ANALYSIS

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OUTLOOK FOR THE DANISH ECONOMY — MARCH 2022

War in Ukraine dampens growth and increases prices

Highest inflation rate in several decades

Russia's invasion of Ukraine and international sanctions have initially affected the international economy by further increasing prices, especially of energy. Inflation was already high due to supply and demand imbalances during the pandemic.

Growth pause in Danish economy

High energy prices and increased uncertainty dampen investments and consumption in the global economy. In Denmark, this results in a growth pause that slows the economic boom, but there will still be pressure on the labour market and low unemployment.

Fiscal policy must be adapted to capacity pressure from new priorities

The invasion of Ukraine has given rise to new spending priorities aimed at strengthening the Danish defence and energy supply. There is room for this in the public finances. However, activity in the Danish economy is already high, and fiscal policy must, if necessary, alleviate capacity pressure in the economy elsewhere.

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In a short period of time, Russia's invasion of Ukraine has brought great human costs to the Ukrainian people and become a new, destabilising factor for the international community. It also impacts the international economy. The attack and the subsequent extensive international sanctions against Russia hamper a large number of production, trade and demand patterns, which will have economic consequences for companies and households across countries.

First and foremost, the invasion and subsequent sanctions weaken the supply of energy and other commodities, which increases supply problems, especially in Europe. This is already reflected in further, significant price increases for gas, oil and electricity as well as food products and raw materials. The large price increases and increased uncertainty about the further course of events will reduce global consumption and investments. Together with an expected sharp economic downturn in Russia and Ukraine, this will dampen activity in the world economy. The economic downturn can only be partially countered by fiscal policy measures targeted at investments in energy transition and strengthening of the defence. In addition, European countries in particular will also be affected by flows of refugees.

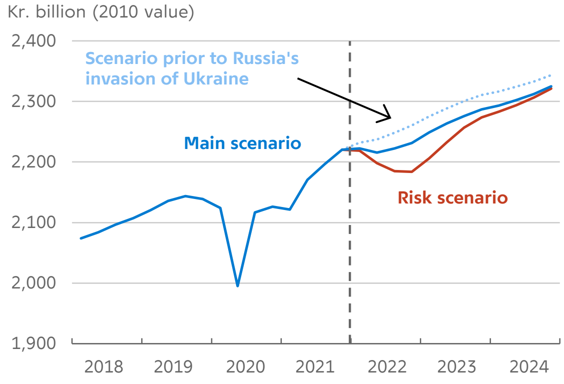
The size and duration of the economic consequences of the attack on Ukraine are associated with great uncertainty. The prospects for the Danish and international economies described in this analysis are also extraordinarily uncertain due to these circumstances. In the following, both a main scenario and a risk scenario are presented.

Main scenario: Slowdown in the world economy gives growth pause in Denmark

The main scenario is based on the current sanctions and implications for financial and commodity markets as well as energy supply etc., but it does not take into account potential additional fiscal policy stimuli from measures aimed at energy transition and strengthening the defence etc. The scenario is also based on a number of provisional assessments from international institutions etc. Specifically, it is assumed that the invasion of Ukraine will dampen export market growth[1] by approx. 2 percentage points in 2022 to 3.8 per cent. The main scenario thus still expects growth in the international economy this year. In subsequent years, geopolitical tensions, energy prices and restraint on the part of households and companies are assumed to have a smaller impact on the activity level, and export market growth is expected of 3.9 per cent in 2023 and 3.2 per cent in 2024, respectively.

The slowdown in the Danish export markets impacts Danish exports, and, concurrently, large consumer price increases and a subdued appetite

Russia's invasion of Ukraine slows growth in Denmark Chart 1



Source: Statistics Denmark and own calculations.

1 Export market growth is an expression of the rate at which the market for Danish exports is growing, calculated as the weighted import growth in the Danish export markets.

for consumption and investment are weakening domestic demand this year. Overall, demand in the Danish economy is forecast to increase only slightly through 2022, and gross domestic product (GDP) is expected to be only 0.5 per cent higher in the 4th quarter of 2022 relative to the same time in the previous year, see chart 1. For 2022 as a whole, GDP is projected to increase 2.1 per cent, which reflects lockdowns and a low activity level at the beginning of 2021, see table 1. All things equal, growth is estimated to be weakened by 1.0 percentage point relative to the projected development before Russia's invasion of Ukraine. In the coming years, growth abroad and an increase in purchasing power will provide a basis for GDP growth of 2.1 per cent in 2023 and 1.7 per cent in 2024.

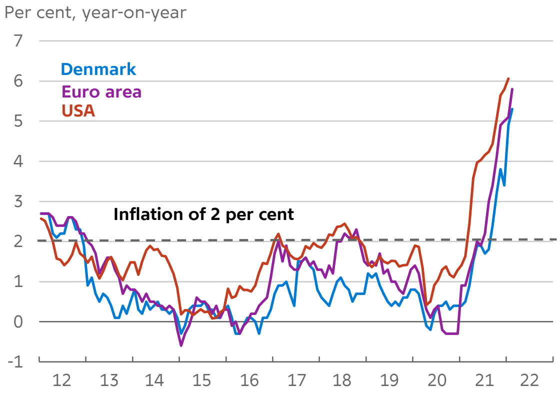
Russia's invasion of Ukraine does not fundamentally change the assessment that the Danish economy will also be characterised by capacity pressure and low unemployment in the coming years. Based on the current outlook, the economy can therefore withstand a more subdued growth trajectory caused by Russia's invasion of Ukraine.

Risk scenario: Danish economy is impacted by decline in activity

However, there is a risk that the situation will escalate with a sudden stop in the supply of Russian oil and gas to Denmark and the rest of the world. This is likely to lead to rationing of production and sharp oil and gas price increases in both Denmark and other affected countries. In such a risk scenario, with further increases in energy prices and other commodity prices and an expected even greater weakening of consumption and investment appetite among households and companies, inflation could increase by 3.9 percentage points relative to the main scenario, and GDP growth could be reduced by 1.2 percentage points. Such a course of events would entail actual declines in activity through 2022, resulting in the economy being close to neutral capacity utilisation and an increase in unemployment of 33,000 persons next year relative to the main scenario. However, the scenario does not take into account countermeasures in economic policy. The strong foundation of the economy provides a starting point for a rapid return of growth in Denmark – even in such a hard scenario – as the immediate shocks to the economy abate.

Imbalances between supply and demand have led to high price increases globally

Chart 2



Note: The price increases have been calculated using the EU Harmonised Index of Consumer Prices, HICP, for Denmark and the euro area and the private consumption deflator, PCE, for the United States.
Source: Macrobond.

Scenarios for the Danish economy

Table 1

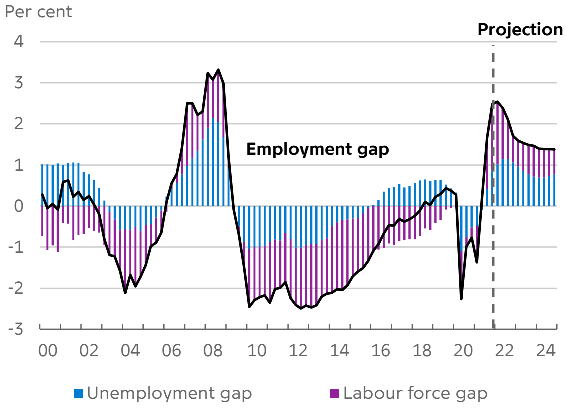
	Main scenario		
	2022	2023	2024
GDP, per cent year-on-year	2.1	2.1	1.7
Consumer prices (HICP), per cent year-on-year	4.9	1.4	2.2
Gross unemployment, 1,000 persons	69	74	76
	Risk scenario		
GDP, per cent year-on-year	0.9	2.1	2.6
Consumer prices (HICP), per cent year-on-year	8.8	1.0	0.8
Gross unemployment, 1,000 persons	83	107	94

Source: Statistics Denmark and own calculations.

Imbalances between supply and demand have led to price increases

Russia's invasion of Ukraine comes at a time when economic activity has returned rapidly and strongly after the pandemic with resulting high labour market pressure, but where the global economy was already affected by pandemic disruptions and high inflation. In some parts of the economy, the supply has thus not been able to keep up with the sharp increase in the demand for goods during the pandemic. Large fiscal and monetary policy stimuli have buoyed demand, and consumption has largely shifted towards goods, while lockdowns and fears of infection have reduced the consumption of services. At the same time, supply in parts of the international economy has been hampered by logistics and production disruptions derived from the pandemic. The combination of high demand, delivery difficulties and large energy price increases has already raised consumer price increases to around 5-6 per cent in the United States, the euro area and Denmark, see chart 2. This is the highest inflation rate in several decades.

Pressure on the labour market is easing slightly, but remains high Chart 3



Note: Gap indicates the difference between the actual level and the estimated potential level of labour force, employment and unemployment. The potential level is the long-term level at which the economy can perform without creating unsustainable inflationary pressure.
Source: Statistics Denmark and own calculations.

In the euro area and in Denmark, the price increases have largely been driven by energy, with gas and electricity prices soaring in the autumn, one reason being that Russia reduced its gas supplies to the European market. But also rising commodity prices, higher freight rates and supply problems have increased producer prices. In the United States, inflation has been high for an extended period of time and is more closely linked to a tight labour market with high wage increases.

Higher inflation and lower growth abroad ease some of the pressure on the labour market

In the main scenario, headline inflation in Denmark is projected to remain very high in 2022 due to the large increases in energy prices, and the EU Harmonised Index of Consumer Prices, HICP, is estimated to increase by 4.9 per cent this year. All else equal, energy price increases following Russia's invasion of Ukraine will lift inflation by 2.0 percentage points in 2022. Next year, inflation is projected to fall to 1.4 per cent as energy prices, based on market expectations for oil, gas and electricity, are expected to decline significantly from the end of 2022 and in 2023 from the currently very high level, thus dragging down inflation in 2023. Energy prices are subsequently assumed to stabilise at a level that will remain high in a longer time perspective.

Inflation is expected to remain higher than in the years leading up to the pandemic, as core inflation[2] is expected to rise to just over 3 per cent in 2022. This reflects that companies' increased costs as a result of both higher commodity prices and pay increases are expected gradually to be passed on to consumer prices. In the following years, core inflation is expected to decrease to just over 2.5 per cent in 2023 and just over 2 per cent in 2024 as lower energy and commodity prices dampen pressure on companies' costs. Against this background, inflation is forecast to be 2.2 per cent in 2024.

The large price increases imply that the purchasing power of households will be weakened in 2022, even though their income is supported by the large growth in employment and high pay increases. During the pandemic, households have had high

2 Core inflation is consumer price increases calculated exclusive of energy and unprocessed food.

savings and accumulated large assets, which makes it possible to smooth consumption during a period with high price increases. However, increased uncertainty is estimated to result in some restraint among companies and households and dampen appetite for consumption and investment. At the same time, there are prospects of lower growth in Denmark's export markets, which supports a small further growth rate for Danish export companies. Danish exports are traditionally relatively robust in relation to downturns in foreign demand.[3]

Larger spending on defence increases public demand, which, however, will decrease overall during 2022 as activities for testing and vaccinations are reduced.

Growth in demand is forecast to pick up a little during 2023 and 2024 as household purchasing power increases again in Denmark and abroad. Falling energy prices mean that wage increases and income growth in households will again be higher than inflation. However, higher interest rates will gradually dampen some of the economic growth.

The growth in production and demand entails that overall employment will increase by 31,000 persons from the end of 2021 to the end of 2024. This is slightly more than the increase in the labour force, and unemployment is forecast to stabilise at just over 70,000 persons, which is slightly lower than the current level. While the current extraordinary pressure on the labour market linked to the pandemic is expected to subside, the pressure on the labour market is assessed to remain higher than in the years before the pandemic, see chart 3. With sustained pressure on the labour market, wage increases are projected to rise to 3.6 per cent in 2022, 3.8 per cent in 2023 and 3.4 per cent in 2024. This is more than 1 percentage point higher than in the years before the pandemic.

Economic policy

Danmarks Nationalbank supports a change of the deficit limit in the Danish Budget Act and the new target for the government budget balance in a coming fiscal policy plan up to 2030. They are both regarded as being compatible with sound and sustainable public finances and a credible fixed exchange rate policy.

Fiscal policy must be adapted to capacity pressure from new priorities – if necessary by alleviating capacity pressure elsewhere in the economy.

Disbursements to households are an expedient tool to mitigate the consequences of rising energy prices in the short term. However, repeated disbursements will weaken the incentive to reallocate away from, for example, gas. Subsidies or tax reductions should be avoided, as they will further increase market prices.

Fiscal policy must be adapted to capacity pressure from new priorities

In a short period of time, Russia's invasion of Ukraine has given rise to new public spending priorities aimed at strengthening the Danish defence and reducing vulnerabilities in Danish energy supply. Specifically, an agreement has been reached in the Danish Parliament to allocate a reserve of kr. 7 billion to strengthen the defence over the next two years. Towards 2033, defence spending must be increased to 2 per cent of GDP and, in addition, it must be discussed as quickly as possible how to take specific measures aimed at phasing out natural gas and ensuring independence from Russian gas.

At the same time, it has been agreed to increase the limit in the Danish Budget Act *(Budgetloven)* for the structural deficit from 0.5 per cent to 1.0 per cent of GDP and to aim for a government deficit of 0.5 per cent in the medium-term planning of fiscal policy in a coming 2030 plan. Danmarks Nationalbank supports the amendments to the Danish Budget Act and the new budget balance target. Lowering the deficit limit to 1 per cent of GDP – within the limits of the EU Stability and Growth Pact and the Fiscal Compact – will enable a more appropriate flexibility in the planning of a responsible fiscal policy. Danmarks Nationalbank assesses that the adjustment of the deficit limit

3 See Adrian Michael Bay Schmith and Helle Eis Christensen, Large drop in Danish exports, but the composition might ease the fall, *Danmarks Nationalbank Economic Memo*, no. 8, June 2020 (memo available in Danish only).

and the budget balance target are compatible with sound and sustainable public finances and a credible fixed exchange rate policy.

Decades of fiscal planning aimed at ensuring sound and sustainable public finances mean that there is room in the public finances to meet new priorities. However, increased spending on defence and transformation of energy supply sources will nevertheless mean that other expenditure or revenue policy ambitions that could otherwise be met within the current possibilities must give way, or that further fiscal space must be created through priorities or reforms.

At the same time, it is important that the fiscal policy be organised in regard to the economic situation and capacity pressure in the economy. Although the pressure on the labour market seems to ease slightly, unemployment remains very low, and the Danish economy is characterised by capacity pressure. Expenditure measures aimed at strengthening security of supply, including with a focus on energy efficiency and renewable energy, will contribute to ensuring that Denmark has a robust economy. But to the extent that higher demand linked to the transformation of energy supply and the strengthening of the defence results in increased capacity pressure in the economy, fiscal policy must, if necessary, alleviate capacity pressure elsewhere in the economy.

The sharp energy price increases can create pressure on the economic policy to mitigate the consequences on households. Here, subsidies or tax reductions should be avoided, as they will further increase market prices. Instead, they will act as an income transfer to energy exporters at the expense of the government finances of the importing countries. Transfers to low-income households, such as the disbursement of the so-called heating cheque in February, are an expedient short-term tool, as it aims to support consumption broadly. However, such transfers should be subject to the condition that the situation is exceptional, as the expectation of repeated disbursements would weaken the incentive to reallocate away from, for example, gas. A long-term viable solution is to reallocate to less expensive types of energy and to implement energy efficiency measures.

Capacity pressure may quickly return

The economic development has changed rapidly based on the special events seen in recent years, which poses significant economic policy challenges. If the slowdown in the international economy proves short-lived, the current capacity pressure in the Danish economy could quickly return, and economic policy will again have to deal with an economic boom to a greater extent. Several years of improvements in wage competitiveness and large savings

Key economic variables Table 2

Real growth relative to the previous year	2021	2022	2023	2024
GDP (real), per cent	4.1	2.1	2.1	1.7
Employment, 1,000 persons	3,060	3,141	3,140	3,150
Gross unemployment, 1,000 persons	106	69	74	76
Balance of payments on current account, per cent of GDP	8.3	7.0	6.8	7.4
Government budget balance, per cent of GDP	0.1	1.7	1.6	1.8
House prices[1], per cent year-on-year	10.9	3.6	1.7	2.1
Consumer prices, per cent year-on-year	1.9	4.9	1.4	2.2
Hourly wages[2] (manufacturing industry), per cent year-on-year	2.7	3.6	3.8	3.4

Source: Statistics Denmark and own calculations.
1. Nominal prices of single-family houses.
2. Statistics Denmark's implicit wage index.

in the private sector provide a good foundation for handling high domestic capacity pressure. A deterioration in wage competitiveness will thus not in itself pose a significant risk to a turn in the Danish business cycle. Therefore, there is room for Danish wages to increase by more than foreign wage increases for some years.

Higher wage increases are a natural part of the adjustment towards a steady state of the economy and contributes to the efficient allocation of resources. However, a rapid and sharp deterioration in wage competitiveness may lead to a concurrent loss of customers and orders for many companies that are exposed to foreign competition. This may make much of the production capital redundant or increase mismatches in the labour market if the labour force released from companies which are exposed to competition do not have the competences required in the parts of the economy in which there is still a demand for labour. A rapid and sharp deterioration in wage competitiveness will make the economy more vulnerable in the event of a turn in the international business cycle. Therefore, it may be expedient to reduce the risk of a large deterioration in wage competitiveness.

The need to alleviate capacity pressures increases if there is a concurrent slide towards a debt-driven consumption recovery, which puts additional pressure on the labour market. The possibility of households to increase debt is mainly linked to the housing market. Significant house price rises during the pandemic provide high home equities which households can extract if they want to use some of their wealth increases of recent years for higher consumption. Household borrowing in connection with mortgage refinancing or via the raising of additional loans has remained unchanged during the pandemic, and total household borrowing remains moderate.[4] Thus, there are currently no signs of an unsound development in household indebtedness, and house price increases have slowed down relative to the pandemic in the past six months, while the increase in private consumption has diminished again after the reopening of society.

4 See Danmarks Nationalbank, Rising inflation and Russian invasion have increased volatility, *Danmarks Nationalbank Analysis (Monetary and financial trends)*, no. 4, March 2022.

Current drivers of Danish and international economies

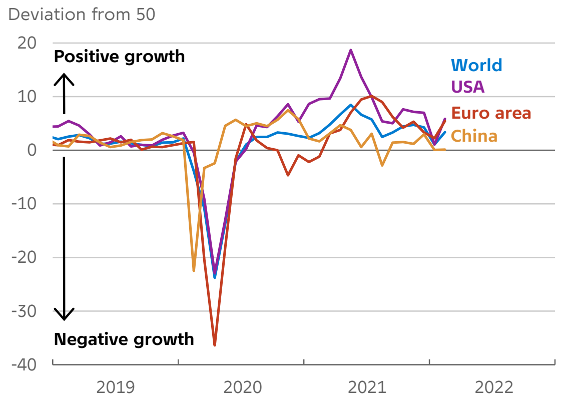
Global economy hit after Russia's attack on Ukraine

New challenges for world economy after Russia's invasion of Ukraine

In a short time, Russia's invasion of Ukraine has become a destabilising factor for the world economy. The attack in February and the subsequent implementation of a series of international sanctions against Russia may create appreciable disruptions of energy supply, production and trade, with negative consequences for corporate and household finances. The disruptions come at a time when global economic recovery had otherwise picked up again after waves of infection linked to the Omicron variant delayed recovery over the winter. Before Russia's attack on Ukraine, business confidence, as measured by the PMI index, indicated solid global growth in February after a dip at the start of the year, see chart 4.

Business sector confidence points to solid global growth in run-up to Russia's invasion of Ukraine

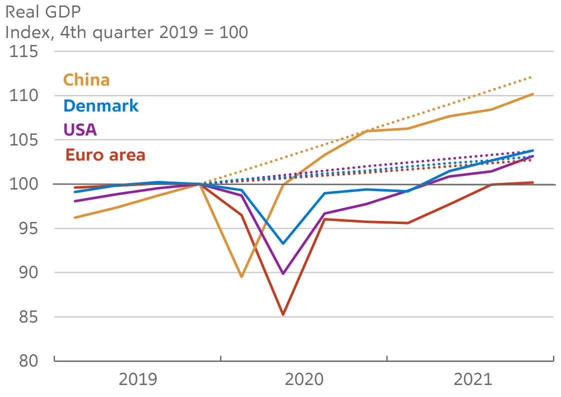
Chart 4



Note: PMI index for the whole economy.
Source: Macrobond.

The starting point for the economies of Denmark, the United States and the euro area before the war in Ukraine differed somewhat. In the 4th quarter of 2021, GDP in Denmark was just under 4 per cent higher than the pre-pandemic level, while GDP in the United States was about 3 per cent higher, and GDP in the euro area was virtually back to square one, see chart 5. Especially private consumption has developed more strongly in Denmark than in the euro area, one reason being the disbursement of frozen holiday pay. High activity in the construction industry and the manufacturing industry has also contributed to Danish production having performed better than in the euro area during the pandemic and in the period up to the outbreak of the war in Ukraine.

GDP has increased by more in Denmark than in the euro area during the pandemic Chart 5



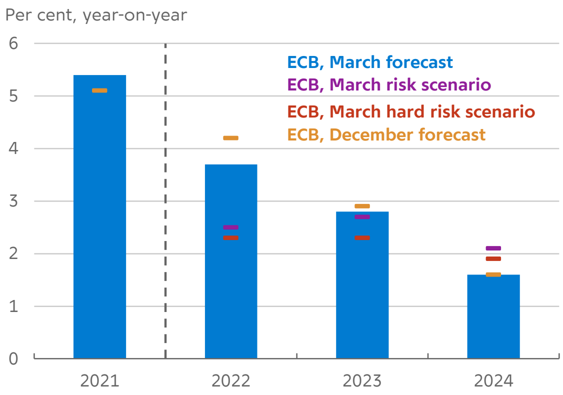
Note: The dotted lines indicate the forecast of the International Monetary Fund (IMF) from January 2020 before the coronavirus outbreak. For Denmark, it indicates Danmarks Nationalbanks projection from september 2019.
Source: Macrobond, IMF, Statistics Denmark and own calculations.

Global growth prospects hit after Russia's invasion of Ukraine

There is currently great uncertainty about the size and duration of the derived global economic consequences of Russia's attack on Ukraine. Initially, continued progress is expected in the world economy in the coming years, although global GDP growth is estimated to slow down relative to 2021 due to a number of factors, including the war in Ukraine and a less expansive fiscal policy in the United States.

In March, the ECB published a number of possible GDP growth scenarios in the euro area, in addition to its forecast, as there is great uncertainty about the macroeconomic consequences of the war in Ukraine. The scenarios differ in that they have different assumptions about factors such as energy prices, sanctions, supply chain pressures and the extent of negative confidence effects. It may be argued that recent developments in Ukraine have moved the situation closer to the ECB's negative risk scenario than its forecast, which was prepared on 2 March and which therefore does not fully include, for example, the subsequent escalation of sanctions and energy price increases. In this risk scenario, the ECB expects GDP growth in the euro area to be 2.5 per cent in 2022, which is 1.7 percentage points down on the estimate in December 2021, see chart 6.

ECB expects weaker GDP growth in the euro area after the war in Ukraine Chart 6



Note: For a description of the different scenarios, see ECB, *Staff macroeconomic projection for the euro area*, March 2022.
Source: ECB.

Several foreign central banks have either commenced or moved closer to a gradual rollback of monetary policy stimuli. In the United States, the rollback of monetary policy stimuli is further along than in the euro area, as price pressure and pay increases

Assumptions for main and risk scenarios of projection Table 3

	Main scenario			Risk scenario		
Year-on-year	2022	2023	2024	2022	2023	2024
Export market growth (per cent)	3.8	3.9	3.2	1.8	3.9	3.9
Oil price (dollars per barrel)	105	91	83	148	125	95
Gas price (euro per MMBtu)	144	72	52	204	99	60
Electricity price (euro per megawatt hour)	93	47	48	123	64	53
Effect on consumer and business confidence from increased uncertainty (effect on GDP growth, percentage points)	-0.2	0.0	0.0	-0.4	0.0	0.2

Note: Oil, gas and electricity prices in the main scenario follow a seven-day average of futures prices from 4 to 10 March.
1. MWh = Megawatt hour.

are stronger.[5] From a more long-term perspective, however, interest rates remain low and rising inflation expectations have kept real interest rates down. This may contribute to the financial conditions continuing to support the activity in the international and Danish economies.

The main scenario in this projection for the Danish economy leans on a number of the available preliminary assessments from international organisations, including the ECB, of global growth prospects after the war in Ukraine. The war is generally expected to have a noticeable effect on domestic activity in Denmark, especially as a result of the European economy losing momentum, but this does not change the basic picture of progress in Danish export markets. In specific terms, it is assumed that export market growth will increase by 3.8 per cent in 2022, 3.9 per cent in 2023 and 3.2 per cent in 2024, see table 3.

A driver of demand both in Denmark and abroad is the price development, which is eroding household purchasing power. This driver must especially be seen in the light of the large increases in the price of oil, electricity and gas in recent months. The projection uses futures prices from 4 March to 10 March as a basis for the further economic development. The increased uncertainty among companies and households created by the new geopolitical situation is also assumed to dampen investment and consumption appetite.[6] In specific terms, it has been assumed that increased uncertainty affects consumption and investments by half the estimated effect of the terrorist attack on the World Trade Center on 11 September 2001.[7] Conversely, in the wake of Russia's invasion of Ukraine, measures have been planned in Europe that will stimulate demand, including targeted energy transition. In the projection for the Danish economy, these measures have not been factored into foreign demand, as a specific agreement has not been drawn up.

However, the risk of a more subdued growth trajectory is present. The risk is particularly linked to

5 See Danmarks Nationalbank, Rising inflation and Russian invasion have increased volatility, *Danmarks Nationalbank Analysis (Monetary and financial trends)*, no. 4, March 2022.

6 See, for example, Fernandez-Villaverde et al., *Risk Matters: The Real Effects of Volatility Shocks, 2011.* Bernanke, *Irreversibility, Uncertainty, and Cyclical Investment,* 1983, argues that higher uncertainty makes companies postpone investments until the future is more secure again.

7 As measured by the change in Danmarks Nationalbank's and the Danish business daily Dagbladet Børsen's uncertainty index. See Bess et al., Uncertainty and the Real Economy: Evidence from Denmark, *Danmarks Nationalbank Working Paper*, no. 165, November 2020.

the geopolitical situation and the knock-on effects on energy prices. In a risk scenario based on an assumption of a stop to the supply of Russian oil and gas to Denmark and the rest of the world, Danish GDP growth could be reduced by a further 1.2 percentage point this year. The reduced growth expectation is due to a number of factors, including weaker demand in export markets and increased uncertainty among companies and households, see box 1.

Sudden halt of supply of Russian gas and oil to Denmark and the rest of the world could reduce growth in the Danish economy by a further 1.2 percentage point this year

Box 1

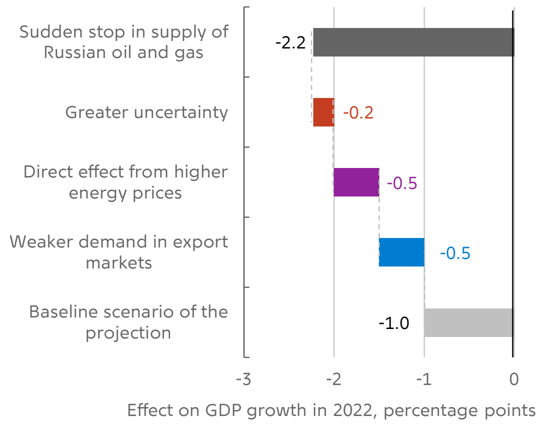
A sudden halt to sales of Russian gas and oil to Denmark and the rest of the world is a risk scenario that will have major economic consequences. Calculations based on Danmarks Nationalbank's macroeconomic model, MONA, indicate that such a scenario could reduce Danish GDP growth by a further 1,2 percentage point to 0.9 per cent this year, see chart A. In this scenario, domestic inflation increases by a further approx. 4 percentage points to 8.8 per cent this year.

A sudden halt to gas supplies from Russia will result in higher commodity prices. The higher prices increase production costs for companies and weaken the purchasing power of households both in Denmark and abroad. It is assumed that a global stop to the supply of Russian oil will send the oil price up to 148 dollars per barrel on average in 2022, followed by a decrease to 125 dollars per barrel in 2023 and 95 dollars per barrel by 2024.[1] A partially similar increase is assumed for gas and electricity prices. The European economy will be particularly hard hit, as a sudden stop to the supply of gas from Russia will not only lead to higher commodity prices, but also, by all accounts, a situation in which gas must be rationed. In the short term, this will partly limit industrial production in Europe and further dampen demand on Danish export markets. Overall, the combination of higher commodity prices and gas rationing is expected to dampen growth in Danish export markets by a further 2 percentage points to 1.8 per cent this year.[2]

A further escalation of geopolitical and economic tensions between Russia and the West will concurrently increase uncertainty about the economic prospects significantly. Great uncertainty can make companies reluctant to invest and cause households to postpone consumption. A sudden supply stop scenario is expected to lead to a pronounced increase in uncertainty, which will further dampen consumption and investments in Denmark. In specific terms, it has been assumed that increased uncertainty affects consumption and investments by an effect corresponding to the estimated effect of the terrorist attack on the World Trade Center on 11 September 2001.[3]

The downturn that a sudden supply stop will cause to the world economy is likely to be partly offset by economic policies aimed at stimulating demand. The projection and this risk scenario do not include economic policy that has not yet been specifically adopted or agreed.[4]

Chart A: Sudden supply stop from Russia could further reduce Danish growth



1. The estimated oil price increase has been calibrated based on a number of factors, including runs on the International Monetary Fund's Global Integrated Monetary and Fiscal Model and the probability distribution derived from options prices for oil.
2. Global growth is assumed to be reduced by a further 1.3 percentage points. The effects are based on sources such as the European Central Bank, Global implications of low oil price, *Economic Bulletin*, no. 4, box 1, 2016. An elasticity from global growth to Danish export market growth of 1.5 is assumed. No direct effects of rationing of Danish production have been factored in, but most of the effect is estimated to be reflected in a further weakening of the demand on export markets.
3. The effects on private consumption and business investments are estimated on the basis of a structural VAR model, which includes the uncertainty index of Danmarks Nationalbank and Dagbladet Børsen. See Bess et al., Uncertainty and the Real Economy: Evidence from Denmark, *Danmarks Nationalbank Working Paper*, no. 165, November 2020.
4. Kr. 3.5 billion has been included from the *National compromise on Danish security policy* agreement in 2022 and 2023, while the increase in defence expenditure to 2 per cent of GDP has not been recognised, nor have expenses aimed at achieving independence from Russian gas in Denmark and Europe been included.

High inflation is driven by large world economy fluctuations

The way out of the pandemic creates pressure in several places in the global economy

Before the war in Ukraine, the global economic recovery from the downturn during the pandemic has been characterised by the inability of supply to keep up with heavy demand in some parts of the economies, partly due to large fiscal and monetary policy stimuli. Consumer prices are currently rising due to the combination of labour market growth, high energy prices and rising costs for companies. Across countries, inflation was at its highest level for decades even before Russia's invasion of Ukraine. Following the Russian attack in February, prices of energy, food and metals have increased apprecia-bly, which will have a knock-on effect on consumer prices, resulting in further increases in the coming months.

Domestic and global consumer prices are of great importance to the Danish economy, as they affect, for example, household consumption and the level of interest rates. Some of the drivers of the currently high increases in consumer prices in Denmark are expected to be of a temporary nature, but core infla-tion is estimated to be higher in the coming years than before the pandemic. In the short term, the steep energy price increases caused by the war in Ukraine are crucial to the development in consumer prices, one reason being that they result in indirect price pressure on other goods from increased costs for companies.

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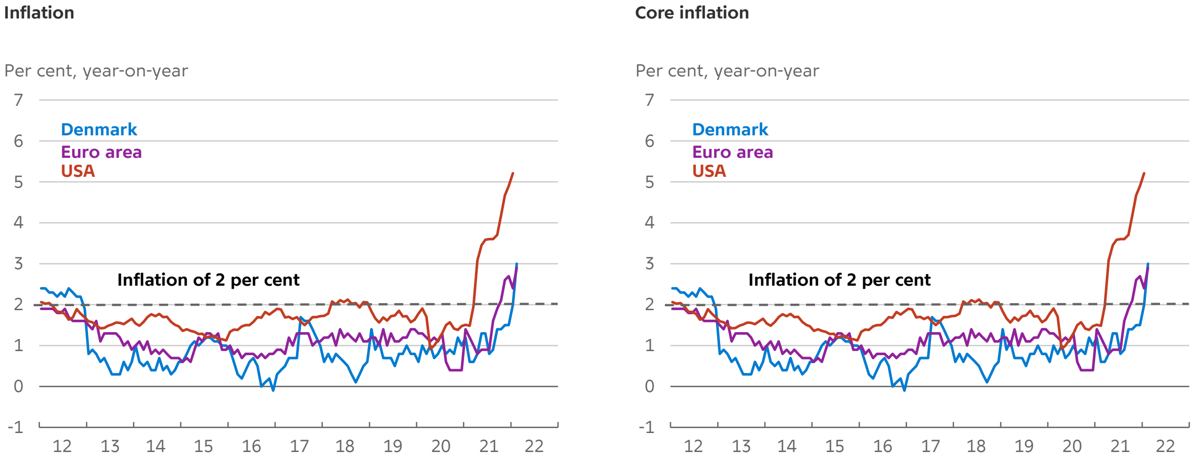
Some of the drivers of the currently high increases in consumer prices are of a temporary nature, but core inflation in Denmark will be higher in the coming years than before the pandemic.

Inflation has risen to a high level in Denmark and abroad

Chart 7



Note: Left-hand chart: HICP inflation for Denmark and the euro area and the private consumption deflator, PCE, for the United States. Right-hand chart: Core HICP inflation, i.e. inflation excluding energy and food products for Denmark and the euro area. For the United States, core PCE inflation is shown.
Source: Macrobond.

Core inflation is expected to increase over the coming years in step with the tight labour market making itself felt on wages, and with the very high increases in manufacturer prices gradually being passed on to consumers.

Core inflation in Denmark has increased in step with the increasing pressure on the economy

Denmark has seen ever-increasing consumer prices during 2021, which were 5.3 per cent year-on-year in February, measured by the EU Harmonised Index of Consumer Prices (HICP), see chart 7. The increase can especially be attributed to rising energy prices, which account for about half of the total price increases. Core inflation has also risen due to the high capacity pressure in the economy, among other factors, but it is still lower than in the United States, see box 2. Excluding energy and unprocessed food products, Danish consumer prices rose 3 per cent year-on-year in February. The number of price categories in the HICP index which are increasing by more than 2 per cent year-on-year has risen significantly over the past year, suggesting that the price increases are broadly based.

Energy prices are sharply pushing up consumer price rises

Energy prices have increased significantly in the past year, see chart 8. Even before Russia's invasion of Ukraine, the price of gas had risen extraordinarily in Europe, as stocks were low in the EU due to, among other factors, lower supplies from Russia. The war in Ukraine has challenged future energy supply and led to noticeable increases and fluctuations in the price of gas since February, with about 40 per cent of the EU consumption being imported from Russia before the war.

The war in Ukraine has also led to marked increases in the price of oil, as Russia accounts for approx. 11 per cent of the global oil production, and as the United States and the UK as well as several oil companies have boycotted Russian oil. These increases come at a time when the price of oil had already risen significantly in the year leading up to Russia's attack, driven by a number of factors, including the rapid recovery of the world economy combined with a production that reacted sluggishly to the higher prices. One reason for the sluggish production is that investments in oil extraction have declined over a number of years, possibly because, going forward, the green transition is expected to make investments in fossil fuels less profitable.

The sharp rise in the price of oil and gas, among other commodities, affects consumer prices both directly through higher prices of energy products and indirectly through higher costs for companies and thus higher prices of other goods. In addition, this may lead to second-round effects if, for example, high energy prices affect expectations for future pay increases or dampen household demand.

Danish energy consumer prices have risen more than in the euro area in the past year, especially for gas and electricity. This suggests that the pass-through from higher commodity prices to consumer prices has been relatively rapid in Denmark, one reason being that prices are adjusted quickly in a large part of the contracts on energy. For example, approx. 50 per cent of Danish consumer electricity prices are adjusted monthly, and a further 40 per cent once a quarter. The consumer price of gas is calculated in the Danish consumer price index only on the basis of contracts with variable prices. However, higher commodity prices for energy do not normally have a proportional impact on consumer prices, as they also consist of taxes.

There are signs of a certain indirect pass-through on Danish consumer prices from the high energy prices. For example, the oil price sensitive parts of core inflation increased more than core inflation in February, see chart 9. The indirect price effects from the use of energy in production may increase if gas and oil prices remain at a high level.[8]

There is considerable uncertainty about the outlook for energy prices following Russia's invasion of Ukraine. The projection is based on futures prices of oil, which are decreasing slightly during the rest of 2022 after the heavy increases since February. The projection of consumer energy prices in the overall projection is also supplemented by a forecast for consumer prices of gas and electricity based on futures prices. In specific terms, this means that the gas price is assumed to remain high throughout 2022, while the price of electricity is assumed to fall. The assumptions entail that the annual rate of increase in energy prices in the consumer price index in the projection will peak in spring 2022 and then gradually diminish throughout the rest of the year from this high level, see chart 10.

Price pressure is lower in Denmark than in the United States

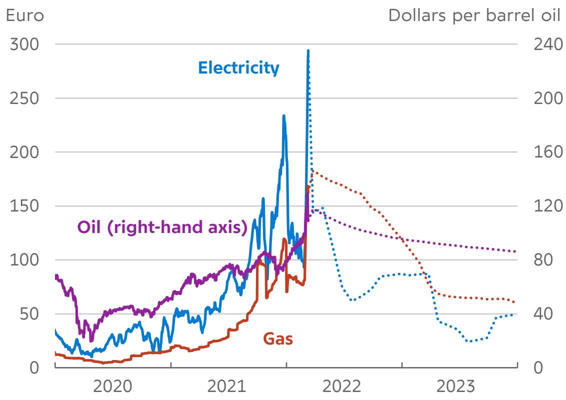
Box 2

The underlying price pressure is significantly lower in Denmark than in the United States, although the increase in private consumption has been around the same level as during the pandemic, see chart 7. The lower consumer price increases in Denmark relative to the United States are particularly due to prices of transport, e.g. cars, having increased very sharply in the United States, but not in Denmark. This suggests that the pressure on global supply chains has made itself felt more heavily on US consumer prices, as transport is particularly affected by, for example, shortage of materials and logistics challenges. Consumer price increases for restaurants and hotels have also been significantly higher in the United States, one reason being that high pay rises in this industry have increased costs.[1] The profit rate per unit produced has increased significantly more in the United States than in Denmark during the pandemic. This suggests that US companies have been able to raise their prices to a greater extent, which may also have contributed to greater consumer price increases relative to Denmark.

1. To make consumer price increases in the United States and Denmark directly comparable, this box is based on Eurostat's calculation of the EU Harmonised Index of Consumer Prices (HICP) for both the United States and Denmark and not the US personal consumption expenditures (PCE) deflator, which is otherwise the Federal Reserve's preferred inflation measure for the United States. In December 2021, the annual growth rate in the HICP index was 8.1 per cent in the United States and 3.4 per cent in Denmark, i.e. a difference of 4.7 percentage points. Lower contribution from transport prices in Denmark is estimated to explain 3.4 percentage points of this difference, while lower price increases in the hotel and restaurant industry explains 0.6 percentage points. The remainder can be attributed to the price development in a wide range of goods and services.

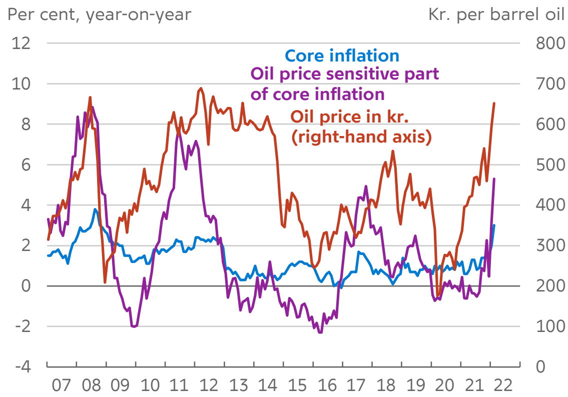
8 A calculation based on input-output tables indicates that a permanent increase in the oil price of 50 per cent in the long term, i.e. in equilibrium, will raise consumer prices by 1.2 per cent, of which 0.7 percentage points can be attributed to indirect price effects from use of energy in production. Correspondingly, the calculation suggests that a permanent increase in the gas price of 50 per cent will raise consumer prices by 0.15 per cent in the long term, with roughly a third being indirect effects. The calculation is based on the method used in Anne Ulstrup Mortensen and Jonas Staghøj, Falling oil and consumer prices, *Danmarks Nationalbank Quarterly Review 1st quarter 2015*, March 2015.

Energy prices have risen significantly Chart 8



Note: The electricity price refers to the average Nordpool price measured as a 14-day moving average. The gas price is the price of TTF natural gas, and the oil price is the price of a barrel of Brent oil. Dotted lines show futures prices.
Source: Macrobond.

High energy prices result in indirect increase in consumer prices in Denmark Chart 9



Note: The oil price sensitive parts of core inflation consist of the prices that are affected by oil price fluctuations, including transport and horticultural products. For a further definition, see Anne Ulstrup Mortensen and Jonas Staghøj, Falling oil and consumer prices, *Danmarks Nationalbank Quarterly Review 1st quarter 2015*, March 2015.
Source: Macrobond and own calculations.

Higher manufacturer prices are passed on to consumers over time

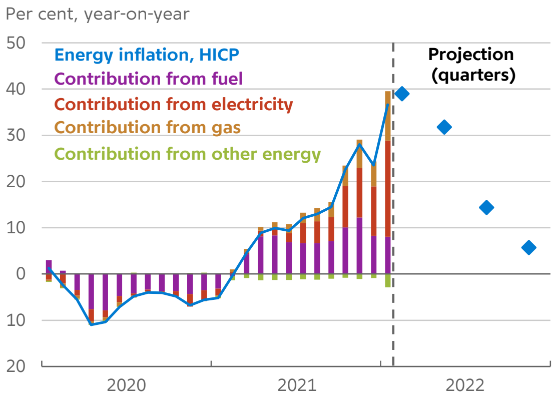
There is heavy pressure on both the first and subsequent links in the pricing chain in Denmark and abroad, one reason being that rising commodity prices have increased corporate costs, see chart 11. In the United States and the euro area, the pressure on manufacturer prices is even stronger than in Denmark, which affects Danish import prices, among other prices. Over time, higher manufacturer prices in Denmark and abroad will be passed on to consumer prices and, in particular, the prices of goods. Russia's invasion of Ukraine has led to sharp increases in the price of certain metals and food products, as this area accounts for a large part of the world's production of selected commodities. This may lead to further increases in manufacturer prices.

Model calculations indicate that pressure on global supply chains has increased product inflation in both Denmark and abroad by the end of 2021, see box 3. If Russia's invasion of Ukraine leads to more disruptions in trade and production or shortages of metals and food products, this effect on consumer prices may persist for some time to come.

Core inflation replaces the role of energy prices as a driver of inflation in Denmark

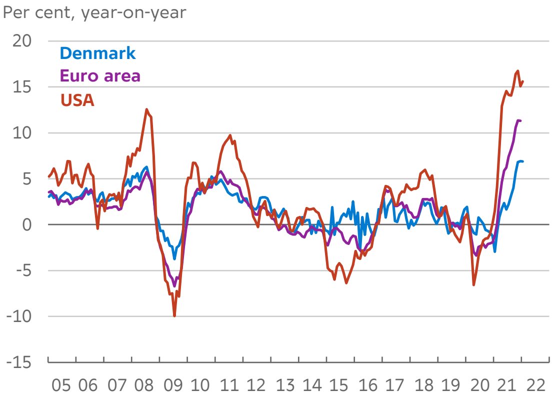
In Denmark, there is a prospect that several drivers of the currently high consumer price increases

Energy prices are expected to drag down inflation Chart 10



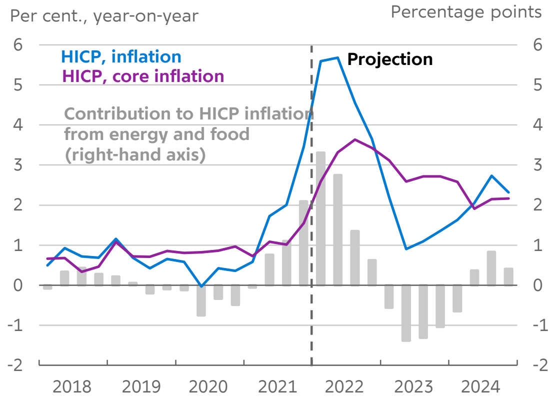
Note: The chart shows energy prices in the HICP index at monthly frequency and Danmarks Nationalbank's projection for energy prices at quarterly frequency.
Source: Macrobond and own calculations.

Manufacturer prices point to strong pressure at early stage in pricing chain Chart 11



Note: Manufacturer prices in industry, total production for both domestic and export markets.
Source: Macrobond and OECD.

Prospects of higher core inflation in Denmark in coming years Chart 12



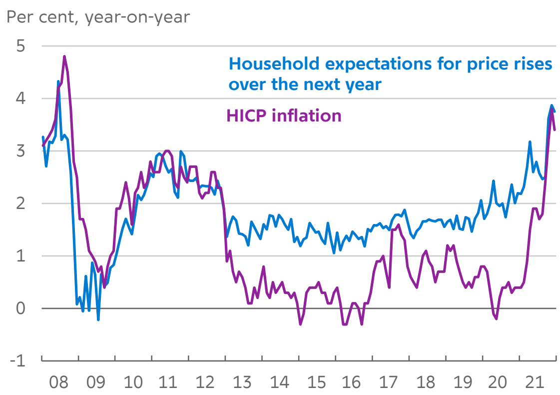
Note: Core inflation shows the HICP index excl. energy and unprocessed food.
Source: Macrobond and own calculations.

will gradually decrease, but that core inflation will concurrently increase at a higher rate in the coming years than before the pandemic. Over the next few years, inflation will especially be driven by the tight labour market, higher pay increases and the large manufacturer price rises which are expected to be passed on to consumers with some delay.

In the projection, consumer prices in Denmark are estimated to rise by 4.9 per cent in 2022 due to, among other factors, the large energy price increases, see chart 12. Next year, the rate of inflation is expected to fall to 1.4 per cent because energy prices, based on market expectations for future oil, gas and electricity prices, are expected to drag down consumer price increases. After energy prices fall back in 2023, they are expected to stabilise at a level that remains high for an extended period of time. This will contribute to increasing the rate of increase in consumer prices to 2.2 per cent in 2024.

Core inflation in Denmark is projected to rise to just over 3 per cent in 2023. This reflects that companies' costs for higher commodity prices and pay increases are expected gradually to be passed on to consumer prices. In the following years, core inflation will gradually decrease to just over 2.5 per cent in 2023 and just over 2 per cent in 2024 as lower energy and commodity prices dampen pressure on the companies' costs.

Households in Denmark expect high price rises next year Chart 13



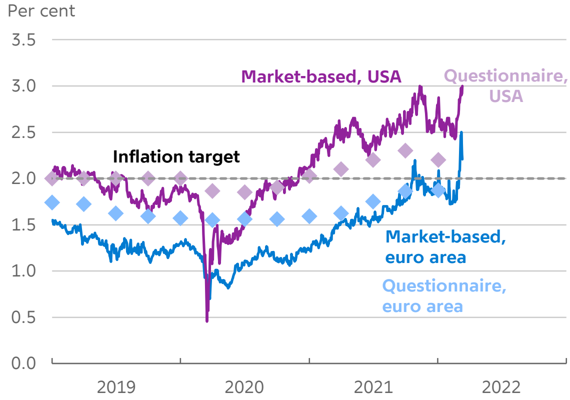
Note: Household questionnaire-based inflation expectations for the next 12 months weighted by the difference between actual and perceived inflation, i.e. that households which neither overestimate nor underestimate the actual price increases are given a higher weight.
Source: Statistics Denmark, Macrobond and own calculations.

Just as in Denmark, the euro area has prospects of high inflation this year. In the ECB's central trajectory, based on information up to 2 March, the ECB estimates that consumer prices in the euro area will rise by 5.1 per cent in 2022, 2.1 per cent in 2023 and 1.9 per cent in 2024. The expected decrease in the rate of price increases in the coming years is based on the assumption that increases in energy prices will diminish over time. In addition, core inflation in the euro area is expected to rise to 2.6 per cent this year, after which it will slow to 1.9 per cent in 2024, as indirect price effects from energy and supply chain pressures, among other factors, will diminish. According to the ECB, there are short-term increasing risks to the price development in the euro area, and energy prices have risen further since the energy price forecast was prepared.

Well-anchored inflation expectations are essential in ensuring that the current price increases stabilise in the long term and do not give rise to a wage-price spiral. In Denmark, household expectations for price increases over the next 12 months have increased and were 3.7 per cent year-on-year in December after a prolonged period of inflation expectations of just below 2 per cent, see chart 13. If high inflation expectations persist, there is a risk that it will impact expectations for, for example, wage formation, and thus create self-reinforcing pressure on prices. However, experience shows that short-term inflation expectations among households often react to current consumer price increases and can therefore also decrease rapidly again. In the United States and the euro area, market-based indicators show that expectations for inflation in ten years have increased significantly following Russia's invasion of Ukraine, see chart 14.

Long-term inflation expectations have risen in the United States and euro area following Russia's invasion of Ukraine

Chart 14



Note: Market-based inflation expectations are based on a five-year/five-year inflation swap. The questionnaire-based inflation expectations for the euro area refer to long-term inflation expectations in the Survey of Professional Forecasters published by the European Central Bank (ECB), while, for the United States, inflation expectations over the next 5-10 years are shown from the Survey of Professional Forecasters published by the Fed.
Source: Macrobond and Refinitiv Eikon.

Pressure on global supply chains has pushed up product inflation in Denmark and abroad

Box 3

The combination of high global demand for goods supported by fiscal policy stimuli in the United States, among other countries, and pandemic-related lockdowns has created heavy pressure on global supply chains, see chart A. For example, companies across countries report shortages of materials, insufficient stocks, long delivery times and rising prices of inputs in production. This box analyses whether the pressure on global supply chains has had an effect on consumer price inflation in Denmark and abroad.

For an indication of whether pressure on global supply chains has had an impact on consumer prices, an econometric model is established to estimate the correlation with inflation, see note on chart for a description of the method used. The model calculation shows that pressure on global supply chains has increased the annual price increase rate of durable consumer goods by approx. 5 percentage points in the United States in the 4th quarter of 2021, see chart B. In both Denmark and the euro area, the effect is lower and amounts to approx. 2 percentage points. The higher estimated effect in the United States than in Denmark should be seen in conjunction with the sharper price development in the transport sector, for example cars, in the United States. The transport sector has been particularly challenged by supply chains during the pandemic. In Denmark, there is a negative contribution from other factors to the rate of price increases for durable consumer goods, meaning that part of the price development is not immediately explainable by the model's assessment of pressure on the labour market or global supply chains. One reason for this may be that Danish companies have absorbed costs in their profit margins to a greater extent.

Durable consumer goods, which account for just under 14 per cent of the weight in the overall consumer price index in Denmark, are characterised by being produced globally, and they are therefore more exposed to challenges in, for example, logistics than other prices in the consumer price index. This suggests that pressure on supply chains basically has a lower effect on the general price level than on product prices. For example, services account for 42 per cent of the weight in the overall consumer price index in Denmark. They are only traded globally to a minor extent and are therefore not affected to the same degree by, for example, high freight rates. The econometric analysis shows that pressure on supply chains does not have a statistically significant explanatory force for Danish core inflation, i.e. inflation without energy and unprocessed food. In the United States, on the other hand, the pressure can explain approx. 2 percentage points out of the overall annual rate of increase in core inflation of 4.3 per cent in the 4th quarter of 2021.[1]

Overall, the analysis in this box suggests that pressure on global supply chains has pushed up consumer price increases across countries. If Russia's invasion of Ukraine leads to new disruptions in trade and production patterns going forward, this effect on consumer prices may persist for some time to come.

Chart A
High demand for goods and the pandemic have created pressure on global supply chains

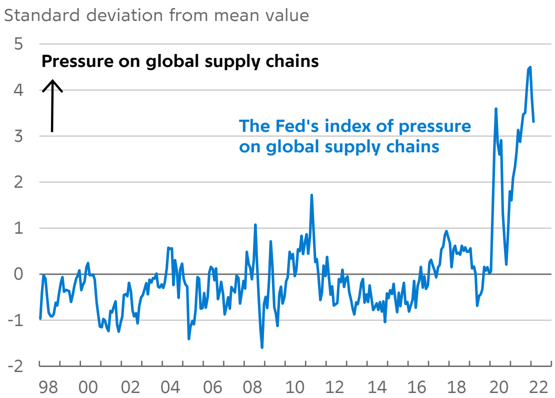
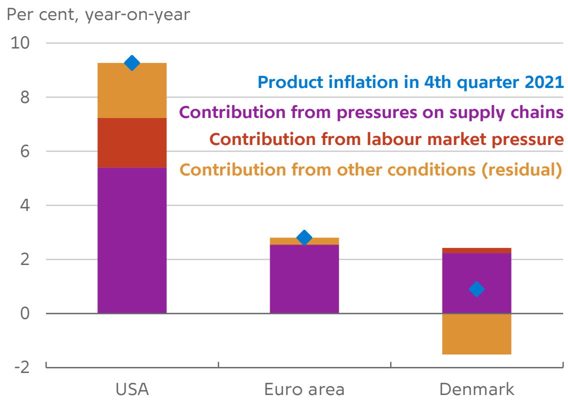


Chart B
Disruptions of global supply chains contribute to high product inflation across countries



Note: Left-hand chart: The index is based on a number of indicators, including transport costs, freight rates, delivery times, production lags and stock build-up, see Benigno et al., A New Barometer of Global Supply Chain Pressures, *Federal Reserve Bank of New York Liberty Street Economics*, January 2022. Right-hand chart: The contributions have been calculated as the difference between actual inflation and counterfactual inflation without pressure on global supply chains. The calculation is based on an econometric model that uses the Phillips curve, in which the price increase rate for durable goods is explained by its own layer, an unemployment gap and the index of pressure on global supply chains. The price increase rate has been calculated based on unchanged taxes in Denmark and the euro area.

Source: Macrobond, Federal Reserve Bank of New York and own calculations.

1. Several factors may contribute to the estimated effect on core inflation being higher in the United States than in Denmark, including the greater impact on durable consumer goods or quicker price adjustments after cost increases. In addition, core inflation fluctuates more in Denmark, making it more difficult to identify the effects in a statistical model.

Tight labour markets give higher wage increases

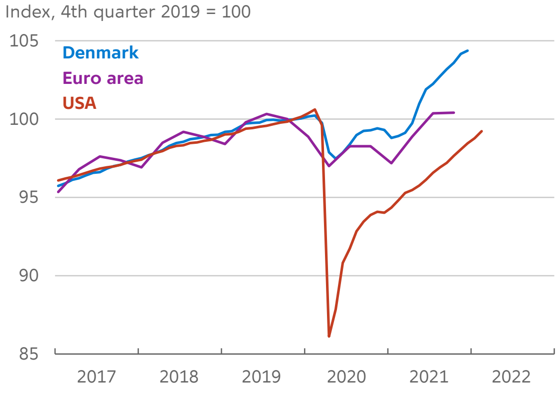
Employment in Denmark is higher than before the pandemic

Employment has increased sharply in both Denmark and abroad as many of the restrictions to contain the pandemic have been lifted during 2021. This development has been particularly rapid in Denmark, where payroll employment is 116,000 persons higher than the pre-pandemic level, equal to 4.1 per cent, see chart 15.

In the euro area, employment has roughly returned to its pre-pandemic level, while it remains just under 1 per cent lower in the United States. The increase in employment has meant that unemployment has fallen across countries. In Denmark, gross unemployment was 2.7 per cent of the labour force in January and thus lower than before the pandemic. In the euro area, the unemployment rate fell to 6.8 per cent in January, the lowest level ever since the introduction of the euro, while, in the United States, it was 3.8 per cent in February, and thus only slightly above the low pre-pandemic starting point.[9]

Strong employment growth in Denmark

Chart 15



Note: Waged employment in Denmark, Labour Force Survey in the euro area and non-farm payroll employment in the United States. Data for Denmark and the United States is on monthly frequency. Data for the euro area is on quarterly frequency.
Source: Macrobond.

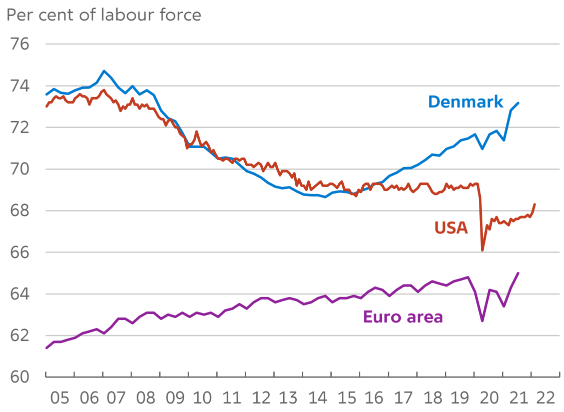
9 The comparable unemployment rate in Denmark is 4.5 per cent.

In Denmark, GDP is 3.8 per cent higher than the pre-pandemic level, which means that the development in GDP and employment suggests a rather weak development in productivity during the pandemic. However, calculations of GDP per employee may be affected by production disruptions and large shifts between (and within) industries. In relation to employment, value added has developed particularly weakly in some of the industries affected by lockdowns and in the public sector. Several conditions during the pandemic have made it more difficult to carry out business activities, and if these conditions ebb out, there is potential for a further increase in activity without corresponding increases in employment.

However, a calculation of productivity should be based on hours worked in order to take changed working hours into account.[10] Here, the provisional calculation also shows that productivity per hour in especially the public sector has been reduced during the pandemic. This should be seen in the context of many persons having been employed in vaccination and test centres. Furthermore, the tasks handled by the public sector require close contact and have therefore been difficult to perform as effectively as before the pandemic.[11] In the private sector as a whole, the increase in productivity per hour has slowed down slightly during the pandemic, while it has continued unhindered in the manufacturing industries.

Participation rate has increased in Denmark, but decreased in the United States

Chart 16



Note: National accounts employment is shown for Denmark. Employment from the Labour Force Survey is shown for the euro area, and non-farm payroll employment is shown for the United States.
Source: Macrobond.

The labour market has tightened both in Denmark and abroad

In the United States, the pressure on the labour market is somewhat stronger than warranted by the rate of employment. For example, there are an extraordinary number of voluntary notices to quit and vacancies in comparison to the number of unemployed persons. This reflects a number of factors, including that the labour supply is currently hampered by people having left the labour market, especially persons who are nearing the age of retirement.[12] This has lowered the participation rate in the United States during the pandemic, but there are signs that it is rising again, see chart 16.

The participation rate in the euro area is at about the same level as before the pandemic, while it has increased in Denmark. The reasons for this may include that wage compensation schemes in Denmark allowed employees and companies to maintain their links during the lockdowns and that wage compensation schemes have maintained at least 10,000 jobs.[13]

However, labour market pressure has also increased in Denmark and the euro area, and more companies both than before the pandemic and during the

10 There is a great deal of uncertainty connected with the calculation of the productivity development during the pandemic, including the calculation of persons on wage compensation schemes (and how this affects hours worked), a high rate of absence due to illness and large shifts in demand patterns.

11 General reservations should be made for aggregated productivity calculations in national financial statements for the public sector.

12 See, for example, Carlo Pizzinelli and Ippei Shibata, Has Covid-19 Induced Labor Market Mismatch? Evidence from the US and the UK, *IMF Working Paper*, no. 5, January 2022.

13 See Pernille Valentin Borgensgaard, Job retention during the covid-19 pandemic, *Danmarks Nationalbank Working Paper*, no. 186, January 2022.

overheating prior to the financial crisis are reporting that labour shortages are hampering their production, see chart 17. In the euro area, this has occurred even though the overall activity level was back at the pre-pandemic level in the 4th quarter of 2021. In Denmark, employment has increased significantly despite reported great labour shortages over the same period. This may indicate that parts of the pressure are linked to the pace of employment growth, with many companies recruiting at the same time.

In Denmark, some of the pressure is also assessed to reflect temporary pandemic-related effects.[14] For example, 25,000 people have periodically been engaged as testing and vaccination staff, and the number of sickness benefit recipients previously in employment has increased by about 10,000 persons. Over winter 2021, labour shortages may also have been exacerbated by a large share of the workforce having been in isolation due to infection.[15]

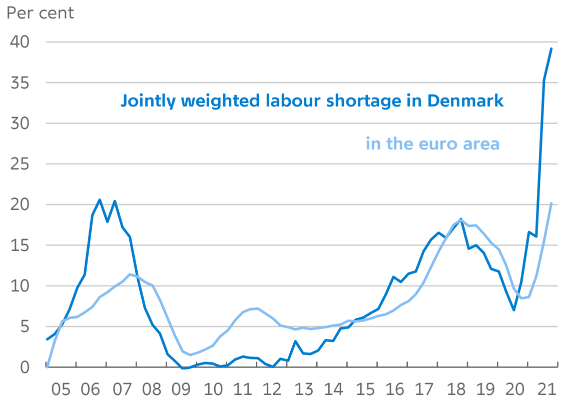
However, most of the pressure on the labour market in Denmark is assessed to be linked to a generally high activity level. The assessment is supported by the fact that the number of newly posted job advertisements remains high and by the posted vacancies having been less for temporary positions in the second half of 2021, see chart 18. Therefore, the coming years will also be marked by labour shortages, although the parts of the pressure which are related to the pandemic and the pace of recovery should ease, and the war in Ukraine dampens activity in the economy.

The war in Ukraine will most likely result in immigration of refugees from Ukraine to Denmark. With the many job postings and continued prospects of labour shortages, there are relatively good employment opportunities in Denmark for refugees from Ukraine who are ready to work.

Labour shortages reflect that companies want to buy more labour than households are willing to sell at the current wages. This is a natural part of

Labour shortages are greater than before the pandemic in Denmark and the euro area

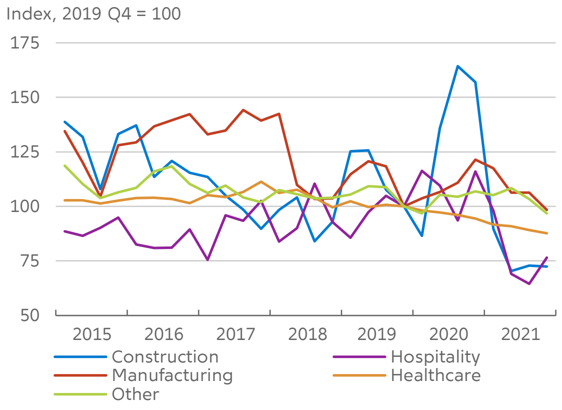
Chart 17



Note: Employment-weighted labour shortages across manufacturing industry, construction industry and service industries.
Source: Statistics Denmark, Eurostat and own calculations.

Demand for staff for temporary positions has fallen during 2021

Chart 18



Note: To measure the demand for temporary positions, the text contents of job postings on Jobindex.dk have been analysed. In specific terms, searches have been conducted on words indicating that the employer is looking to fill a temporary position. The words are: *fixed term, temp, student job, temporary, hourly wage*. The proportion of job postings that mention these words in a given quarter is related to the total number of job postings.
Source: Jobindex.dk and own calculations.

14 See Bess et al., Pressure on the labour market during the pandemic, *Danmarks Nationalbank Economic Memo*, no. 2, March 2022.

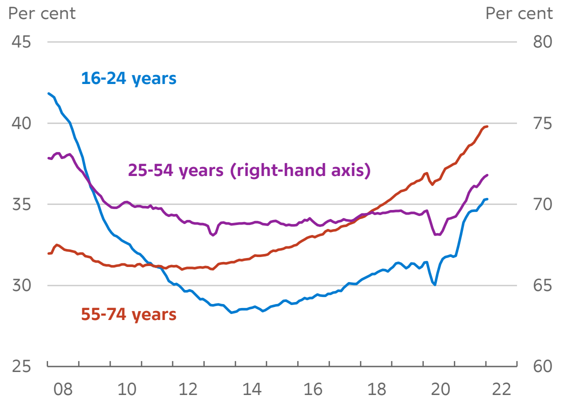
15 In the United States and the UK, around 2.5 per cent of the labour force was prevented from working due to illness at the peak of the Omicron wave.

an economic expansion until wages find a level where demand matches supply. In the short term, an increased labour force may contribute to dampening pay increases if the extra labour matches the competences demanded. In the longer term, increases in the labour force consequently cannot prevent that companies will sometimes not be able to find labour at the current level of wages.

There are still available resources in Denmark and prospects of a higher structural labour force
It is estimated that there are still available resources in the labour market in Denmark, even though unemployment is approaching the level before the financial crisis. The employment rate for persons under the age of 60 is lower than in the 2000s, see chart 19. This is especially due to the participation rate of the younger part of the population, which must be seen in relation to more young persons taking a higher education. Although students typically have part-time work, they nevertheless constitute a certain labour resource.

Still lower employment rate for persons under the age of 55 than in the 2000's

Chart 19



Note: Full-time employees as a percentage of the population.
Source: Statistics Denmark, jobindsats.dk and own calculations.

In addition, there are prospects in the coming years that previous reforms involving a higher retirement age will increase the labour force and thus, to some extent, continue to contribute to reducing labour market pressure. In addition, there is a contribution from employment among foreign nationals, which has also increased the labour force in the period leading up to the pandemic.[16]

On 1 January 2022, the last increase in the retirement age until 2030 entered into force, while the early retirement age will be increased by six months at the beginning of 2023. Together with foreign labour and the development in the population etc., this contributes to an overall increase in structural employment by 46,000 people in 2022 and 2023. Employment can thus increase almost correspondingly without this being estimated to lead to a further tightening of the labour market, although, in the present situation, this would mean that the current high pressure on the labour market will persist. However, the increase in the retirement age in 2023 is the last one until 2027, when the early retirement age will be raised by one year. After a number of years of annual increases in the retirement age, the development in the structural labour force will thus only be driven by, for example, demographic developments and net immigration. In the future, a given increase in employment is expected to result in higher pressure on the labour market than in recent years.

The sharp increases in employment are expected to slow down as growth in the Danish economy slows. At the same time, public sector employment is assumed to decrease slightly, and testing and vaccination staff will also become available. The growth is nevertheless strong enough to increase employment by 31,000 people from the end of 2021 to the end of 2024. As pandemic-related additional employment is reduced, productivity will be improved in the public sector and parts of the private sector, resulting in an increase in GDP per employee. The decrease in unemployment is expected to diminish in line with employment and the slowdown in GDP growth.

Labour market pressure and high inflation push up wage increases in Denmark and abroad
With higher pressure on the labour market than before the pandemic both in Denmark and abroad,

16 See Jakob Adolfsen and Rasmus Mose Jensen, Intra-EU labour mobility dampens cyclical pressures, *Danmarks Nationalbank Analysis*, no. 1, January 2019.

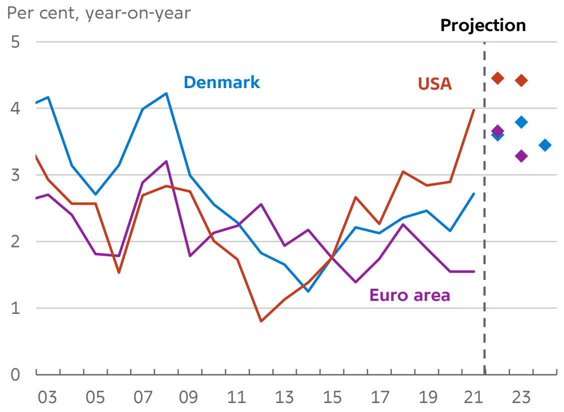
there are prospects of higher wage increases. In Denmark, wage increases in the private labour market have risen from a level around 2.5 per cent in the years before the pandemic to 3.2 per cent in the 4th quarter of 2021, measured by the pay statistics of the Confederation of Danish Employers (DA). Relative to the reported labour shortage, the wage increases are still moderate. The United States has seen a stronger reaction in wages, while wage pressure has been more subdued in the euro area.

In Denmark, pay increases have been most pronounced in the construction industry, where, since summer 2021, labour shortages have been higher than in the years before the pandemic. In the service industries, wages have not increased quite as much, although labour shortages have also been high in this sector since the summer. This must be seen in the context of a typical time lag before pressure on the labour market makes itself felt on wages. Wage increases in the Danish labour market are largely determined in connection with local pay bargaining, typically conducted in the spring. At that time last year, the reopening of Danish society had just begun, and the pressure on the labour market was not nearly as pronounced as now. Wage increases may therefore rise further during this spring. The prospects of higher consumer price increases may also boost wage increases.[17]

Job changes from one job to another without an intermediate period of unemployment typically result in greater wage pressure than movements from unemployment to employment. The reason for this is that people in employment have higher wage demands than unemployed persons, and job-to-job changes typically make up a larger proportion of total labour market movements during an economic boom where there are fewer unemployed persons available. For example, wage increases in the United States are more than 1.0 percentage points higher

Prospects of higher pay increases in Denmark than in the euro area

Chart 20



Note: Historical observations for the euro area and the United States are from the international pay statistics of the Confederation of Danish Employers (DA), and the projections are based on the *OECD Economic Outlook*. Pay increases in Denmark are Statistics Denmark's implicit wage index and own projection.
Source: DA's international pay statistics, OECD and own calculations.

for job-to-job changes,[18] and studies based on US data show that few job-to-job changes can help explain the low pay increases of the past ten years.[19] With the large movements in employment due to lockdowns and reopenings, there is not yet a good updated measure of the turnover rate in the Danish labour market.

In Denmark, wage increases are expected to rise from 2.7 per cent in 2021 to 3.6 per cent in 2022 as a result of the labour market having tightened. In the following years, wage increases are expected to be 3.8 per cent in 2023 and 3.4 per cent in 2024. This is roughly equal to the pay increases in the mid-2000s, when the unemployment and employment gap was

17 A range of model estimations find a limited pass-through from higher inflation expectations to wage formation.

18 The difference has been stated as the difference between Atlanta Fed Measure of Nominal Wage Growth for *Job Switcher* and *Job Stayer*, respectively.

19 See, for example, Renato Faccini and Leonardo Melosi, Bad Jobs and Low Inflation, *Federal Reserve of Chicago Working Paper*, no. 9, February 2020.

of the same magnitude. For the United States, international organisations expect slightly higher wage increases, while they are expected to be slightly lower in the euro area, which reflects differences in capacity pressure in the labour market between regions, see chart 20.

Stronger wage increases in Denmark will slightly weaken competitiveness going forward

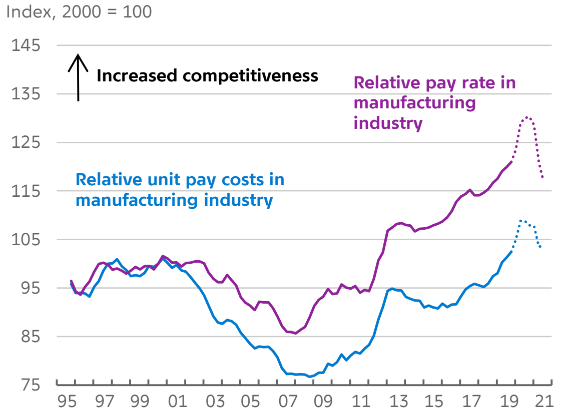
Overall, wage increases in Denmark are expected to be higher than abroad, and the wage competitiveness of Danish export companies is expected to be slightly weaker during the years covered by the projection. In the period between the financial crisis and the outbreak of the pandemic, wages in Denmark increased by 5 percentage points less than abroad. At the same time, productivity increased more in Denmark, and, in addition, Danish companies have been able to sell their goods at higher prices and achieve terms of trade gains. Wage competitiveness measured by the relative wage share has thus increased by more than 25 per cent, see chart 21.

Therefore, the Danish economy can withstand higher wage increases than abroad in a transition period. Even during the overheating of the 2000s, the wage increases did not reach a magnitude that would seriously jeopardise the improvements in competitiveness in the past ten years in a short time frame.

At the same time, Denmark's large balance of payments surplus is an expression of somewhat weaker domestic demand than production. Wage and price increases ensure that the production for the increased demand is distributed towards those industries and countries in which the marginal productivity is high relative to the level of wages. When the Danish economy is seeing a stronger recovery than the euro area with higher wage increases, imports will rise and gradually free resources from the export-oriented industries, thereby slowing down the pace of the economy slightly. This is a natural part of the economic adjustment mechanism of a market economy.

Wage competitiveness improved markedly between the financial crisis and the outbreak of the pandemic

Chart 21



Note: The development in wage competitiveness since the outbreak of the pandemic should be interpreted with caution, as the development in wages and productivity is connected with increased uncertainty about the calculation between countries as a result of, for example, wage compensation schemes. The development in recent years is therefore shown with dotted lines.

Source: Statistics Denmark, Eurostat, OECD, BEA, BLS and own calculations.

Conversely, a sharp and sudden deterioration in wage competitiveness may mean that many export companies will lose both customers and orders. Although the demand for labour is high in other parts of the economy, it is not certain that the released labour immediately has the right competences, which may result in an increase in unemployment. In addition, much of the production apparatus may become redundant at the same time, and this may make the Danish economy more vulnerable in a reversal of the international business cycle. It is therefore most expedient that wage competitiveness does not deteriorate too quickly and that the adjustment takes place gradually. In addition, sudden and sharp wage and income increases risk boosting increased consumer optimism and an optimistic risk assessment among households.

The attack on Ukraine dampens demand in the Danish economy

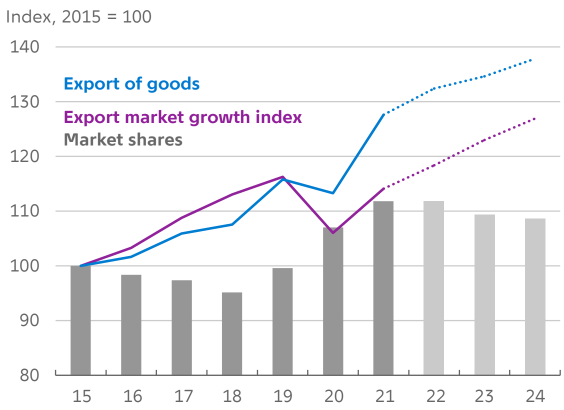
Russia's invasion of Ukraine generally dampens demand in the Danish economy. This applies particularly to demand from abroad, where especially the European economy is hampered by the consequences of the Russian attack on Ukraine.

However, the Danish economy is well equipped to resist a slowdown in growth. Exports of goods have been strong in the past year, and households have large savings. Furthermore, the slowdown in growth occurs at a time at which there was already high capacity pressure and high demand.

Growth in export markets despite attack on Ukraine
Danish export companies have fared well through the pandemic, in particular due to strong exports of goods. This is primarily due to the strong upturn in world trade. In addition, good competitiveness and a less cyclically sensitive composition of Denmark's exports of goods have contributed to Danish export companies having captured market shares.[20]

Continued prospects of growth in exports of goods

Chart 22



Source: Statistics Denmark and own calculations.

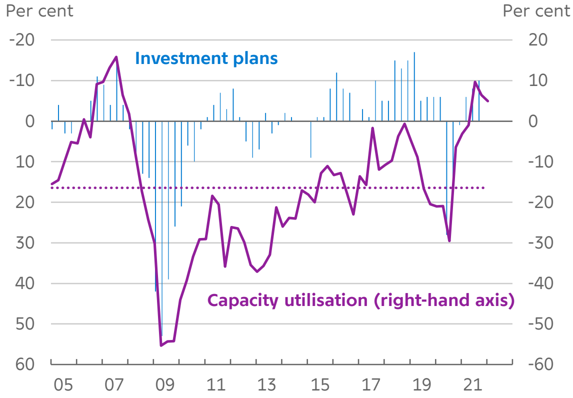
20 See Adrian Michael Bay Schmith and Helle Eis Christensen, Large drop in Danish exports, but the compisition might ease the fall, *Danmarks Nationalbank Economic Memo*, no. 8, June 2020 (in Danish only).

There is continued progress in Denmark's export markets, which, despite the war in Ukraine, are expected to grow by 3.8 per cent this year, thus providing a basis for higher exports, see chart 22. Especially service exports will benefit from the international economy being less hampered by the pandemic as demand shifts back towards services. This will, for example, increase tourism exports, but with a largely corresponding increase in imports. However, service exports are not expected to return fully to the pre-pandemic level, one reason being that, in those years, exports were supported by large one-off building and construction projects abroad.

Overall, Danish exports are expected to increase by 6.3 per cent in 2022. The high growth rate must be seen in the light of the strong economic recovery in 2021. Over the next few years, exports are expected to increase by around 2.5 per cent in 2023 and 2024, but there is considerable uncertainty associated with growth in the export markets. Seen in isolation, Russia's invasion of Ukraine is estimated to reduce growth in exports by 1.1 percentage points in 2022 and 0.5 percentage points in 2023.

High capacity utilisation and investment plans suggest higher investments in Denmark

Chart 23



Note: The dotted purple line indicates an average. The left-hand axis is reversed.
Source: Statistics Denmark and own calculations.

Investments are characterised by uncertainty despite high capacity utilisation

The strong increase in Danish exports of goods has driven up the activity level in the manufacturing industry. Many companies report high capacity utilisation, and many companies expect to increase their investments, see chart 23. The situation is the same internationally, where, before Russia's attack on Ukraine, investments had returned to a higher level than before the pandemic in both the euro area[21] and the United States. In Denmark, corporate business loans are increasing,[22] and there is a foundation for these investments to contribute to the future growth of the Danish economy.

However, the increased uncertainty about international growth prospects is assumed to dampen investment appetite. Pressure on supply chains and shortages of materials may also dampen investments in both buildings and machinery. At the same time, building investments are already high, and there is a great shortage of labour in the construction industry.

The high energy prices may have opposite effects on private sector investments. On the one hand, increased costs could put a damper on investments, but, in turn, the incentive to convert energy sources increases. Overall, corporate investments are expected to rise by 1.8 per cent in 2022, 5.3 per cent in 2023 and 3.8 percentage points in 2024. The overall investment rate will remain relatively high in the coming years, see chart 24.

Continued solid growth in private consumption

The higher energy and food prices are eroding the incomes of Danish consumers. It weakens their purchasing power and pulls towards lower consumption in volumes. This year, consumer price increases are expected to be 3.2 percentage points higher than

21 Figures for the overall euro area are back on par, excluding investments in intellectual property rights in Ireland, which were extraordinarily high in 2019 due to single one-off investments.

22 See Danmarks Nationalbank, Rising inflation and Russian invasion have increased volatility, *Danmarks Nationalbank Analysis (Monetary and financial trends)*, no. 4, March 2022.

estimated in September 2021, which reduces real incomes. During the pandemic, however, households have built up large liquid assets. The reasons for this include disbursements of frozen holiday pay and large equity price increases. Although high energy and food prices put downward pressure on consumption, households are well equipped to resist price increases.

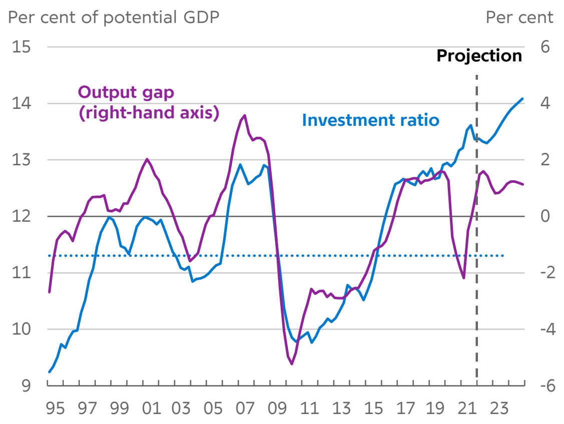
Especially the households that use gas to heat their homes are affected by high gas prices. There are just under 400,000 natural gas customers in Denmark. Overall, they have higher incomes, are homeowners to a larger extent, have slightly larger liquid assets and spend a slightly lower share of their income on consumption than other groups. These factors also indicate that the very high gas prices could have a smaller overall effect on consumption than if the cost increase had been spread across a wider group. However, there are still households that will be affected markedly by the high gas prices.

With a new geopolitical situation in Europe, economic uncertainty has increased dramatically in a short period of time. That uncertainty is likely to make some households postpone forthcoming consumption decisions. This may, for example, especially make itself felt in purchases of durable consumer goods.

In the short term, the uncertainty caused by Russia's invasion of Ukraine may drag down consumption even further, but the households still have a buffer in large wealth increases during the pandemic that can be converted into higher consumption. However, this was also the case in the years leading up to the outbreak of the pandemic, without the households significantly converting wealth increases into increased consumption. In fact, several studies also find a low propensity to consume in connection with wealth increases.[23] Since the outbreak of the pandemic, wealth increases have largely been concentrated in the housing market as well as in pension savings and ownership shares. Housing wealth and pensions are largely illiquid, while especially unlisted ownership shares are largely concentrated among high-income groups with low consumption propensity. This indicates that consumption will not outpace incomes in future, and this is probably also why the increases in wealth have not given a significant boost to the consumption rate.

The investment rate is expected to increase in future

Chart 24



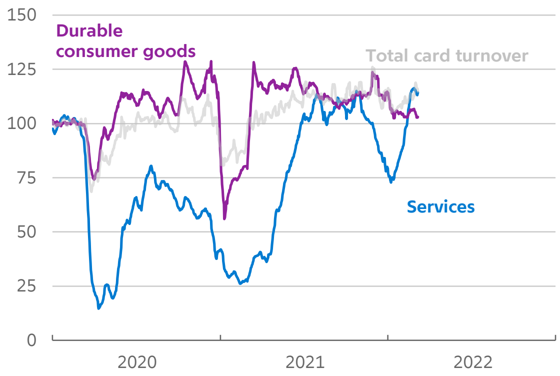
Note: The investment ratio is business investments over potential GDP. The output gap indicates the deviation of actual GDP from potential GDP, which is the long-term level of sustainable real output in the economy without creating inflationary pressures. Four-quarter moving averages.
Source: Statistics Denmark and own calculations.

Nor does payment card consumption indicate that consumption has fallen recently, but rather that it is continuing to increase. Over the winter, the total consumption was only to a lesser extent affected by high infection rates and restrictions, and card turnover is at an expected trend level in March. At the same time, there are again indications that household consumption patterns, distributed on goods and services, were about the same as before the pandemic, see chart 25.

23 Studies on Danish data find a marginal consumption propensity of around 4 per cent from unexpected wealth increases in the housing and equity markets, respectively. See Henrik Yde Andersen and Søren Leth-Petersen, Housing Wealth or Collateral: How Home Value Shocks Drive Home Equity Extraction and Spending, *Journal of European Association*, no. 19, 2021, and Asger Lau Andersen et al., Dynamic Spending Responses to Wealth Shock: Evidence from Quasi-Lotteries on the Stock Market, *CEBI Working Paper,* no. 11, July 2021.

Card turnover in Denmark only fell slightly during winter

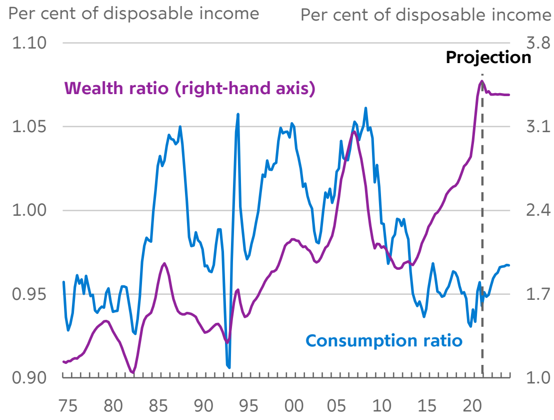
Chart 25



Note: Seasonally adjusted. Seven-day moving average. The latest data is from 7 March 2022.
Source: Nets Denmark A/S and own calculations.

Large wealth increases have not raised consumption rate in Denmark since the financial crisis

Chart 26



Note: Ratios are four-quarter moving averages.
Source: Statistics Denmark and own calculations.

The projection is therefore based on the assumption that, in the coming years, household consumption relative to household incomes will be on a par with the pre-pandemic years, see chart 26. In the coming years, household consumption opportunities will be supported by continued high employment and probably less uncertainty. Higher price increases will especially reduce real purchasing power this year, and household incomes will also be reduced by increased net interest costs. Against this background, real private consumption is expected to increase by 2.3 per cent in 2022, 1.9 per cent in 2023 and 1.8 per cent in 2024. Growth this year should be seen in the light of the rapid recovery last year, and, according to the projection, consumption will grow in line with the increase in income.

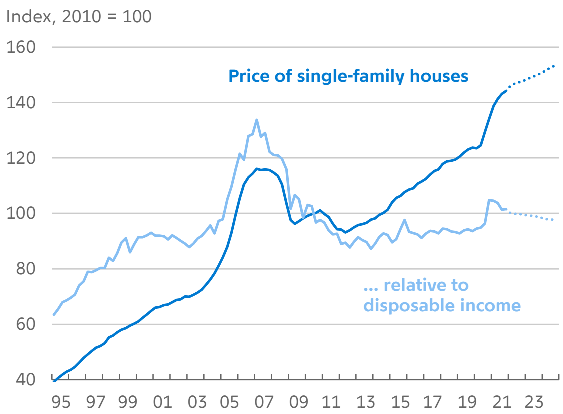
Subdued development in the housing market since summer

Since summer 2021, price increases and trading activity in the housing market have fallen from a very high level and have returned to the same level as in the years before the pandemic. In the 3rd and 4th quarters, prices of single-family homes increased by 1.3 per cent and 0.8 per cent, respectively, which is close to the average in the years 2013-19, see chart 27.

Although the rate of price increases and trading activity have returned to the pre-pandemic level, this has occurred at a significantly higher price level. The

Price increases in the housing market have slowed down

Chart 27



Source: Statistics Denmark and own calculations.

higher price level must be seen in the context of the pandemic having led many households to increase their appreciation of their homes[24] and of income also having increased significantly.

The listed supply of homes for sale remains very low, and trading activity is thus high relative to the number of homes on the market. The low listed supply is probably a consequence of the sudden increase in the appreciation of having a home during the pandemic, which brought with it great trading activity. The listed supply of homes for sale is expected to increase in the coming years as, among other things, higher prices entice sellers onto the market.

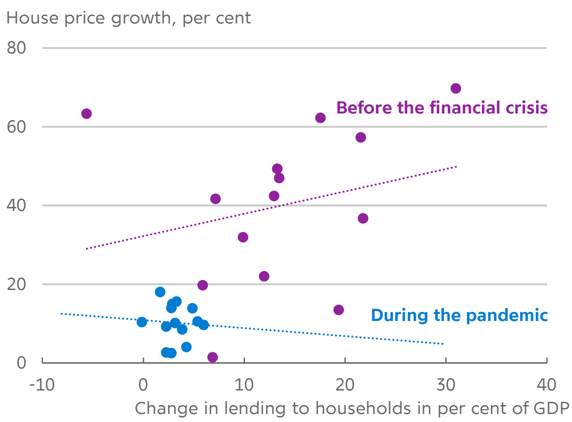
In future, house prices are expected to rise at a slower pace than in early 2021. The lower rate of price increases must be seen in the light of a number of factors, including that parts of the increased appreciation of having a home may be temporary and that higher interest rates are increasingly putting a damper on prices. Based on market expectations, long-term mortgage rates are assumed to be 1.2 percentage point higher by the end of 2024 relative to the end of 2021. Seen in isolation, these interest rate rises will dampen house prices by 3.7 per cent towards 2024.[25] Household interest rate sensitivity is generally assessed to be limited, and it has decreased over the ten years prior to the pandemic in line with a lower level of variable rate loans.[26] However, higher wage increases will increase household purchasing power, and house prices are overall expected to continue to rise by 3.6 per cent in 2022, 1.7 per cent in 2023 and 2.1 per cent in 2024.

There is still a great deal of uncertainty connected with the development in the housing market. This applies first and foremost to the extent to which households' increased appreciation of their homes will persist on the other side of the pandemic. Secondly, there is considerable uncertainty about the development in interest rates, especially if inflation proves to be more sustained in Europe.

Housing lending is still subdued and has increased by 4.6 per cent in the past year. This is in line with lending growth in the years before the pandemic and the underlying growth of the Danish economy.[27] It is an international phenomenon that lending growth to households has increased at a more modest rate than in the run-up to the financial crisis, despite large house price increases, see chart 28.

Internationally, house price growth is not currently coincident with increased indebtedness

Chart 28



Note: *Before the financial crisis* covers 1st quarter 2002 to 1st quarter 2007. *During the pandemic* covers 1st quarter 2020 to 3rd quarter 2021. The dots cover the countries Denmark, Belgium, Canada, Finland, France, Germany, Italy, Netherlands, Norway, Spain Switzerland, Sweden, United Kingdom, United States.
Source: Bank for International Settlements and own calculations.

24 See Simon Hviid et al., Housing market robustness should be strengthened, *Danmarks Nationalbank Analysis,* no. 16, June 2021.

25 Own calculations using Danmarks Nationalbank's macroeconomic model, MONA. Based on MONA and a number of other macroeconomic models, it is estimated that the pass-through from an interest rate increase to a house price increase extends over more than three years and that only about half of the pass-through has taken place within the first three years.

26 See Stine Ludvig Bech, Simon Juul Hviid and Jakob Guldbæk Mikkelsen, Measuring household interest-rate sensitivity in Denmark, *Danmarks Nationalbank Working Paper*, no. 183, November 2021.

27 See Danmarks Nationalbank, Rising inflation and Russian invasion have increased volatility, *Danmarks Nationalbank Analysis (Monetary and financial trends)*, no. 4, March 2022.

However, in the United States, where house prices have risen more than in Denmark during the pandemic, there are now signs that lending to households is increasing.

Healthy balances make Denmark more robust

Public finances have fared well through the pandemic without large deficits

Despite large relief packages to cushion the economy, public finances have come through the pandemic without large deficits and significant increases in debt.

The government budget deficit was just 0.2 per cent of GDP in 2020, and a government budget surplus of 0.1 per cent of GDP is expected in 2021. One reason for this is that the Danish economy has come through the pandemic with a lower decline in activity than other countries and that large returns in the financial markets have yielded large proceeds from pension return taxation. Added to this are tax revenues from the disbursement of holiday pay, just as the disbursement itself did not affect the government budget balance.

The surplus in 2021 should be seen in conjunction with the fact that costs for other compensation schemes were lower, and growth in the Danish economy increased tax revenue markedly. This has more than offset reduced revenues from personal taxes on frozen holiday pay, high one-off costs for compensation of mink farmers and increased public expenditure on tests and vaccinations.

> Sound public finances, large savings and a solid international investment position provide a good buffer for the Danish economy.

Gross public debt has increased since the beginning of the pandemic, but this is mainly due to liquidity relief schemes for companies that increase public sector assets, and net assets have grown from 6.3 per cent of GDP to 9.3 per cent of GDP. This is the highest amount of net assets ever.

Economic boom generates future government budget surpluses

There are prospects of government budget surpluses towards 2024. This is due to the expiry of many relief packages, a gradual tightening of fiscal policy, higher tax revenues from high employment and lower expenditure from fewer transfer income recipients. Conversely, lower proceeds are expected from the pension return tax due to higher interest rates and a weaker development in equity prices.

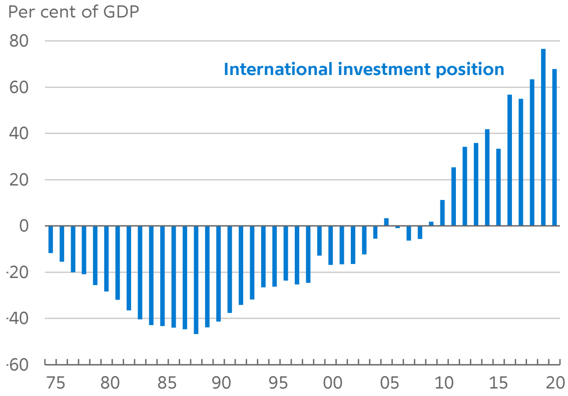
In 2022, the fiscal policy will be tightened overall by just under 1.5 per cent of GDP in terms of the one-year fiscal effect. However, most of the tightening reflects the expiry of compensation schemes. The structural balance, which disregards one-off conditions regarding the pandemic, is estimated, with the inclusion of the reserve from the National compromise on Danish security policy agreement, to be an unchanged deficit of 0.3 per cent in 2022. From 2022, there will, to a large extent, be no more costs for testing activity and vaccines, and public consumption is expected to decrease. Therefore, a government budget surplus of 1.7 per cent of GDP is expected in 2022. For 2023 and 2024, a surplus is expected of 1.6 per cent and 1.8 per cent of GDP, respectively.

Large savings surpluses in the private sector

Since the early 1990s, Danish companies have had a large savings surplus, and, since the financial crisis, savings in Danish households have increased significantly, as also shown by the low consumption rate. The government budget has fluctuated around balance since the mid-2000s, and Denmark has therefore had a marked balance of payments surplus of around 8 per cent of GDP in recent years.

The balance of payments surpluses have meant that Denmark's international investment position has grown considerably from a debt of around 40 per cent of GDP in the second half of the 1980s to an international investment position of around 70 per cent of GDP today, see chart 29. The development is especially driven by the private sector. The Danish economy is therefore in a markedly different place today than in the 1980s, when large balance of payments deficits and high foreign debt necessitated a major fiscal policy tightening to increase savings and curb the deficits.

Denmark's international investment position has increased significantly Chart 29



Note: The end of the 3rd quarter is stated for 2021.
Source: Statistics Denmark and own calculations.

There are prospects of a reduction of the balance of payments surplus to 7 per cent in 2022, one reason being that higher energy prices increase import prices. The balance of payments surplus is expected to remain at approximately 7 per cent of GDP in 2023 and 2024.

Growth prospects for Danish economy characterised by downside risks

With Russia's invasion of Ukraine, the growth prospects for the Danish and international economies have been greatly marked by downside risks. Well-upholstered households and companies a priori make the Danish economy resilient to shifts in the growth prospects of the international economy. The further course will depend greatly on the development in Ukraine, and further escalation could significantly slow down economic activity in the short term.

Right before the outbreak of the war, the risk picture in Denmark was otherwise more upward with considerable capacity pressure. Especially the combination of great pressure on the labour market and high home equities constituted a risk of a strong debt-driven consumption upswing with the risk of the economy overheating. That risk is still present, but most predominantly in the longer term.

> In a short space of time, the war in Ukraine has become a destabilising factor for the international community. Risks to growth prospects are predominantly downside, although there is great pressure on the labour market.

Downside risks pick up for growth prospects in Danish and international economies

In a short time, the war in Ukraine has become a destabilising factor for the international community, resulting in a deteriorated risk picture for the Danish and international economies. Risks have materialised repeatedly in recent weeks, and, in the nature of things, there is very high uncertainty about the further course of events in the war and the economic consequences that it entails. In the short term, there is a significant risk of further escalation of the war, and the risk scenario for the projection described in box 1 provides an example of a potential outcome and its consequences.

This projection for the Danish economy is based on an assumption that the current price pressure from energy and commodity prices, freight rates and supply problems will gradually diminish. However, the war in Ukraine also creates a significant risk that this will not happen. The longer the pressure lasts, the greater the risk of a large pass-through to wages to compensate for price increases, thus increasing the pressure on companies' costs and the price pressure in the economy. This presents significant upside risks to the development in inflation both in Denmark and abroad.

Key economic variables

Table 4

					2021		
Real growth relative to the previous period, per cent	2021	2022	2023	2024	Q2	Q3	Q4
GDP	4.1	2.1	2.1	1.7	2.3	1.2	1.1
Private consumption[1]	3.5	2.3	1.9	1.8	6.6	2.8	-2.8
Public consumption	4.3	-1.4	-0.4	1.0	4.9	-3.9	2.5
Residential investments	4.2	-3.1	1.6	1.6	-2.7	-2.3	-2.6
Public investments	6.0	1.6	13.3	-7.8	5.9	-2.0	4.9
Corporate investments	3.6	1.8	5.3	3.8	3.6	-1.5	-1.5
Inventory investments etc.[2]	0.2	0.0	0.0	0.0	-0.2	1.7	-0.2
Exports	7.5	6.3	2.5	2.5	-0.8	1.1	6.2
Industrial exports	13.1	3.6	0.6	1.8	2.1	-1.5	7.6
Imports	7.9	4.7	2.7	2.2	3.5	2.0	2.6
Employment, 1,000 persons	3.060	3.141	3.140	3.150	3.042	3.091	3.126
Gross unemployment, 1,000 persons	106	69	74	76	115	99	80
Balance of payments on current account, per cent of GDP	8.3	7.0	6.8	7.4	7.5	7.6	9.8
Government budget balance, per cent of GDP	0.1	1.7	1.6	1.8	0.7	2.2	-3.3
House prices[3], per cent year-on-year	10.9	3.6	1.7	2.1	13.4	10.6	7.6
Consumer prices (HICP), per cent year-on-year	1.9	4.9	1.4	2.2	1.7	2.0	3.5
Hourly wages[4] (manufacturing industry), per cent year-on-year	2.7	3.6	3.8	3.4	2.8	3.0	3.1

Source: Statistics Denmark and own calculations.
1. Includes both households and non-profit institutions serving households (NPISH).
2. Contribution to GDP growth (this item comprises inventory investments, valuables and statistical discrepancy).
3. Nominal prices of single-family houses.
4. Statistics Denmark's implicit wage index.

Prolonged high inflation abroad may make it necessary for central banks to raise interest rates by more, and possibly also quicker, than they currently expect to do, in order to avoid that inflation expectations are detached from the central banks' objectives. However, it is an appropriate policy response, as detached inflation expectations could otherwise necessitate a sudden and strong monetary policy tightening which risks leading to a sharp tightening of financial conditions and a derived downturn in the international economy. It will also spill over to the Danish economy, where the risks of rapid interest rate increases are especially linked to the housing market.

The pandemic may also still cause new production disruptions and thus create prolonged price pressure from energy and commodity prices, freight rates and supply problems. Although the World Health Organization (WHO) assesses that the pandemic may be coming to an end in Europe and the United States, mutations still pose a risk as long as a large part of the world's population is not vaccinated or has gained immunity through infection. In the worst case scenario, more deadly mutations could lead to another downturn in the global economy.

Continued upside risks in the slightly longer term
In the slightly longer term, increased European focus on military armament and supply independence may result in significant fiscal stimuli for the European and Danish economies. This may push demand up further.

At the same time, households in both Denmark and abroad have had large increases in wealth after high returns in the financial markets and involuntary savings during the lockdowns. This could trigger a sharp increase in consumption and boost both domestic and foreign demand. This applies especially if the war in Ukraine becomes less extensive than expected.

There is also still a risk that private consumption in Denmark will increase significantly more than expected in the projection, and that the economic boom will develop into a debt-driven upswing, even though the risk has reduced in the short term. The risk will increase if labour shortages, low unemployment, frequent job changes and sharp pay increases lead to an optimistic risk assessment in households and high consumer optimism.

Household home equity has increased markedly, and a share of the increase is typically extracted by homeowners for increased consumption and home improvements. Increased home equity extraction often occurs in connection with mortgage refinancing resulting from large interest rate changes in the mortgage market, but the experience with mortgage refinancing in periods of rising interest rates is limited. However, the rapid labour market growth increases the risk of households choosing to extract home equity for consumption. This applies especially if the war in Ukraine becomes less extensive than feared. A credit-driven consumption jump at a time when there is capacity pressure in the economy could significantly boost activity. It has previously been seen that the indebtedness of households and companies reacts to increases in house prices with a delay of 1-2 years.[28] However, recent growth in household borrowing is more a reflection of high trading activity in the housing market during the pandemic than of extraction of rising home equities.[29]

28 See Oliver Juhler Grinderslev et al., Financial Cycles: What are they and what do they look like in Denmark?, *Danmarks Nationalbank Working Paper*, no. 115, June 2017.

29 See Danmarks Nationalbank, Rising inflation and Russian invasion have increased volatility, *Danmarks Nationalbank Analysis (Monetary and financial trends)*, no. 4, March 2022.

Appendix: Assumptions in and changes of projection for the danish economy (main scenario)

The projection has been prepared using Danmarks Nationalbank's macroeconomic model MONA and is based on the available economic statistics, including Statistics Denmark's quarterly national accounts for the 4th quarter of 2021. The projection is based on statistics published up to and including 10 March 2022. The projection also includes a number of assumptions concerning the international economy, financial conditions, development in the labour force and fiscal policy.

International economy
Export market growth is assumed to be 3.8 per cent in 2022, 3.9 per cent in 2023 and 3.2 per cent in 2024. The assumptions take into account the latest forecast from the European Central Bank (ECB) and adjustments based on commodity price developments since then. Wage increases abroad are assumed to be moderate in the coming years, and price increases abroad are also assumed to be modest.

Interest rates, exchange rates and oil prices
Developments in short-term and long-term interest rates in the projection are based on the expectations of future developments that can be derived from the yield curve in the financial markets. On this basis, the 3-month money market interest rate, measured by the CITA swap rate, is expected to increase gradually throughout the projection period from its current level of -0.5 per cent in 2022 to 0.9 per cent in 2024.

In the projection, the effective krone rate and the dollar rate are assumed to remain constant at their current levels.

Energy prices are generally expected to follow the development in oil prices, which is assumed to follow futures prices during the projection period. Due to the sharp fluctuations in energy prices caused by Russia's invasion of Ukraine, the oil price has been fixed in the projection based on an average of futures prices between 4 and 10 March. In early March 2022, the oil price was around 120 dollars per barrel, and it is expected to decrease gradually to just above 80 dollars per barrel at the end of 2024.

In addition, this projection takes into extraordinary account consumer prices of energy resulting from the current situation with special developments in gas and electricity prices. Just like oil prices, gas and electricity prices are determined based on an average of the futures prices between 4 March and 10 March. On this basis, the price of gas is assumed to remain around 160 euro per MWh[30] through 2022 and then to fall to around 50 euro per MWh by the end of 2024. Correspondingly, the electricity price is expected to drop from around 300 euro per MWh to 85 euro per MWh by the end of this year and to 48 euro per MWh by the end of 2024. The price of electricity and gas is thus assumed to remain higher than in 2019.

Fiscal policy assumptions
The projection is based on preliminary national accounts data on public sector consumption and investments and the planned fiscal policy in *Economic Survey, December 2021*, and *Updated 2025 development, August 2021*.

The agreement on *Denmark can do more I* is expected to be adopted, thus increasing the structural labour force by 12,000 people. Kr. 3.5 billion has been included from the *National compromise on Danish security policy* agreement in 2022 and 2023, while the increase in defence expenditure to 2 per cent of GDP will be recognised when this has been adopted in a coming defence settlement. Expenses incurred for achievement of independence from Russian gas will also be recognised once they have been finally agreed.

30 Megawatt hours.

Overview of projection assumptions

Table A1

	2021	2022	2023	2024
International economy:				
Export market growth, per cent year-on-year	7.6	3.8	3.9	3.2
Foreign price[1], per cent year-on-year	7.8	3.8	2.0	1.7
Foreign hourly wages, per cent year-on-year	2.5	2.7	2.7	2.6
Financial conditions etc.:				
3-month money market interest rate, per cent p.a.	-0.4	-0.3	0.5	0.9
Average bond yield, per cent p.a.	0.4	1.0	1.2	1.4
Effective krone rate, 1980 = 100	103.9	101.9	101.7	101.7
Dollar exchange rate, DKK per USD	6.3	6.7	6.8	6.8
Oil price, Brent, USD per barrel	70.6	104.5	91.0	83.4
Fiscal policy:				
Public consumption, per cent year-on-year	4.3	-1.4	-0.4	1.0
Public investments, per cent year-on-year	6.0	1.6	13.1	-7.8
Public sector employment, 1,000 persons	855	852	851	855

1. Weighted import price for all countries to which Denmark has exports. The projection assumes the same growth rates for the weighted export prices in the countries from which Denmark has imports.

Changes in the projection

Table A2

Per cent, year-on-year	GDP 2022	2023	2024	Consumer prices (HICP) 2022	2023	2024
Projection from September	3.1	2.4	1.7	1.7	1.6	1.7
Contribution to revised forecast from:						
Export market growth	-0.5	-0.2	0.1	0.1	0.0	0.0
Development in interest rates	-0.1	-0.2	-0.1	0.0	0.0	0.0
Exchange rates	0.7	0.2	0.0	0.3	0.2	0.3
Oil prices	0.0	0.1	0.1	0.8	0.0	0.1
Other factors	-1.0	-0.2	0.0	2.0	-0.4	0.2
This projection	2.1	2.1	1.7	4.9	1.4	2.2

Note: The transition from the previous projection to this projection may not add up due to rounding.

On this basis, real public consumption is expected to decrease by 1.4 per cent this year and by 0.4 per cent in 2023 and to increase by 1.0 per cent in 2024. Public investments are expected to increase by 1.6 per cent this year, to increase by 13.1 per cent in 2023 and to decrease by 7.8 per cent in 2024, see table A1. The sharp increase in public investments in 2023 must be seen in conjunction with a number of factors, including that low public building and construction investments are planned in 2022, while, in technical calculation terms, the level will be high in 2023 and onwards in the latest medium-term projection, one reason being assumptions about procurement of new fighter aircraft.

Revisions in relation to the previous projection

The projected GDP growth has been adjusted downwards by 1.0 percentage points this year and by 0.3 percentage points in 2023 relative to the previous projection from September 2021. A revised assumption of the export market growth contributes to dampening growth in 2022 and 2023. This year, exchange rates are making a positive contribution to growth, but this will be offset by other factors during 2022, including price increases for oil and gas as well as increased uncertainty.

The forecast of the rate of increase in consumer prices, HICP, has been adjusted upwards by 3.2 percentage points this year and by 0.2 percentage points in 2023. Seen in isolation, the price of oil results in consumer price increases of 0.8 percentage points. Other factors contribute 2.0 percentage points and reflect that electricity and gas prices have risen by more than the normal oil price pass-through suggests. In addition, other factors also reflect the price increases caused by delivery difficulties. In the coming years, decreases in electricity prices will be reflected in a negative contribution to other factors, while higher wages will make positive contributions to inflation.

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