Capitalism is not a stable system where the only things politicians change are technical parameters, such as, for example, taxes or the configuration of the pension system. It requires constant intervention through fiscal and monetary policy, adapting policy instruments again and again. His most recent reflections concerned how the rise in inflation and energy prices since the invasion of Ukraine would impact the poorest households. How can energy dependency be reduced without penalising the most vulnerable?

Jean-Paul Fitoussi was able to draw out the implications for European construction. Economic governance cannot be built by means of economic rules: the criteria of a 3% public deficit and 60% public debt, in addition to being arbitrary, distract from the imbalances that are accumulating outside the State budget. What is needed is not uniform rules but a place for debate to identify imbalances and anticipate future crises, a forum for European sovereignty. For Jean-Paul Fitoussi, the role of European sovereignty is not to fuel confrontation but to ensure coordination and management of the economic exception.

Yet the aim of this economic coordination cannot be to maximise growth without concern for inequality or sustainability, but about contributing to the common good. Here the intellectual strength of Jean-Paul Fitoussi meets the modesty of the economist. It is not for the economist to decide what an economy means for society but for democracy to show the desirable futures. Jean-Paul Fitoussi's contributions have therefore focused on the definition and measurement of well-being. As part of the Stiglitz-Sen-Fitoussi Commission, he has contributed since 2009 to broadening the measures of economic progress beyond GDP growth alone.

But Jean-Paul Fitoussi was also someone who builds, and he was concerned with participating in the life of the city. He became President of the OFCE in 1989 and directed the Institute for 20 years, establishing the OFCE as an internationally recognised centre. All those who worked with him can testify to his kindness, his attention, and his sense of humour. His concern for others was no mere intellectual attitude. For 20 years he was Secretary General of the International Economic Science Association, participating in international reflections with Arrow, Sen, Phelps, Solow, all Nobel Prize winners – and his friends.

Finally, Jean-Paul Fitoussi was a great architect of Sciences-Po and contributed to developing the institution in many ways. He helped to open it up socially and to create the economics department. The relevance of his ideas and his sense of pedagogy have given him a special place in the public debate. Consulted by one government after another, he was never stingy with his time to explain economic policy issues, with students as well as Presidents of the Republic.

Jean-Paul Fitoussi leaves us at a time when we are most in need of his thinking. Because of his conception of the role of the economist in the city, his attention to crises and to the economic difficulties of society's most vulnerable, Jean-Paul Fitoussi can be described as Keynesian. This is both accurate but reductive. We need to broaden the focus and present him better: an honest man and a great economist.

[Xavier Ragot](#)

Our planet, our health, our priority!

By [Éloi Laurent](#)

“Are we able to reimagine a world where economies are focused on health and well-being?” With these words, the WHO issued a call to governments and citizens around the world on World Health Day, 7 April 2022, which marks the 74th anniversary of its founding and the coming into force of its [Constitution](#).

The theme of the WHO anniversary is “our planet, our health”, and it comes only a few weeks after the publication of three important articles that help to grasp the relevance and scope of this theme.

The first two articles demonstrate the progress in our knowledge about the emergence of SARS-CoV-2, the origin of the Covid-19 pandemic. The authors state that, first, it is [“very likely”](#) that the pandemic is the result of a zoonosis (i.e. transmission from animals to humans), as was the case with SARS-CoV-1 in 2002/2003, and that, second, it was at the [Wuhan live animal market](#) that this transmission first took place. This is a major breakthrough in a scientific debate that has been fiercely contested for the past two years and where all hypotheses have been seriously considered.

The [third article](#) looks at the consequences of the Covid-19 pandemic and measures the magnitude of the health shock it has caused. The authors estimate the excess mortality due to the global pandemic in 191 countries and territories from 1 January 2020 to 31 December 2021. They conclude that there is a discrepancy of one to three between their estimates and the official figures: taking into account errors and mistakes in

the Covid death toll, the number of deaths worldwide over this period was not 5,940,000, but rather 18,200,000 (a global excess mortality on the order of 16%).

For some countries, such as India, the gap is truly considerable: from 489,000 official deaths to an estimated 4,070,000. For France, the gap is still significant: [from 122,000](#) to 155,000, i.e. a difference equivalent to the number of official deaths during the first wave in spring 2020. Yet this global estimate is based on the figure of 17,900 Chinese deaths (almost four times more than officially announced), which is simply impossible to believe.

It is clear therefore that human health is [“inextricably linked”](#) to the health of ecosystems and biodiversity, which implies, as the WHO rightly points out, that the health-environment nexus must become the backbone of an [economy of well-being calibrated for the 21st century](#).

This backbone must be based on a “One Health” approach. In November 2020, a panel of high-level experts in this field (with [Serge Morand](#) being the only French member) was charged with consolidating and institutionalising this approach under the aegis of the World Organisation for Animal Health (OIE), the Food and Agriculture Organisation of the United Nations (FAO), the United Nations Environment Programme (UNEP) and the WHO. Human health, animal health, plant health and environmental health, these experts tell us, are complementary and interdependent.

The climate challenge similarly highlights the intersection of health and environmental issues. The [second installment of the IPCC Sixth Assessment Report](#), which deals with the impacts, adaptations and vulnerabilities associated with climate change, runs to 3,676 pages and contains no fewer than 4,853 occurrences of the word “health”.

Given all this, the WHO might want to update its own

definition of health, which dates from 1948: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". To update this definition, we may wish to define ["full health"](#) as "a continuous state of well-being: physical and psychological, individual and social, human and ecological". The important thing about this definition is to emphasise the holistic nature of the approach, the continuity of health, which links mental health to physiological health, individual health to collective health and human health to planetary health. Full health is therefore health based on interfaces, synergies and solidarities.

If the WHO member states were to adopt this redefinition of health, this would, for example, encourage health issues in France to be studied systematically from an environmental perspective, which is far from being the case today, as can be seen from examining the profusion of reports and proposals on the future of the French health system, and more broadly on health insurance and its financing. The common point in all these is to ignore the ecological issue almost completely. Yet if there is a "Great Social Security System" to be invented, it is social-ecological security.

The Covid-19 pandemic has shown how health is a collective matter that is blurred and distorted by calls for "individual responsibility", but the collectivity that we must take note of and become partners in goes far beyond the human race alone.

Is the war in Ukraine influencing central bank monetary policy?

by [Christophe Blot](#)

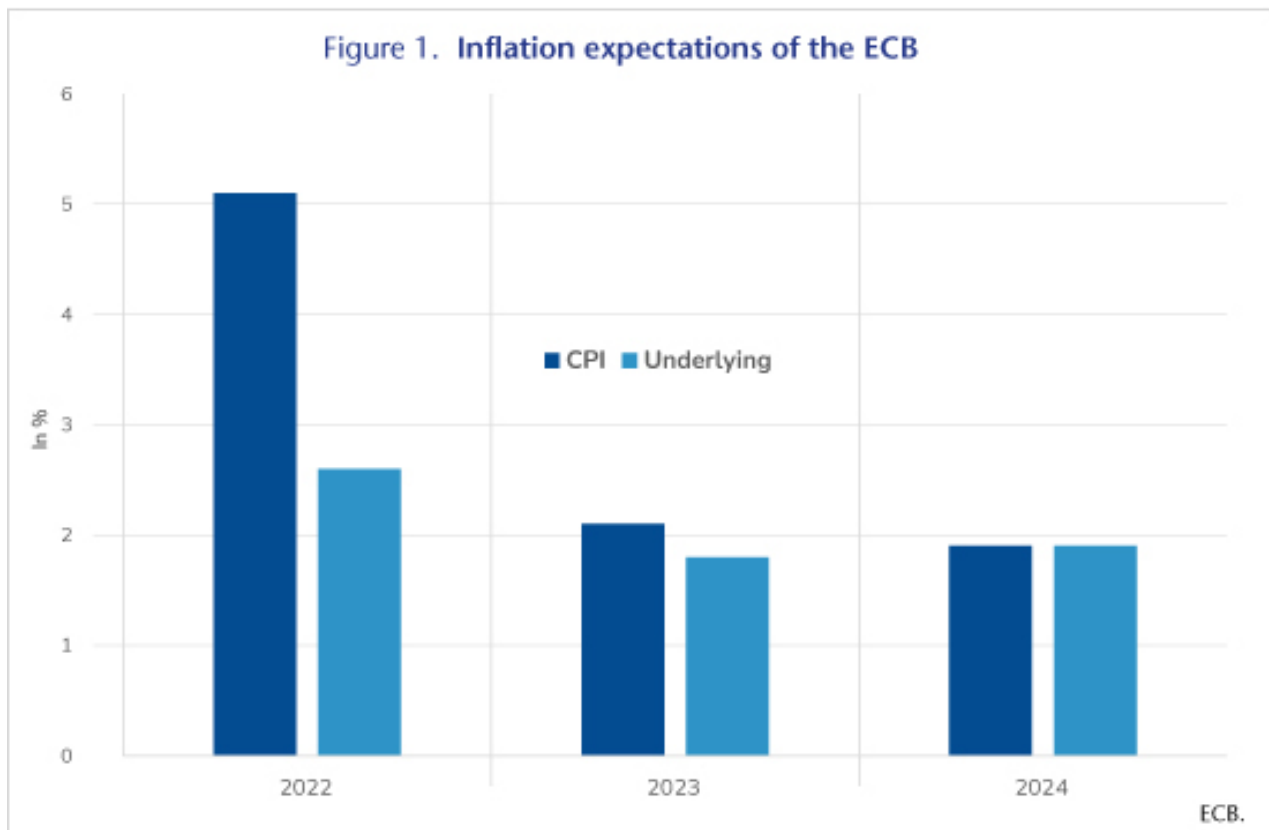
The end of 2021 was marked by growing concern among central banks about inflation[\[1\]](#). As pressure on prices intensified with Russia's invasion of Ukraine, could this change the terms of the discussion and influence future monetary policy decisions? Indeed, in February, the inflation rate reached 5.9% in the euro area and 7.9% in the US[\[2\]](#), well above the 2% target of the ECB and Federal Reserve. The January policy meetings suggested that a rate increase was imminent in the US and likely by the end of the year in the euro area[\[3\]](#). So what is the situation today? The war between Russia and Ukraine has not only shaken up the geopolitical situation but is expected to affect the global economy, accentuating inflationary pressure, reducing household purchasing power and fuelling uncertainty. Finally, the risk of a sovereign default by Russia could also rekindle financial tensions, in particular via a risk of contagion in the emerging countries. In this new context, one could expect greater caution and a more wait-and-see approach, as suggested in a [post by Xavier Ragot](#). However, neither the ECB at its meeting on 10 March nor the Federal Reserve on 16 March have changed their tune. The banks remain focused on inflation.

As stated in the [introductory statement](#) of the ECB press conference on March 10, Christine Lagarde acknowledged the many uncertainties linked to the conflict's economic repercussions. But she also stressed the strength of the

economic recovery, with growth in the euro area expected to reach 3.7% in 2022 and 2.8% in 2023, according to the Eurosystem. These forecasts have been revised downwards since December 2021 by 0.5 and 0.1 points respectively. However, the ECB has decided to end its asset purchase programme (APP) more quickly, with it gradually decreasing in net terms to 10 billion euros in June. Beyond that, “the calibration of net purchases for the third quarter will be data-dependent and reflect our evolving assessment of the outlook”. In other words, net purchases should cease unless inflation and inflation expectations fall sharply[\[4\]](#). 4] Recall that in December 2021, it was envisaged that purchases under the APP would continue until the third quarter of 2022. Indeed, in the short term, the shock of Russia’s invasion of Ukraine will undoubtedly translate into higher inflation, fuelled in particular by rising prices for energy and certain foodstuffs. Thus, the ECB’s inflation expectations have been revised upwards: 5.1% on average over 2022 compared to a forecast of 3.2% in December 2021. Does this mean that the ECB is planning to raise rates soon? The press release issued at its previous meeting on 3 February stated: “The Governing Council expects net purchases to end shortly before it starts raising key ECB interest rates”. Assuming that asset purchases are now scheduled to wind up in June, the likelihood of a rate hike becomes greater. A qualification is needed, however, as its 10 March press release states that, “Any adjustments to the key ECB interest rates will take place some time after the end of our net purchases under the APP and will be gradual”. So the end of purchases is definitely put forward, but now the rate hike would take place not “soon after” but “some time after”. This is still widely considered possible, although it cannot be said that it is more likely today than at the end of the 3 February meeting. Moreover, to a journalist who explicitly asked whether “some time after” ruled out the possibility of a rate hike this year, Christine Lagarde replied that no action had been ruled out and that the ECB’s communication was intended to give itself as many options as possible.

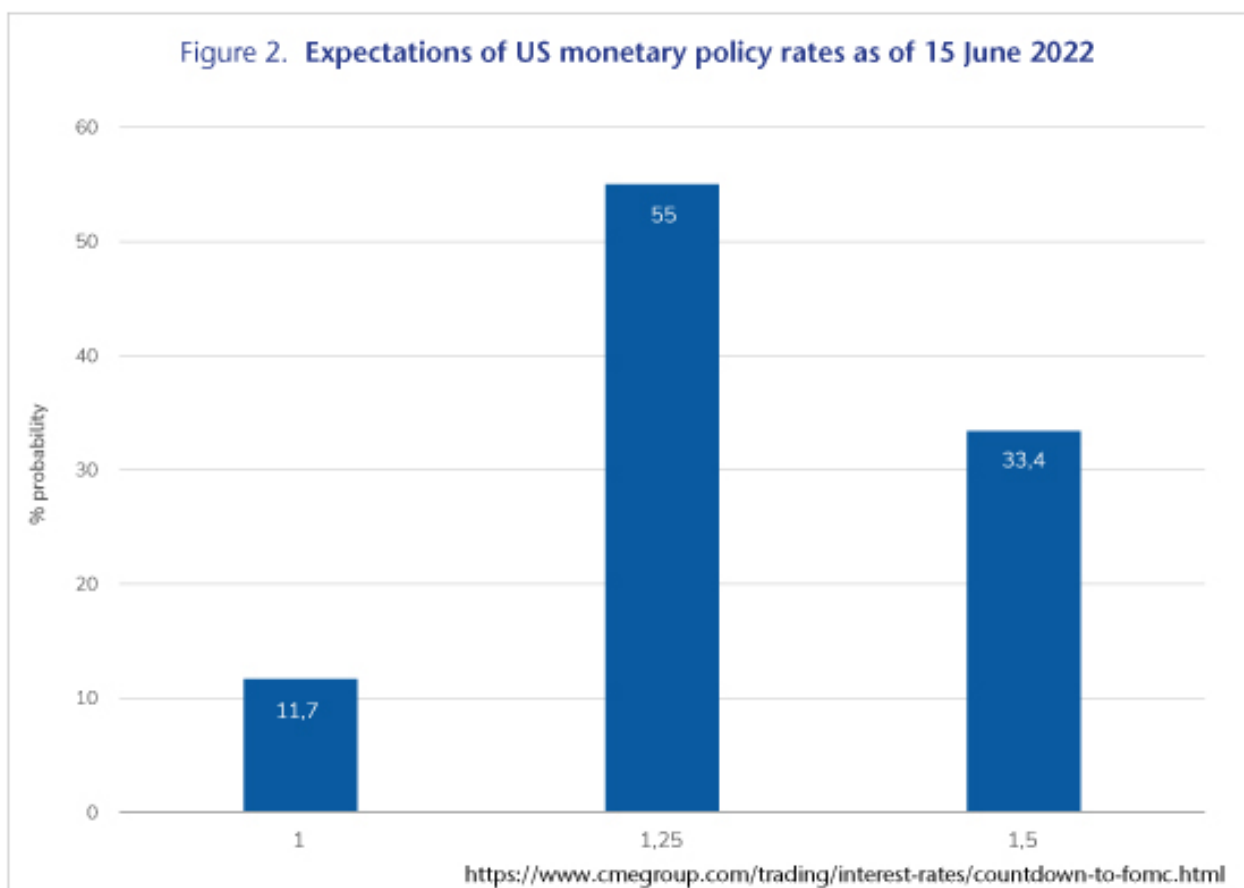
However, the ECB does seem to be focusing on inflation. Beyond the short-term inflationary shock, the ECB is looking closely at inflation one or two years hence, since this is the horizon at which a monetary policy decision affects prices. So what's most important for the rate scenario are inflation expectations for 2023 and 2024, and not for 2022. If long-term inflation converges to or exceeds the 2% target, the ECB will surely raise rates as the need for monetary support fades[\[6\]](#). According to the latest forecasts, the ECB expects inflation to reach 2.1% in 2023 and 1.9% in 2024, which are close to the target (Figure 1).

With inflation close to target, growth robust and unemployment falling, the prospect that monetary policy will be normalized may seem fitting. However, note that higher inflation is being driven largely by food and energy prices. Apart from these two components, the ECB expects inflation to be 1.8% in 2023 and 1.9% in 2024[\[7\]](#). Under these conditions, the ECB is in a dilemma, with a shock that is resulting in higher inflation but also slower growth, which could delay the return of growth to its potential[\[8\]](#). If inflation remains essentially driven by energy and food prices, then a rate hike would not be effective in reducing it but would accentuate the negative shock on the economy. So while the ECB's primary objective remains inflation, tightening monetary policy is worthwhile only if it helps to achieve this objective. In the current context, the ECB will have to find the right mix between on the one hand fighting against a risk of runaway inflation that is linked to possible second-round effects and on the other risking undermining the recovery.



From this point of view, the situation of the US is different even if, as in the euro area, the [FOMC members](#) have revised the US growth forecast for 2023 downwards and the inflation forecast upwards. The US economy is probably less exposed to the shock of the war. The main difference with the euro area, however, is the level and nature of the inflation. Indeed, the change in inflation is not only a consequence of pressure on energy prices, as the year-on-year increase in the underlying consumer price index was 6.4% in February, compared to 2.7% in the euro area. Moreover, wages also seem to be taking off, reflecting tensions in the US labour market and thus a much higher risk of overheating than in the euro area, which would justify faster and probably stronger action by the Federal Reserve[\[9\]](#). It is therefore not surprising that the FOMC members were broadly in favour of a quarter-point increase in the federal funds rate at the meeting held on 16 March. This hike in the monetary policy rate had been announced implicitly at the previous meeting and was widely anticipated. This trend could even pick up pace since, at the end of the FOMC meeting scheduled for 15 June, according to the *FED watchers*, there is a 55% probability that the rate will reach 1.25% and a 33%

probability that it could hit 1.5% (Figure 2)[\[11\]](#). However, even if higher rates seem more justified in the United States, the Fed will also have to take into account the impact of interest rates on medium-term debt dynamics. Given the level of public debt (130% in 2021 versus 109% in 2019), close coordination of monetary and fiscal policies is likely necessary to reconcile the objectives of fighting inflation, maintaining growth and gradually reducing public debt. As [Gilles Dufrénot](#) reminds us, debt reduction after the Second World War was accompanied by a low real interest rate strategy[\[12\]](#).



[\[1\]](#) See the [OFCE post](#) of 20 January 2022.

[\[2\]](#) The consumption deflator, an indicator monitored by the Federal Reserve, was rising by 6.1% year-on-year in January 2022.

[\[3\]](#) Note that in the UK, January inflation was 5.5% and the

Bank of England had already raised its key interest rate twice.

[\[4\]](#) The flow of asset purchases by the ECB under the APP leads to increasing the size of its balance sheet. Terminating the programme does not imply a cessation of purchases but rather the end of increases in the size of its balance sheet. Thus, the ECB will replace maturing assets with purchases that stabilize the balance sheet.

[\[5\]](#) In December 2021, the ECB envisaged net purchases of 30 billion euros in the third quarter of 2022.

[\[6\]](#) It is indeed conceivable that, given the current level of interest rates, a small hike would not contribute to slowing down activity but would reflect less support.

[\[7\]](#) Recall that since July 2021 the ECB has communicated a new inflation target of 2%, as opposed to its previous “close to but below 2%”. However, the measure of inflation remains the HICP, an indicator that includes energy and food prices. See [Blot, Bozou and Hubert](#) (2021) for more detail [in French].

[\[8\]](#) Indeed, central banks generally react to the gap between actual inflation and the target and the gap between the level of activity and potential GDP. Thus, rapid growth does not indicate that activity is exceeding its potential. Indeed, according to the OECD, this growth gap should still be negative in 2023 (-0.3%). However, this estimate does not take into account the impact of the economic shock linked to the war in Ukraine.

[\[9\]](#) See [Domash and Summers \(2022\)](#) for a more in-depth analysis of the tensions in the US labour market. Although the unemployment rate has not yet returned to its early 2020 level, other indicators such as the employee resignation rate and the job vacancy rate point to greater pressure.

[\[10\]](#) All but one member voted in favour of this increase, with

the dissenting voice in favour of a half-point increase.

[11] A meeting is also scheduled for 4 May, at which there is a 58% probability of a rate hike of 0.25 points and a 42% probability of 0.5 points.

[12] See [Reinhart and Sbrancia](#) (2015) for a more detailed analysis of public debt reduction after 1945 in the industrialized countries.

War in Ukraine: What short-term effects on the French economy?

by [Xavier Ragot](#), with contributions from [Céline Antonin](#), [Elliot Aurissergues](#), [Christophe Blot](#), [Eric Heyer](#), [Paul Malliet](#), [Mathieu Plane](#), [Raoul Sampognaro](#), [Xavier Timbeau](#), [Grégory Verdugo](#).

The purpose of this analysis is to open up discussion about how the war in Ukraine will affect the French economy. Such an assessment is of course uncertain, as it requires a forecast of diplomatic and military developments and in particular involves critical assumptions about sanctions and economic policy responses.

If consequences that are deemed negative are identified, this should not be read as a criticism of these policy choices, but rather as a contribution to how best to limit their negative impacts.

This document is intended as a summary and refers to relevant work for further consideration. Ongoing study will clarify the

analyses and the relevant calculations.

The war in Ukraine will affect the French economy through eleven different channels.

I – The economic shock: Short-term effects

1) The first effect is of course on France's energy bill

Increases in the price of gas and oil will reduce the purchasing power of French households and raise production costs for business. The gas price is the first unknown. The average daily price in 2019 was €14.6/MWh, before falling to €9.6/MWh in 2020 due to the pandemic. The price per MWh reached €210 on 10 March 2022! This high level will not last. A level of €100/MWh is a realistic assumption, which would constitute a six-fold increase in price from 2019. Second, the higher gas prices will not be passed on to households immediately, because many contracts have expired ([Antonin, 2022](#)) and the government will wind up bearing part of the energy bill through the regulation of gas prices. However, the price increase on imports will be paid by domestic agents.

France imported 632 TWh of gas in 2019 and 533 TWh in 2020, as the pandemic slowed activity. But what counts most are net imports, which are lower. The cost of net gas imports in 2019 was €8.6 billion. Imports in 2022 will be affected by a possible economic slowdown but also by gas storehouses. For 2022, a working hypothesis could start from the level of net imports in 2019. Applying an increase of €85/MWh, this results in an additional cost of around €40 billion *if* the increase were to last one year. If the higher price were to last longer, then it would generate substitution effects in the medium term, as discussed below.

The price of oil is equally difficult to predict, as it

depends on the behaviour of strategic players, such as OPEC. The price of a barrel of Brent crude fluctuated between USD 60 and USD 70 in 2019. It rose to USD 133 on 8 March, before falling back to USD 114 after OPEC announced a boost in production. The price of oil will, much like gas, depend on the sanctions on Russia; Russian crude represented around 10% of France's purchases in 2020 and in 2019 constituted about 4.8% of the world's known reserves. We could assume an average price of 110 dollars (or 100 euros, which is consistent with the [EIA](#) analysis). In 2019, France's crude oil bill was €21.8 billion, to which must be added €13.3 billion of refined products. Assuming unchanged demand and using these same amounts, we end up with a total oil bill of 58.5 billion euros, i.e. an extra cost of 24 billion euros. The euro/dollar exchange rate could also fluctuate during the crisis, with a probable depreciation of the euro that is difficult to estimate at present. As a result, a constant exchange rate of 1.1 will be kept.

This increase will necessarily generate moves towards import substitution and reduction. These effects have been studied for the German economy (with references to the measures) by [Bachman et al. \(2022\)](#), who focus only on substitution effects. Using the literature ([Ladandeira et al., 2017](#)), they assume an elasticity of -0.2. In the case of a reduction in the quantity of gas and oil, how much residual capacity do firms have to produce? The answer to this question depends on assumptions about the extent energy can be substituted by other factors. Depending on these assumptions, all of which are realistic, the estimate for Germany ranges from 0.7 GDP points to 2.5 GDP points, or even more due to supply effects alone.

For France, a concrete example of substitution would be a reduction in heating: a 1° reduction in heating leads to a 7% reduction in gas consumption, i.e. a reduction of gas consumption by 4.2 billion m³, whereas 14.7 billion m³ of Russian gas is consumed.

The following table summarises estimates of how much price increases will raise costs, using various assumptions.

Table. Increase in the energy bill based on how long energy prices stay high, in billions of euros

Duration of the rise	3 months	6 months	12 months
Direct impact	16	32	64
Partial substitution	13	26	51

Authors' calculations.

The table shows the uncertainty of the estimate depending on the duration of the price rise and the assumption of partial short-term substitution. The figure of 64 billion euros is close to three GDP points, which would be a significant shock to the French economy. A duration of six months with substitution behaviour would lead to a shock of one GDP point. Here we see the critical importance of political uncertainty.

2) Macroeconomic effect of rising energy costs

The primary effects of higher energy prices would be a reduction in household purchasing power, an increase in business production costs and higher costs to the state due to regulating prices. The impact on growth would proceed through complex mechanisms. As mentioned above, it occurs through substitution effects but also through the diffusion of energy prices to production prices and wages.

The OFCE has estimated the macroeconomic impact of a rise in energy prices in three different ways. First, by using two macroeconomic models, the *emod.fr* model, also used in forecasting, and the *Threeme* model, which breaks down energy consumption by sector ([Antonin, Ducoudré, Péleraux, Rifflart, Saussay, 2015](#)). Another strategy has been to use possibly non-linear econometrics ([Heyer and Hubert, 2016](#) and [Heyer and Hubert, 2020](#)). Note that the latter work includes substitution possibilities measured by the elasticities mentioned above.

The results are as follows. In the model-based approach, a long-term oil price increase of 10 dollars leads to 0.1% to 0.15% less GDP growth and 0.6% inflation in the first year. With the econometric approach, a 10 dollar oil price increase reduces growth by 0.2% and leads to a 0.4% increase in inflation, with a relatively linear effect and a maximum impact after four quarters.

Because of the size of the shock, it is difficult to know whether to consider the high ranges because of the nonlinearities or the low ranges because of a greater substitution effort and a fall in the savings rate. Furthermore, the estimate is made for oil and not for gas. For this reason, we will consider average effects, without seeking to maximise the fall in GDP. Thus, an increase of 40 dollars (compared to the situation in 2019), which is increased proportionally to take account of increases in the price of gas as well, leads to a fall in GDP of about 2.5 GDP points in the upper range and an increase in inflation of 3% to 4%. This amount corresponds to a multiplier for the negative shock on energy expenditure of -1. With unchanged business behaviour and unchanged public policy, this fall in GDP translates into a drop of the same order in market employment, so about 600,000 jobs (change compared with a non-war environment). In the low range (short duration and substitution), we obtain a fall in GDP five times smaller at 0.5 GDP points.

At this stage, this estimate does not take into account the effect of the conflict on other commodities, cereals or precious metals, which are of secondary importance compared to energy prices and are discussed by [COFACE](#).

3) Uncertainty channel

Modelling the effect of the war in Ukraine depends heavily on the reaction of households and businesses to the uncertainty generated by the war. In an environment like this, the savings rate is expected to rise in the medium term (after purchases

of basic necessities), which would aggravate the depth of a recession. However, after the Covid-19 crisis, households in France have an excess of savings of 12% of annual income (166 billion euros, [OFCE Policy Brief no. 95](#)), which they could dip into to pay the additional energy bill without changing their consumption habits. This attitude depends crucially on the perceived duration of the shock. A shock that is expected to last very long may lead to an additional increase in savings.

Companies' wait-and-see attitude (before knowing which way markets are going) is leading to a downturn in investment. For business, the period of high uncertainty during the pandemic was marked by a good level of investment, partly due to public support ([OFCE Policy Brief no. 95](#)).

The third effect of the uncertainty channel is an increase in precautionary savings and a search for secure savings. As a result, savings are more likely to be directed towards safe assets, including public debt, and the real interest rate on France's public debt may fall. After the outbreak of the conflict, rates did indeed fall in Germany (0.20 points), the United States (0.15), France (0.20), Italy (0.35) and Spain (0.2). In the longer term, how rates change will depend on how the policy of the European Central Bank (ECB) is perceived, which is discussed below. The search for safe assets will also cause the stock markets to fall and lead to negative effects on financial wealth, which won't modify consumption in France much.

4) Redistributive effects

Higher energy prices will affect households differently and will disproportionately hit the poorest households with the lowest savings rates ([Malliet, 2020](#)).

There is considerable heterogeneity in the structure of spending on energy products. According to data from the 2017 *Budget des familles* survey conducted by INSEE, 10% of the

consumption expenditure of the households in the poorest decile goes on *electricity, gas and other fuel* for the home and on *fuel* for transport. At the other end of the scale of living standards, households in the richest decile spend less than 7% on these items. On the other hand, [Malliet \(2020\)](#) shows that there is still considerable heterogeneity in the structure of consumption of these products even within a given decile. There is a significant proportion of the population that is highly exposed to certain energy prices, which requires that targeted measures be adopted that take into account this extraordinary exposure to certain goods for which – unless the household makes a major investment – there are few readily available substitutes.

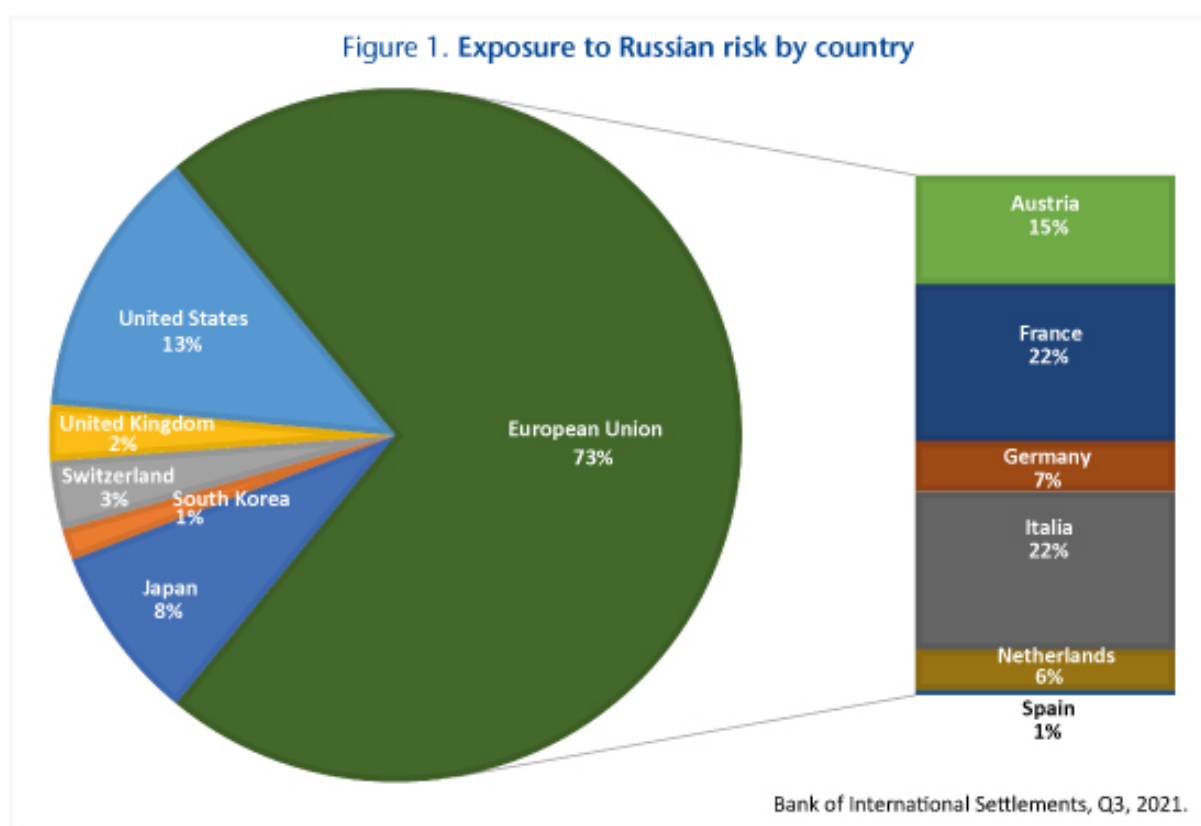
The anti-redistributive aspect of a rise in energy prices therefore leads to a marked drop in the consumption of households with the lowest savings rate. This effect, in addition to the uncertainty channel, leads to a drop in aggregate demand and activity. Compensation for the loss of purchasing power induced by the rise in the price of oil and gas of 30% thus comes to 20 billion euros in the high range.

5) Destabilising financial effects

In addition to the average effect on interest rates, the sanctions that entail the exclusion of certain Russian banks from the Swift system is leading the banks to default on payments. Freezing the Russian central bank's assets will generate difficulties that will probably lead to an explicit default on Russia's public debt (a first since 1998) if the conflict continues for a few more weeks. According to the rating agencies, the risk of a sovereign default is imminent. A decree already allows for the repayment of the public debt to certain countries in roubles. The risk of a default on Russia's debt is approaching one (measured by the CDS), and evaluations of the impact of sanctions on Russia's debt point to a fall in GDP of between 7.5% and 10% in 2022 ([Coface](#)). The risk on Turkish and South African debt is also mounting.

The exposure of French and European banks and investment funds to Russian risk (public and private) is difficult to estimate because of possible contagion effects. The amount of external public debt is, however, low, estimated at USD 60 billion. The ECB can be trusted to intervene in the event of heightened financial instability, but the risk of a tightening of credit is likely.

The following graph shows the exposure to Russian risk by country, measured by residents' consolidated position in Russian assets (Bank for International Settlements data).



We see that France's exposure is high, at 22%, as is Italy's. However, this exposure doesn't include the possible contagion effects of financial crises.

II – Fiscal policy response

How the economy fares after such a shock will depend on the fiscal and monetary response.

6) Reception of refugees

First of all, while the primary purpose of taking in refugees obviously is not economic, this will generate expenditures that will probably be financed by debt and so will have an effect on activity. The experience of the last refugee crisis in 2016 leads to a first estimate. As Jean Pisani-Ferry notes, according to UNHCR analyses, Germany's intake of 750,000 refugees in 2016 called for a budgetary effort of 9 billion euros, i.e. about 10 billion euros per million refugees. For an estimated 4 million refugees (given that currently the number is about 2.5 million), this leads to a temporary cost of 40 billion for Europe, which, on the scale of Europe, is not all that much but which for the countries hosting the most refugees, such as Poland, is huge.

The central question, however, is how to organise support for these millions of refugees. [Gregory Verdugo](#) has discussed the challenges for the European asylum system from 2019 and the integration of [refugees](#). Note that the long-term impact of migration is positive, even if today's refugees are mainly women and children. Of course these economic considerations are not central to how to support the refugees.

7) Support for the most vulnerable households

As noted, the rise in energy and food prices is strongly anti-redistributive and disproportionately affects the poorest households. For this reason, to offset the rise in inflation at the end of 2021, the French state has introduced an inflation allowance and exceptional support in the form of a €100 energy voucher, for a total estimated cost of €4.4 billion (€3.8 billion and €0.6 billion). The government has announced that it will spend €24 billion, or about 1 GDP point, to offset the rise in energy prices. This is the order of magnitude of the increase in the oil bill, without taking into account the increase in the price of gas. The OFCE *Policy Brief* on purchasing power, published on 17 March, deals with these issues.

This price increase will make the country poorer (negative supply shock) due to domestic dependence on energy imports. Responding to the shock with a wage increase is not a good solution, as it leads to higher prices and induced inflation, as companies in turn would face higher production costs. Support for vulnerable households should therefore be fiscal and not wage-based. The low interest rates on France's public debt opens up some fiscal space that should be used temporarily.

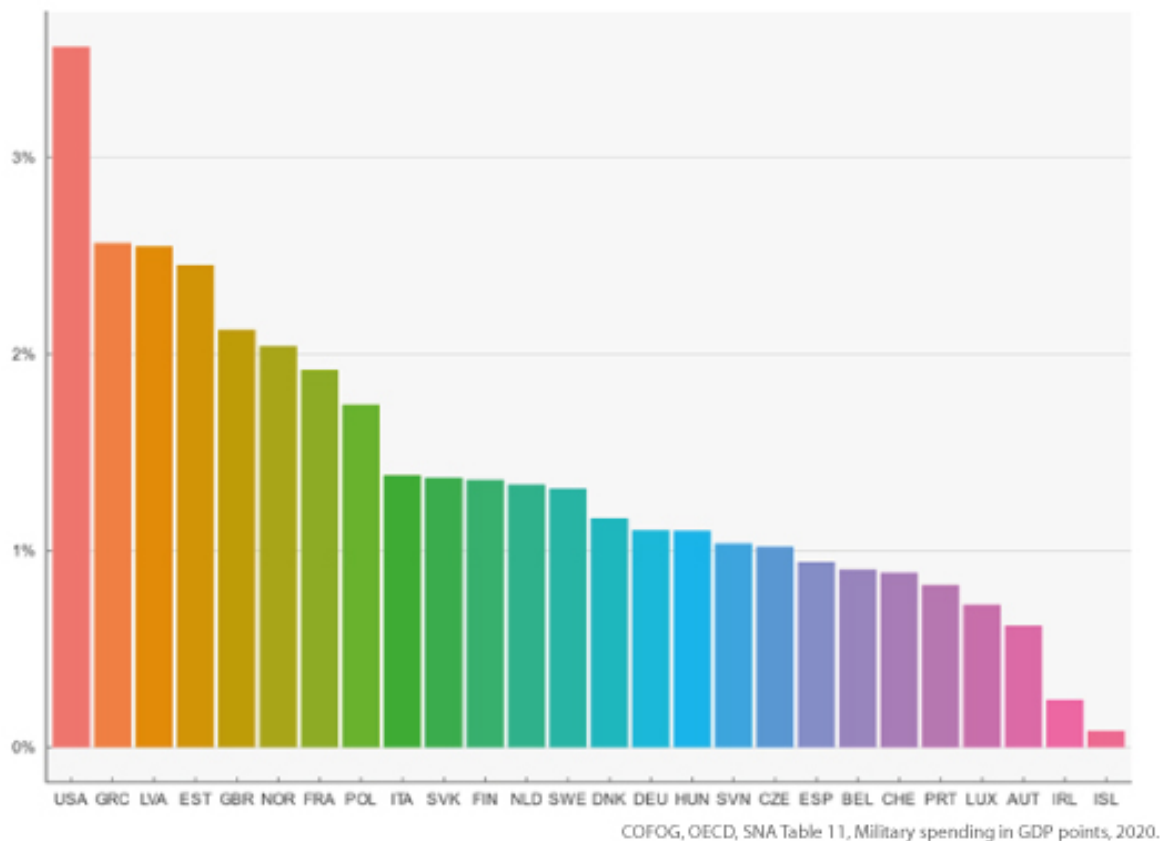
8) Energy investment

Reducing dependence on Russian oil and gas (which will be compulsory if there is an embargo) will lead to additional investments. The recent [IAE](#) report on ending this dependence leads to "sobriety" measures but also to new investments, which are difficult to quantify for France at this time.

9) Military expenditure

Another consequence of the war in Ukraine will be higher military spending. This will lead to medium-term investments, the economic effect of which will depend on how it is financed (by debt or taxes). Germany has announced a package of 100 billion euros to be used in the short term. France, on the other hand, already has a higher level of military spending and at present is sticking with a policy of increasing military spending by 3 billion euros per year.

Figure 2. Military spending as a percentage of GDP, in 2020



10) Europe and European fiscal rules

The war in Ukraine will most likely lead to the suspension of European fiscal rules for another year, until 2024. The establishment of a common European debt is under discussion, but the outcome remains uncertain.

III – European Central Bank and monetary policy

11) The ECB is in a difficult situation, as it faces rising energy prices, falling activity and high levels of public debt

One point needs to be clarified: the rise in energy prices will certainly push up the price index and therefore average prices, but this primarily involves domestic impoverishment. In other words, the ECB cannot fight this energy cost-driven price increase (which will also push European entities to find ways to reduce their energy dependence). This price increase will lead to inflation if wages and other prices start to rise continuously after this initial impulse. In other words, it is

against possible second-round effects, not first-round effects, that the ECB needs to fight. In contrast to the 1970s shock, it is unlikely that the rise in energy prices will lead to an inflationary spiral, due to the de-indexation of wages. However, the way in which the SMIC, the French minimum wage, is indexed should push it higher. A fiscal effort on behalf of people paid the minimum wage to compensate for higher energy costs does, however, make less relevant the increase in the SMIC induced by higher energy prices.

However, the current difficulty concerns the existence of some second-round effects upon exiting the Covid-19 crisis (irrespective of the price of the war in Ukraine), as core inflation was already at 2.7% in February, above the 2% target. It is therefore important that the absorption of the energy price shock does not lead to self-sustaining price increases.

Second, the ECB will have to deal with a new wave of financial instability, with possible contagion in the financial system and rising interest rates in some countries.

Finally, the most likely outcome is that the ECB will take steps to support public policy. The point is not so much to stimulate demand, which would be inappropriate in this kind of environment, but rather to avoid interest rate hikes in some countries, as is suggested by a reading of its statements in the 10 March ECB press conference. Indeed, the statement of Thursday 10 March and the reduction in the volume of securities repurchases go hand in hand with a vigorous affirmation of the fight against the fragmentation of the euro zone, and therefore against the rise in interest rate spreads which could destabilise highly indebted countries such as Italy. Our reading therefore is of an ECB policy of risk reduction without support for demand, which seems justified during the military conflict.

Conclusion

The war in Ukraine is a massive income shock that, without a public response, would lead to a fall in GDP of 2.5% and a rise in inflation of 3% to 4% in the highest estimate of a long-term rise in prices, without behavioural changes, but also without taking into account financial instability. Considering the low range of a short conflict reduces these effects by three-quarters, to a fall of less than 1 GDP point.

- Rising energy prices lead to anti-redistributive effects, which should lead in turn to budgetary efforts on behalf of poorer people.
- As a result, government support of at least 1 GDP point is likely, limiting the fall in GDP but pushing inflation into the high range.
- Financial instability is possible, which would substantially increase these effects, without taking into account of course any extension of the war into Europe outside Ukraine, which would completely change the method of estimation.