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Foreword

This Survey is published on the responsibility of the Economic and Development Review Committee of the OECD, which is charged with the examination of the economic situation of member countries.

The economic situation and policies of the United States were reviewed by the Committee on 10 May 2022, with participation of representatives of the United States authorities. The draft report was then revised in the light of the discussions and given final approval as the agreed report of the whole Committee on 5 October 2022.

The Secretariat's draft report was prepared for the Committee by Ben Westmore and Alvaro Leandro under the supervision of Patrick Lenain. Statistical research assistance was provided by Damien Azzopardi, and editorial assistance by Stephanie Henry, Karimatou Diallo and Ilona Janus and communication assistance by Nathalie Bienvenu. The Survey also benefitted from contributions by Tsage Douglas. Support from the government of the United States is gratefully acknowledged.

The previous Survey of the United States was issued in July 2020.

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Basic Statistics of the United States, 2021*

(Numbers in parentheses refer to the OECD average)**

LAND, PEOPLE AND ELECTORAL CYCLE					
Population (million)	331.9		Population density per km²	36.3	(38.7)
Under 15 (%)	18.2	(17.6)	Life expectancy at birth (years, 2020)	77.3	(79.7)
Over 65 (%)	17.0	(17.7)	Men (2020)	74.5	(77.0)
International migrant stock (% of population, 2019)	15.4	(13.2)	Women (2020)	80.2	(82.5)
Latest 5-year average growth (%)	0.5	(0.5)	Latest general election	Nov-2020	
ECONOMY					
Gross domestic product (GDP)			Value added shares (% 2020, OECD: 2021)		
In current prices (billion USD)	23 315.1		Agriculture, forestry and fishing	1.1	(2.6)
Latest 5-year average real growth (%)	2.1	(1.5)	Industry including construction	18.5	(27.7)
Per capita (000 USD PPP)	70.2	(50.6)	Services	80.4	(69.7)
GENERAL GOVERNMENT					
Per cent of GDP					
Expenditure (OECD: 2020)	45.2	(48.4)	Gross financial debt (OECD: 2020)	126.2	(133.3)
Revenue (OECD: 2020)	33.1	(38.1)	Net financial debt (OECD: 2020)	98.2	(81.1)
EXTERNAL ACCOUNTS					
Exchange rate (USD per USD)	1.00		Main exports (% of total merchandise exports)		
PPP exchange rate (USA = 1)	1.00		Machinery and transport equipment	30.5	
In per cent of GDP			Chemicals and related products, n.e.s.	15.4	
Exports of goods and services	10.9	(54.5)	Mineral fuels, lubricants and related materials	13.6	
Imports of goods and services	14.6	(51.2)	Main imports (% of total merchandise imports)		
Current account balance	-3.6	(0.1)	Machinery and transport equipment	39.4	
Net international investment position	-77.7		Miscellaneous manufactured articles	16.9	
			Manufactured goods	11.6	
LABOUR MARKET, SKILLS AND INNOVATION					
Employment rate (aged 15 and over, %)	58.4	(56.2)	Unemployment rate, Labour Force Survey (aged 15 and over, %)	5.4	(6.1)
Men	63.9	(64.1)	Youth (aged 15-24, %)	9.7	(12.8)
Women	53.2	(48.7)	Long-term unemployed (1 year and over, %)	1.2	(2.0)
Participation rate (aged 15 and over, %)	61.7	(60.3)	Tertiary educational attainment (aged 25-64, %)	50.3	(39.9)
Average hours worked per year	1,791	(1,716)	Gross domestic expenditure on R&D (% of GDP, 2020)	3.5	(3.0)
ENVIRONMENT					
Total primary energy supply per capita (toe)	6.3	(3.8)	CO2 emissions from fuel combustion per capita (tonnes, 2019)	14.5	(8.3)
Renewables (%)	8.0	(11.6)	Water abstractions per capita (1 000 m³, 2015)	1.2	
Exposure to air pollution (more than 10 µg/m³ of PM 2.5, % of population, 2019)	5.6	(61.7)	Municipal waste per capita (tonnes, 2018, OECD: 2020)	0.8	(0.5)
SOCIETY					
Income inequality (Gini coefficient, 2019, OECD: latest available)	0.395	(0.316)	Education outcomes (PISA score, 2018)		
Relative poverty rate (%, 2019, OECD: 2018)	18.0	(11.8)	Reading	505	(485)
Median disposable household income (thousand USD PPP, 2019, OECD: 2018)	42.8	(25.5)	Mathematics	478	(487)
Public and private spending (% of GDP)			Science	502	(487)
Health care (OECD: 2020)	17.8	(9.7)	Share of women in parliament (%)	27.6	(32.4)
Pensions (2018, OECD: 2017)	7.0	(8.6)	Net official development assistance (% of GNI, 2017)	0.2	(0.4)
Education (% of GNI, 2020)	4.4	(4.4)			

Note: * The year indicated in parenthesis if it deviates from the year in the main title of this table.
** Where the OECD aggregate is not provided in the source database, a simple OECD average of latest available data is calculated where data exist for at least 80% of member countries.
Source: Calculations based on data extracted from databases of the following organisations: OECD, International Energy Agency, International Labour Organisation, International Monetary Fund, United Nations, World Bank.

Executive summary

Inflation has risen as a strong demand recovery combined with supply constraints.

The United States economic recovery was more rapid than in most OECD countries. Unprecedented policy support combined with an early vaccination rollout allowed real GDP to recover its pre-pandemic level by mid-2021 (Figure 1). The employment recovery was stronger than those following other recent recessionary periods, but the mismatch between labour supply and demand has become pronounced. Inflation has escalated rapidly and economic activity is now slowing.

Figure 1. Economic growth is slowing after a rapid recovery

Source: OECD Economic Outlook Database

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The rise in inflation is posing significant challenges. Initially, strong domestic demand that was reoriented away from services and towards physical goods combined with limits on supply to push prices higher. More recently, inflationary pressures have broadened, with services inflation now increasing. This has been exacerbated by rising commodity prices that are partly due to Russia's war against Ukraine. While short-run inflation expectations have risen, longer-run expectations remain largely stable. Nonetheless, nominal wages are increasing rapidly, especially for lower wage workers.

OECD projections envisage annual real GDP growth in the United States of 1.5% in 2022 and 0.5% in 2023 (Table 1). Rising inflation and tightening financial conditions will further weigh on household and business spending. The resulting slowdown in domestic production is projected to be accompanied by an increase in the unemployment rate, relieving some of the upward pressure on wages. While core inflation will recede, it is expected to remain above the Federal Reserve 2% target through the end of 2023.

Risks and uncertainties are larger than usual and tilted to the downside. Inflation may prove surprisingly persistent, prompting more aggressive tightening of monetary policy by the Federal Reserve. Further disturbances to global markets in response to the war in Ukraine or other factors could also have a substantial negative impact on real GDP growth and cause even higher inflation. Another variant of COVID-19 that significantly disrupts economic activity would weaken growth, especially in those parts of the country with more limited vaccine coverage. On the upside, recent easing in supply constraints and commodity prices could contribute to a faster moderation of inflation than projected.

Table 1. Macroeconomic projections

Annual average growth, unless specified	2020	2021	2022	2023
Gross domestic product (GDP)	-3.4	5.7	1.5	0.5
Unemployment rate (% labour force)	8.1	5.4	3.7	4.3
Core inflation index	1.4	3.3	4.7	3.1
General government gross debt (% of GDP)	134.4	127.9	125.2	125.5

Source: OECD Economic Outlook Database.

Macroeconomic policies must remain responsive to changing conditions

Substantial macroeconomic policy support is unwinding. Pandemic related fiscal measures have now expired and monetary policy is being rapidly tightened. Rising cost of living pressures are posing challenges for certain vulnerable groups.

A decline in fiscal support is appropriate given elevated inflation and very low unemployment. There may be a need for new fiscal support for vulnerable households facing a dramatic increase in costs. However, any such measures should be well-targeted and temporary.

Monetary policy likely needs to be further tightened. The persistence and broadening of inflationary pressures mean that further increases in the Federal Funds Rate are necessary. Nonetheless, considerable flexibility is warranted,

and policy deliberations will benefit from careful monitoring of the impact of Russia's war against Ukraine, sanctions, other global events, production shutdowns and the tightening of financial conditions on the economy.

Asset prices are being impacted by rising interest rates and heightened uncertainty. The banking system appears to be well capitalised and profitable, but there are signs that non-bank financial institutions have become more highly leveraged. To evaluate the associated risks, better data collection is needed on non-bank entities, such as hedge funds and insurance funds.

Significant long-term fiscal challenges loom

Ageing related fiscal costs are estimated to increase by over 8% of GDP between 2021 and 2060 absent policy reforms. Spending pressures will also stem from further initiatives to strengthen the social safety net and achieve the climate transition. To eventually stabilise the public debt to GDP ratio, additional revenue and improvements to public spending efficiency will be needed.

In broadening the tax base, the first priority should be reducing tax distortions that erode revenues and have unwanted economic consequences. Reforms should include eliminating the mortgage interest tax deduction and gradually phasing out the deduction of state and local taxes from federal income tax liabilities. At the same time, tax evasion could be reduced by continuing to invest in the Internal Revenue Service, for which the additional funding in the *Inflation Reduction Act* is a good start.

There is scope to improve spending efficiency in areas such as health and infrastructure. The cost of health services and large infrastructure projects are high compared with other OECD countries. Declining competition between healthcare providers has led to rising markups which could be combatted through giving consumers more control of their data, including by introducing clear national data portability policies. Very high pharmaceutical costs could also be addressed through further expanding the number of pharmaceuticals subject to negotiation by Medicare. In undertaking infrastructure projects, there are governance challenges related to cross-sectoral planning at the national level. A dedicated federal institution tasked with ongoing cross-sectoral and cross-state infrastructure advisory would be beneficial in response.

Now is also an appropriate time to evaluate shortcomings in the policy framework highlighted by the pandemic. For instance, administrative bottlenecks and outdated systems curtailed the distribution and design of expanded unemployment insurance payments. In response, the administration is undertaking initiatives to help modernise state unemployment insurance systems. This should be seized as an opportunity to better integrate these systems with job search assistance and training schemes.

The US middle class is under pressure

Low economic mobility and rising inequality have contributed to a shrinking middle class. The income and wealth distributions have become more polarised since the 1970s and the fading of pandemic-related government support may see disparities rise further. At the same time, current costs for child care are significant for middle class households and the climate transition will entail further costs.

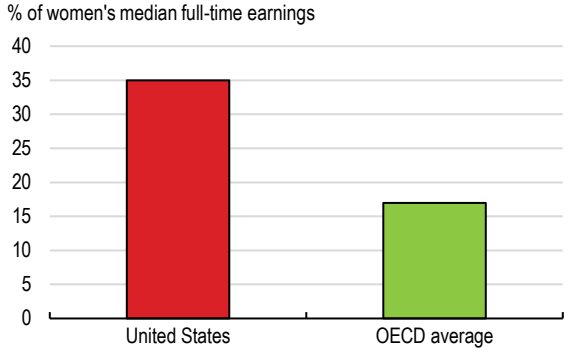
Child care affordability and enrolment is low for the US middle class, partly reflecting the scarcity of licensed child care centres in certain areas (Figure 2). Public investment in child care is below that in most other OECD countries, and most state and federal funding consists of programmes targeting low-income families. Significantly increasing public funding for child care providers, while widening the income eligibility for public programmes, would help lower the cost of child care for middle-class families and encourage enrolment.

The quality of child care is difficult to assess for families searching for care. Child care licensing, regulations and quality rating systems and their coverage differ from state to state, with some states requiring child care providers to participate in rating systems while others do not. Establishing minimum federal standards for the provision of child care (similar to Head Start Performance Standards) would ensure that all child care providers meet minimum standards set at the federal level. In addition, the Quality Rating and Improvement

System, a rating system for child care providers, could be revised and harmonised across states.

Figure 2. Child care costs are high

Child care costs for median-earning couple with two children, 2019

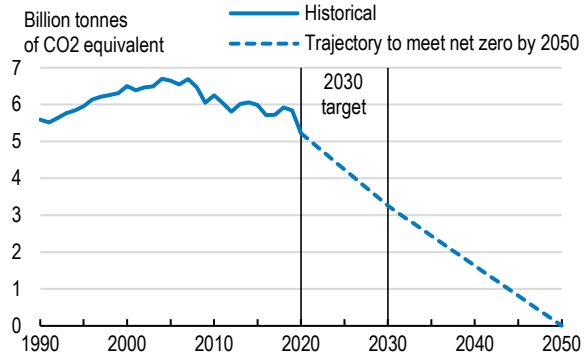


Source: OECD Tax and Benefit Models, 2019. http://oe.cd/TaxBEN

StatLink https://stat.link/5knq64

A well-balanced policy mix is needed to achieve the climate transition. The *Inflation Reduction Act* recently introduced a wide-ranging set of policies that will achieve further emission reductions. Nonetheless, further regulatory changes, green investment, structural reforms and pricing will be required over the years ahead. Largely as the result of high social, geographic and economic inequality, emissions inequality is high in the United States, meaning climate policies will have heterogeneous effects across regions, industries and households. The national climate strategy should explicitly take these inequalities and distributional effects into account.

Figure 3. Large emission reductions are needed



Source: OECD Greenhouse Gas Emissions dataset.

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While the labour market overall may not be greatly impacted by the climate transition, job losses will be concentrated in certain sectors and regions that are more reliant on fossil fuel production and may be accompanied by significant costs for households. Those regions most heavily reliant on fossil fuel production for employment and output will require a combination of place-based policies and reduced barriers to geographical and labour mobility of those affected by employment losses. Active labour market policies, local investment and R&D can help the most affected regions transition towards other activities, and will likely require state or federal funding given the hit to local public revenues.

Residential emissions will need to decline substantially in order to meet climate targets (Figure 3). The residential sector accounted for 17% of total GHG emissions in 2019. Indirect residential emissions related to the consumption of electricity generated from fossil fuels accounted for more than 60% of residential emissions in 2020. Looking forward, a suite of policy instruments should be deployed to ensure that low- and middle-income households can benefit from investment in energy efficiency and be shielded from hikes in energy prices. Programmes providing financial support and preferential lending for weatherisation and deep housing retro-fitting should be expanded to cover middle-income households at the same time as states are incentivised to update building energy standards.

Transportation was the largest contributor to total greenhouse gas emissions in the United States in 2020, accounting for 27% of the total. The light-duty vehicles used by US households were by far the largest contributor, accounting for 57% of greenhouse gas emissions from transportation. Alignment with emissions targets will essentially require all new light-duty vehicles to be zero-emissions in the 2030s. Accelerating the tightening of fuel efficiency and tailpipe CO_2 standards will be important to incentivise the proliferation of electric vehicles.

MAIN FINDINGS	KEY RECOMMENDATIONS
Ensuring a sustained recovery in output and jobs	
Monetary policy has begun to tighten. Elevated inflation and convergence to full employment will likely require further tightening of monetary policy.	Continue to raise the Federal Funds Rate and further reduce asset holdings, with the pace of normalisation remaining highly responsive to changes in economic conditions.
There are signs that institutions in the non-bank financial sector have become more highly leveraged and have significant exposure to leveraged loans that have experienced declining credit quality. However, assessment of non-bank risks is complicated by data limitations.	Improve data collection on the activities of non-bank financial institutions, including hedge funds and life insurance companies.
The pandemic-related fiscal measures announced in 2020 and early 2021 have now expired. Even so, earlier stimulus checks, supplementary unemployment benefit payments and expanded benefit coverage, have resulted in accumulated savings that could continue to support consumer spending in the short-term.	Further reduce the fiscal deficit while continuing to invest in combatting climate change and improving the social safety net.
Expansions in unemployment insurance eligibility and benefit amounts during the pandemic were accompanied by significant delays in processing claims in most states. In addition, outdated software systems placed limitations on the design of supplementary unemployment benefits.	Continue to modernise and streamline unemployment insurance systems, strengthening integration with job search assistance and training schemes.
To eventually stabilise the public debt to GDP ratio, additional revenue and improvements to public spending efficiency will be needed. Mortgage interest tax deductibility and the state and local tax deduction push up property prices, disproportionately benefit high-income families and have limited economic justification.	Phase out regressive distortions from the tax code, including the mortgage interest tax deduction and state and local tax deductions. Reduce tax evasion by investing further in the Internal Revenue Service.
Improving public spending efficiency	
Enabling greater data portability by consumers may promote competition and opportunities for young high potential firms. However, there is a patchwork of sectoral and state-level data protection laws with data portability requirements.	Identify opportunities for introducing data portability policies at the national level and give regulators an active role in supervising interoperability standards.
Substantial ageing related fiscal pressures are on the horizon. Pharmaceutical prices are much higher than in most OECD countries, pushing up public spending. The passage of the *Inflation Reduction Act* will mean Medicare will be able to directly negotiate pharmaceutical prices with manufacturers, but this will only be for a small subset of available drugs.	Consider further expanding the number of pharmaceutical drugs subject to negotiation by Medicare.
Infrastructure gaps are being addressed through the legislated *Infrastructure Investment and Jobs Act*. Particular governance challenges relate to cross-sectoral planning at the national level and public procurement processes.	As in other OECD countries, establish a dedicated federal institution tasked with ongoing cross-sectoral and cross-state advisory about infrastructure priorities and best practices.
Addressing key policy challenges for the middle class	
Enrolment in childcare in the United States is low compared with other advanced economies, especially for low and middle-income households. Net child care costs are among the highest in the OECD, largely reflecting low public investment. Underfunding results in low participation in existing programmes.	Significantly increase public funding for childcare and expand the levels of income eligibility for public programmes.
Childcare quality across different centres is difficult to assess for families searching for care. High turnover of childcare staff, partly due to low pay, reduces quality given the importance of developing relationships between children and care-givers.	Establish minimum federal standards for child care and implement a tiered quality rating system that is consistent across states and that accounts for differences across types of providers.
Total greenhouse gas emissions have steadily fallen since 2004, driven by a shift in the energy mix. Nevertheless, emissions intensity remains one of the highest in the OECD and needs to decline significantly to achieve emission reduction targets. Largely as the result of high social, geographic and economic inequality in the United States, emissions inequality is high and climate policies can have differentiated effects across regions, industries and households. Jobs in fossil fuel and energy intensive industries are geographically concentrated and are often held by middle class households.	Make use of a broad range of climate mitigation policies to meet emission reduction targets, including regulation, public investment and carbon pricing. Develop a national climate strategy that explicitly takes into account emissions inequalities and the redistributive and regional effects of climate policies. Raise public expenditure on active labour market policies, with a focus on job placement and cost-effective retraining policies.
The residential sector accounts for 15% of total GHG emissions. Reductions in household emissions will be key to achieving overall emission targets. Achieving these emissions reductions by significantly increasing the energy efficiency of housing will be costly for households. Residential building energy codes vary significantly across states, and some do not have state-wide codes.	Further expand existing weatherisation and retro-fitting programmes to cover middle-income households. Provide fiscal incentives for states to update their building energy codes.
Transportation was the largest contributor to total GHG emissions in the United States in 2020, accounting for 27% of total GHG emissions. Alignment with emissions targets will require all new light-duty vehicles to be zero-emissions in the 2030s.	Accelerate the tightening of fuel efficiency and tailpipe CO_2 standards.

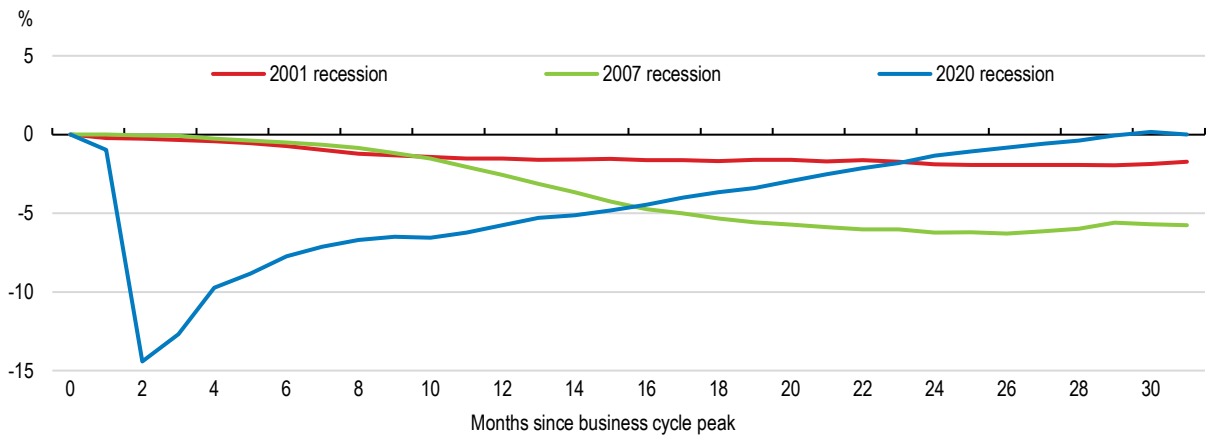
1. Introduction

The United States, along with other OECD countries, is facing considerable uncertainty at present. Just when some of the supply-chain challenges triggered by the pandemic had started to fade, Russia's war against Ukraine has inflicted a new negative supply shock on the global economy. Although direct trade and financial linkages of the United States with Russia and Ukraine are limited, there are impacts on global markets that are having considerable flow on effects for domestic inflation and output.

Prior to the outbreak of Russia's war against Ukraine, the United States economy had rebounded strongly from the depths of the pandemic. The scale of both the health and economic shock necessitated a large and enduring government response, with macroeconomic policies playing an important role in stabilising the living standards of the population. Compared with past recessions, the economic recovery was remarkable: real gross national income had bounced back above its pre-pandemic trend level by the end of 2021 and the labour market recovery has been notably stronger than in earlier episodes (Figure 1.1).

Figure 1.1. The economic shock was abrupt but the recovery was strong

Non-farm employment, percentage change from business cycle peak



Note: Business cycle peak taken from the National Bureau of Economic Research.
Source: BLS; OECD calculations.

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Even so, the legacies of the pandemic are visible. There have been over 900,000 deaths associated with COVID-19 and many more who remain sick or caring for someone with the virus. Job losses were largely concentrated in lower wage sectors, which disproportionately include minorities. Macroeconomic imbalances have become more apparent in various areas, with higher inflation, elevated asset prices, the persistent external deficit and rising public debt. These developments have exacerbated complex pre-

existing policy challenges posed by rising inequality, an ageing population and the need to transition to a less emission-intensive economy.

The United States administration is keenly aware of these challenges. A strong emphasis is being placed on narrowing the polarised distribution of income and wealth, investing in physical infrastructure, supporting the green transition and lifting opportunities for minority groups. With the flexible and highly innovative nature of its economy, the United States is well placed to tackle these priorities and to take advantage of the structural shifts in the global economy that may be a legacy of the pandemic.

Against this backdrop, the main messages of this *Survey* are:

- The economic recovery from the pandemic was rapid and the unwinding of cyclical support from macroeconomic policies is appropriate. Inflationary pressures have risen sharply and need to be tackled through more restrictive macroeconomic policy. Nonetheless, continued targeted and temporary fiscal support may be needed to cushion the impact of Russia's war against Ukraine on vulnerable groups.
- Fiscal pressures will mount in the face of an ageing population, the climate transition and a desire to further strengthen the social safety net. The associated costs should be primarily met by broadening the revenue base and improving spending efficiency in areas such as health and infrastructure spending.
- A hollowing out of the income distribution over the past few decades has resulted from the comparatively weak disposable income growth of middle-income households. Reducing childcare costs for this group can boost disposable income and allow greater labour force participation. At the same time, policies that assist with the rising costs associated with the climate transition and facilitate new jobs for those in carbon intensive industries will be needed.

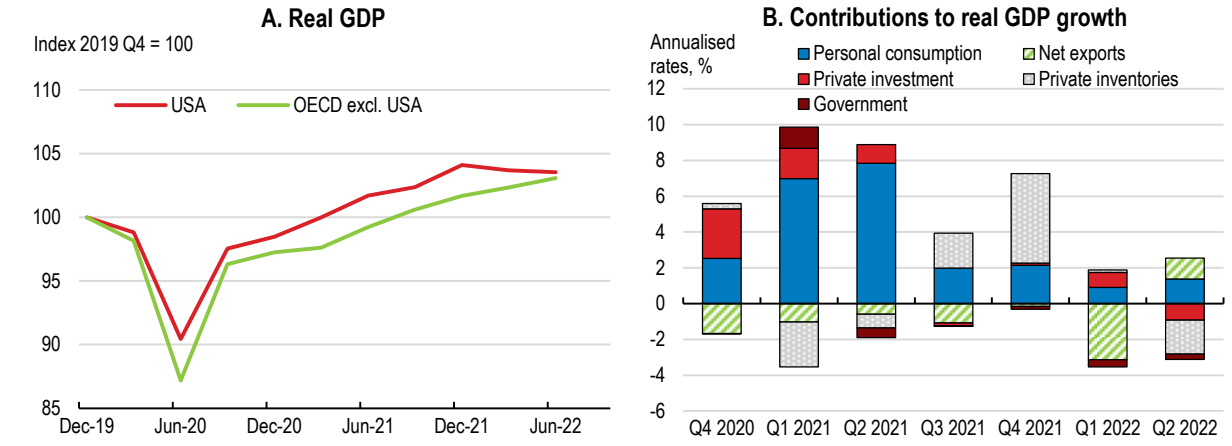
2. Key Policy Insights

The United States economy rebounded strongly from the depths of the pandemic recession, aided by a large and enduring government policy response. However, Russia's war against Ukraine and strong inflationary pressures have dampened the economic outlook. The administration is reinforcing public welfare through packages that invest in infrastructure and the climate transition, but an ageing population means fiscal pressures are on the horizon. In response, further efforts should focus on both broadening the tax base and improving public spending efficiency. For instance, stronger governance of infrastructure projects at the federal level would ensure that new spending has the highest societal return. Establishing a federal institution to provide ongoing cross-state and cross-sectoral advisory about infrastructure priorities and best practices would be beneficial in this regard. There is also substantial scope for improving health spending efficiency, including through further efforts to reduce the very high cost of pharmaceuticals and reforms that promote greater competition between health providers.

Economic growth has weakened following a robust economic recovery

Economic activity is now slowing notably, following a very rapid recovery through the pandemic. Unprecedented policy support combined with a rapid vaccination rollout (see Box 2.1) allowed real GDP to recover its pre-pandemic level by mid-2021 (Figure 2.1, Panel A). Subsequently, the recovery continued to progress, notwithstanding disruptions caused by supply chain issues and resurgences in COVID-19 infection rates. Real GDP contracted in the first half of 2022, largely reflecting declining inventories and net exports. Personal consumption continued to expand (Figure 2.1, Panel B), though recent indicators suggest that spending activity has slowed further in recent months.

Figure 2.1. The economy is slowing following a strong rebound



Source: Bureau of Economic Analysis; OECD Economic Outlook Database.

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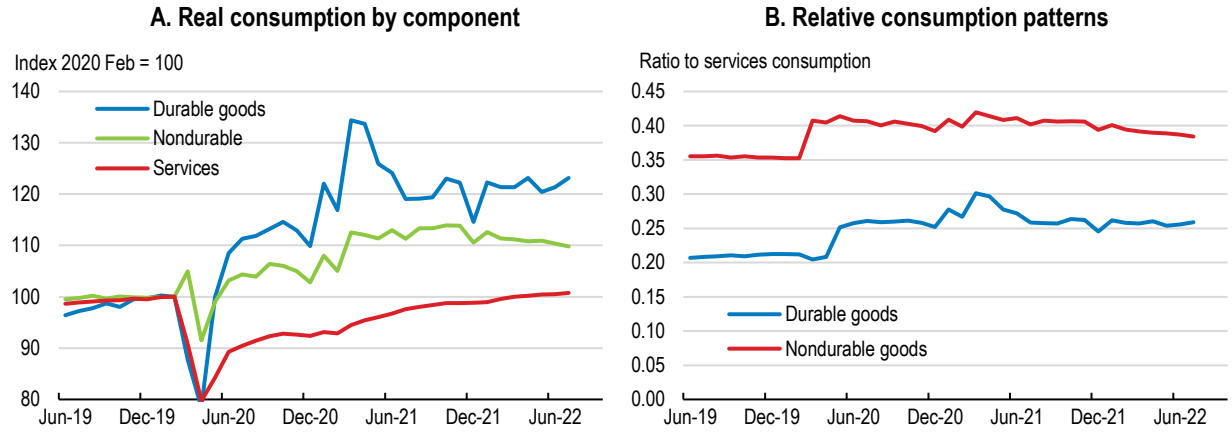
Consumer spending patterns continue to be skewed towards goods. Durable consumption rebounded rapidly through 2020, as fiscal stimulus combined with restrictions on face-to-face interactions prompted consumers to ramp up purchases of items such as motor vehicles and household furniture. Strong growth in durable good spending was observed in households across the income distribution. Over time, services consumption has gradually recovered as restrictions loosened and new strains of COVID-19 were resisted by increasing levels of partial immunity (Figure 2.2, Panel A). Even so, the ratio of both durable and non-durable goods to services consumption remains above pre-pandemic levels (Figure 2.2, Panel B). The reorientation of spending towards physical items through the pandemic led to supplier delivery times for manufacturers increasing to the highest levels on record through the second half of 2021, despite the number of containers processed at domestic ports being at unprecedented heights (Board of Governors of the Federal Reserve System, 2022a).

Figure 2.2. Non-services consumption remains elevated



Source: Bureau of Economic Analysis.

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There have been divergent investment trends through the pandemic. Heightened adoption of digital technologies prompted sustained investment in software and other intellectual property assets (Figure 2.3, Panel A). Dwelling investment surged following the initial wave of the pandemic, with spending driven by

pent-up housing demand, low interest rates, accumulated savings and a shift towards greater working from home. However, supply chain issues have underpinned weaker investment in various assets in recent quarters. Investment in housing and non-residential structures have been impacted by rising interest rates and shortages of construction materials. Similarly, shortages of some transport equipment have impinged upon machinery and equipment spending.

Government spending is now a drag on economic activity, with support introduced during the pandemic having now unwound (Figure 2.3, Panel B). Supplementary unemployment benefits and nutrition assistance programmes expired in most states in mid-2021 and the expanded child tax credit expired at the end of the year. There are still some transfers from Federal to State and Local governments, as well as loans to businesses, that are yet to be fully spent and some households still hold accumulated savings from earlier fiscal support. However, these will only partially offset the fiscal drag. The passage of the *Infrastructure Investment and Jobs Act* (see Issues Note 1) will push public investment slightly higher in 2022 and 2023, but the ten-year investment horizon of the plan means that the annual contribution to overall GDP growth will be quite modest. Overall, fiscal policy will subtract from economic growth in 2022, but fiscal spending will remain higher than it would have based on extrapolating the pre-pandemic trend.

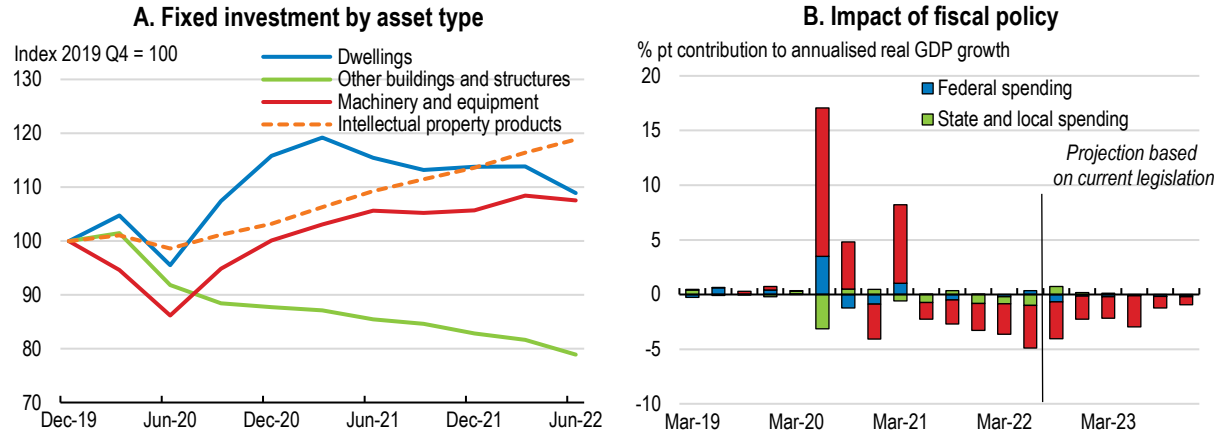
Box 2.1. Vaccinating against COVID-19 in the United States

The United States was a frontrunner in the rollout of COVID-19 vaccination. By the end of June 2021, 55% of the population had received at least one vaccination dose, some 10 percentage points above the OECD average. However, since mid-2021, the pace of vaccinations has slowed. This has been underpinned by significant heterogeneity in vaccination rates across states: while 86% of the 65+ population in Vermont has now received a booster dose, this is only the case for 39% of the 65+ population in North Carolina. Comparatively low vaccination rates are a factor that may explain the relatively high death rate from COVID-19 during the Omicron wave in the United States compared to other high income OECD countries.

Various factors have been cited for relatively low vaccine coverage in the United States. The uninsured population are less likely to be vaccinated and the United States has a much larger proportion of people without coverage than in other OECD countries (10% compared with less than 2% in the average OECD country). The *Household Pulse Survey* showed around a 20 percentage point gap between the vaccination rate of those with and without some type of health insurance. Less engagement with medical practitioners by the uninsured is one reason for this disparity. More limited sick leave entitlements in the United States may also dissuade some workers from being vaccinated in fear of side effects that keep them home. Lower income workers are underrepresented in vaccination uptake and "possible side effects" is the primary reason given for their reluctance in the *Household Pulse Survey*. This highlights the importance of demand-side factors, with some making the conscious choice not to be vaccinated. There is evidence that political affiliation is relevant in predicting vaccination status (Kaiser Family Foundation, 2021). Significant misinformation has also played a role, with one study finding that 78% of adults had heard at least one of eight different false statements about COVID-19 and either believed it to be true or were uncertain whether it was true or false (Hamel et. al. 2021).

Independent primary care practices have had limited engagement in the vaccine campaign so far (Klein and Hostetter, 2021), but they could be increasingly leveraged to support vaccine uptake. Most unvaccinated individuals cite their doctor's office as the preferred location for vaccination. Around 15% of unvaccinated respondents to a large-scale national survey noted they would be more inclined to be vaccinated if their health care provider recommended it to them (Ratzan, et al., 2021). Boosting primary care capacity to administer vaccines should be a focus of further attempts to increase vaccine uptake. This may require resources for training and technical assistance, as well as tools to ensure that accurate information is being disseminated in a consistent manner across jurisdictions (Lewis, et. al., 2021). There are operational barriers that also need to be addressed. These include reducing the burden of reporting and packaging vaccine doses into smaller units, while also ensuring processes are consistently followed that reduce wastage. Furthermore, as new variants emerge, the authorities will need to continue providing updated guidance to both healthcare professionals and the public on the benefits of staying up to date on vaccinations to maintain adequate protection.

Figure 2.3. Investment has recently weakened and fiscal policy support has been scaled back



Source: Bureau of Economic Analysis; Brookings Institution Hutchins Center on Fiscal and Monetary Policy.

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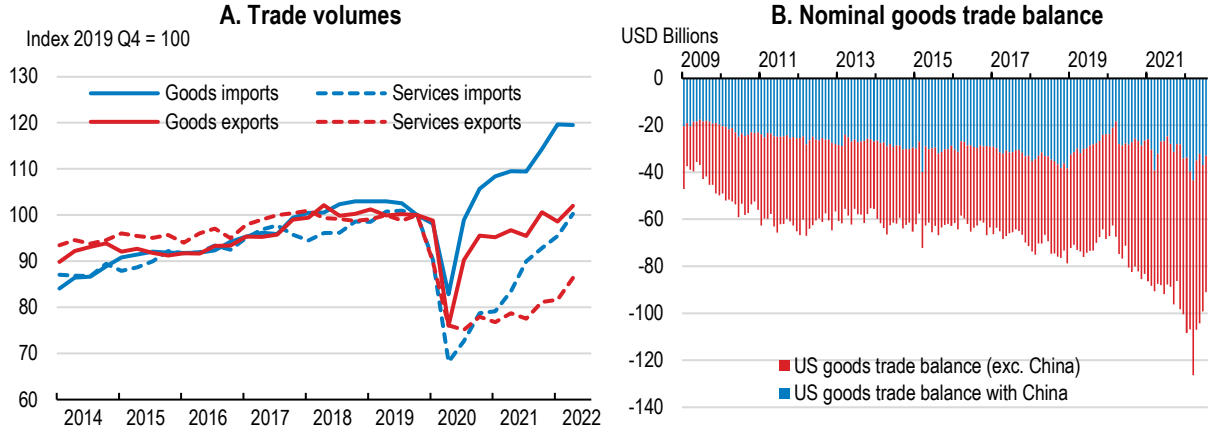
Export activity has been gradually recovering with the abatement of supply constraints (Figure 2.4, Panel A). Goods exports were 2% above the December 2019 level by mid-2022. Services exports picked up in November 2021 with the reopening of US borders to vaccinated travellers and have continued to recover. Strong domestic goods consumption drove a noticeable import recovery, pushing the trade deficit higher (Figure 2.4, Panel B). The recent appreciation of the US dollar may also weigh on exports, given a high share are invoiced in US dollars.

Bilateral trade with China is an important determinant of the overall trade balance. The US-reported trade deficit with China has declined slightly since 2018 (Figure 2.4, Panel B), potentially reflecting trade restrictions enacted in recent years. There is some evidence that this has led to trade diversion, with US imports from countries such as Vietnam subsequently picking up (Bandyopadhyay and Bharadway, 2019; Choi and Nguyen, 2021). In addition, underreporting by producers as they attempt to evade tariffs may bias downwards the bilateral US-China trade deficit reported in the United States (Clark and Wong, 2021). Whilst there may be an incentive for overreporting by Chinese exporters (given an increase in export VAT tax rebate rates during the period), China's reported bilateral trade surplus with the United States continued to expand in recent years (ibid).

Figure 2.4. The export recovery has been slow relative to imports



Source: Bureau of Economic Analysis; OECD Economic Outlook Database.

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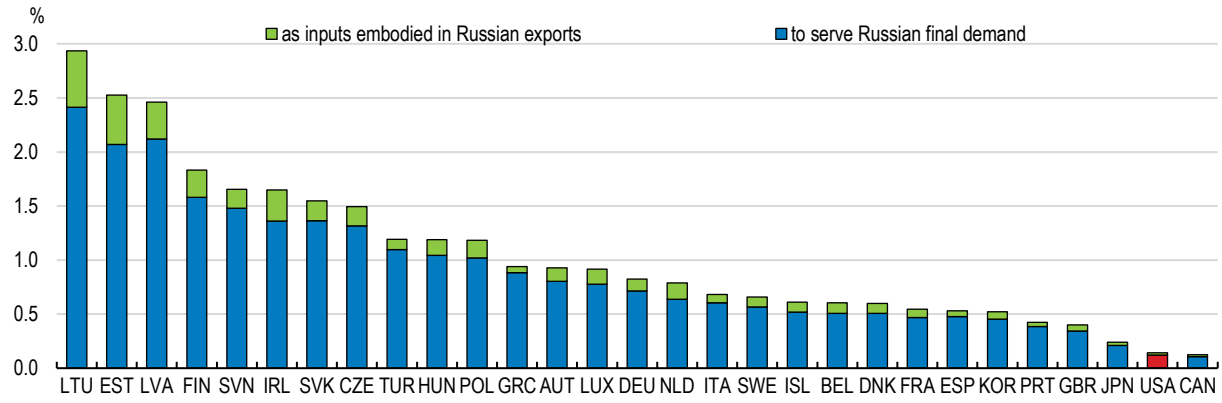
There are trade implications of Russia's war against Ukraine and subsequent sanctions on Russia for certain sectors of the economy. Russia is currently the 26th largest goods trading partner of the United States (Figure 2.5). Notable bilateral exports from the US have included machinery and transport vehicles, while major imports have included mineral fuels, precious metal, steel and fertilisers. Energy dependence on Russia is low overall, as just 3% of crude oil imports and 1% of total crude oil processed by US refineries derives from Russia and the United States is a net exporter of natural gas. Nonetheless, there are some parts of the country, such as Hawaii, which have historically relied to a larger extent on imports of Russian energy. There are also potential vulnerabilities in some other commodities. The US imported 15% of its uranium from Russia on average in the 2017-21 period (nuclear power accounts for about 10% of US primary energy supply). Russia is also a key supplier of palladium, used in catalytic converters for cars, and nickel, used in steel production and the manufacture of batteries (OECD, 2022). Russia and Ukraine are also sources of inert gases such as argon and neon, used in the production of semiconductors, and large producers of titanium sponge, used in aircraft (ibid.).

There may be scope for the United States to ramp up production of some commodities to fill gaps in global supply. Indeed, the administration announced in March 2022 that it would attempt to increase liquefied natural gas exports to the European Union by 15 billion cubic metres by the end of the year. It now appears that they will overachieve this goal. The United States became the largest exporter of liquified natural gas in the world in the first half of 2022, with 39 billion cubic meters exported to Europe. If this pace of increase were to be maintained, the rise in exports to the European Union would be around 45 billion cubic meters in 2022 (i.e. three times the pledge of the administration). This owes to a rise in export and liquefaction capacity investments as well as diversion of exports from other countries. As the second largest exporter of wheat in the world, behind Russia, the US could also fill gaps in global wheat supply. However, drought conditions contributed to lower wheat supply in 2021. Minimising logistical and regulatory hurdles to further raising wheat exports will be critical for supporting global food supply.

Figure 2.5. Trade links with Russia are limited

Domestic value added exported to Russia (both directly and indirectly), 2018, percentage of countries' total value added



Source: TiVA indicators, 2021 edition; and OECD calculations.

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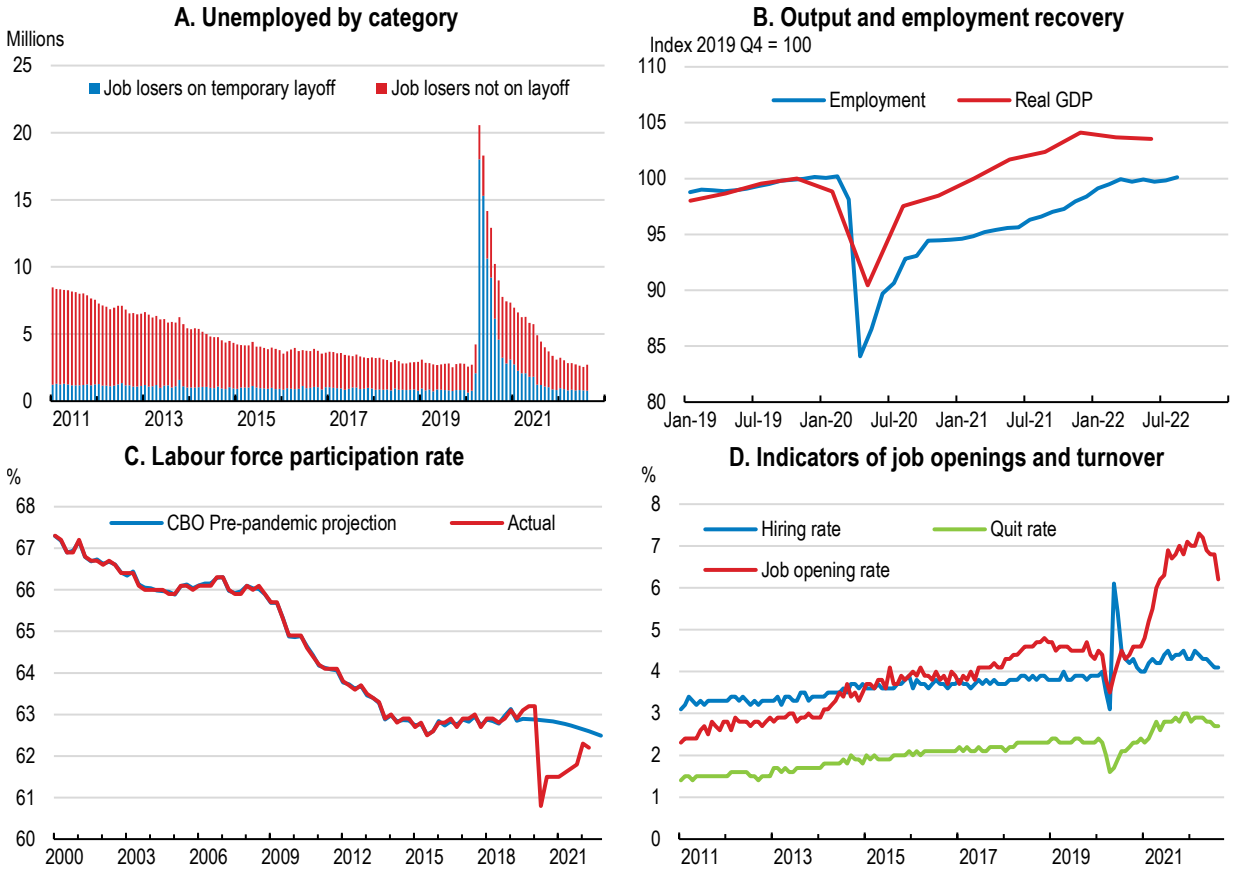
The labour market remains very tight

Employment gradually recovered following the massive labour market shock at the onset of the pandemic. The number of workers on temporary layoff is now back around pre-pandemic levels after spiking through the first half of 2020 (Figure 2.6, Panel A). The employment recovery was weaker than that for economic activity (Figure 2.6, Panel B), with various pandemic-impacted sectors such as food services and accommodation yet to recover their pre-pandemic employment levels. This largely reflects issues with labour supply, with some of the workers who left the labour force during the pandemic having not returned (Figure 2.6, Panel C). The participation rate also declined significantly in the years immediately following the financial crisis. Employers have struggled to reach and maintain desired staffing levels as a consequence. While the job opening rate has fallen in recent months, it remains at levels that are significantly higher than in the pre-pandemic period and well above the hiring rate (Figure 2.6, Panel D). As a result, labour market conditions remain very tight.

Figure 2.6. Employment has recovered and the labour market is tight



Note: Related to Panel C, updated population controls for 2022 shifted the labour force participation rate higher in January 2022.
Source: Bureau of Labor Statistics; Bureau of Economic Analysis. The job openings rate is the number of job openings on the last business day of the month as a percent of total employment plus job openings.

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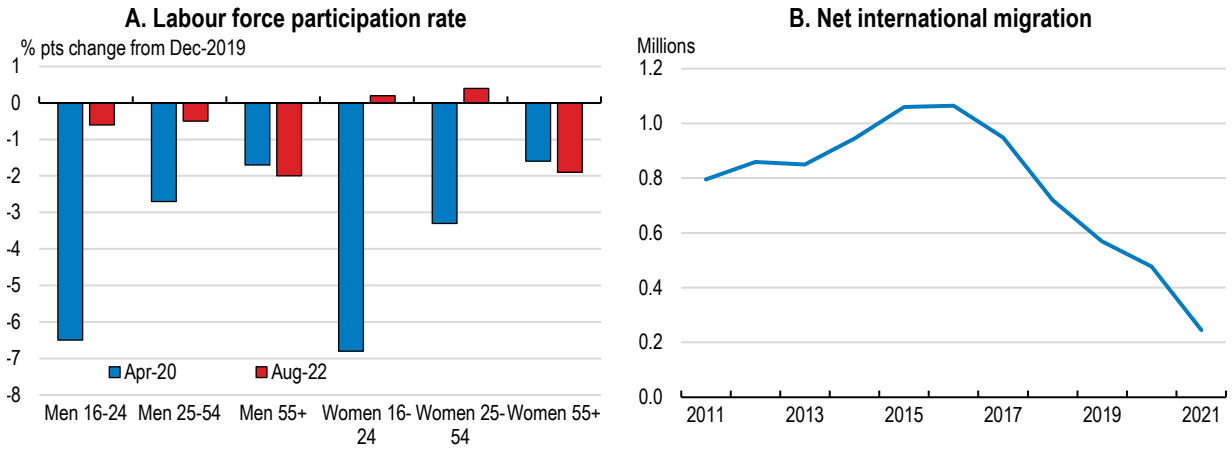
The decline in the labour force participation rate mostly reflects a decline in the participation rate of older workers (Figure 2.7). In particular, there has been a fall in the share of existing retirees transitioning back into the labour force (Nie and Yang, 2021). A continued decline in immigration, from a combination of the pandemic along with pre-pandemic policies, has also weighed on labour supply and the participation rate

as a relatively high share of immigrants are working age (Figure 2.7, Panel B). The Council of Economic Advisers estimate that the labour force would have been about 550,000 larger in January 2022 if immigration had followed its pre-2019 trend (Council of Economic Advisers, 2022). Concerns about contracting COVID-19 may have kept some from returning to work, especially those previously in face-to-face industries with heightened transmission risk.

The direct health impacts of COVID-19 may have also reduced the ability to work for some individuals. The American Academy of Physical Medicine and Rehabilitation estimated that around 11 million Americans were living with "long COVID-19" in 2021. Around 13% of non-retired respondents to the Household Pulse Survey who were not working in February 2022 (amid the Omicron wave) cited either being sick with COVID-19 or caring for someone with COVID-19 as the reason. Offsetting this was an increase in participation by disabled workers, which may have been enabled by the increase in telework opportunities since the onset of the pandemic. In recent months, as COVID-19 cases have remained low relative to early 2021, the proportion of individuals being held back from work by COVID-19 has fallen. By August 2022, only 4% of the non-retired respondents not working when they took the Household Pulse Survey cited being sick with COVID-19 or caring for someone with the virus as the reason.

Figure 2.7. Older cohorts have experienced a decline in labour force participation



Source: Bureau of Labor Statistics; and Census Bureau population estimates.

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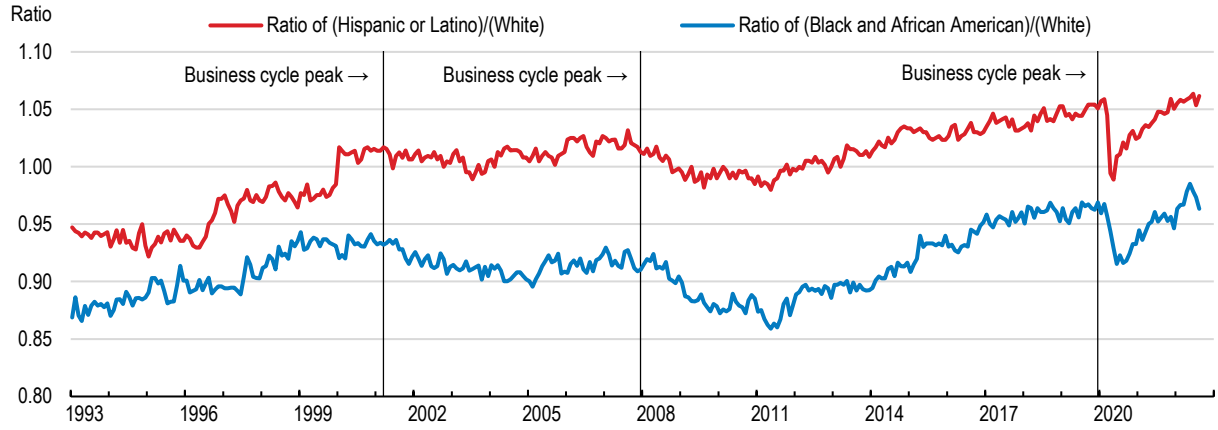
The employment impacts of past recessions have been disproportionately felt by selected racial groups. The previous two recessions were followed by a more significant decline in the employment to population ratio of Black and African American workers compared to the white population (Figure 2.8). The labour market gradually became more inclusive at later stages of the recovery during these episodes, but it took some time. Fortunately, such disproportionate racial impacts have been less persistent during the pandemic downturn. The relative employment to population ratio of Black and African American workers (to the white population) fell very sharply at the onset of the pandemic, but had recovered its pre-pandemic level by the second half of 2021. Nonetheless, as at August 2022, the employment to population ratio of Black and African American workers remained over 2 percentage points below that of white workers and around 6 percentage points below that of Hispanic or Latino workers. In that context, further public investment in training and employment services that more successfully integrate this racial group into the labour market should be a priority.

Figure 2.8. Disparate labour market impacts between races have been less persistent

Relative employment to population ratios, by race



Source: Bureau of Economic Analysis.

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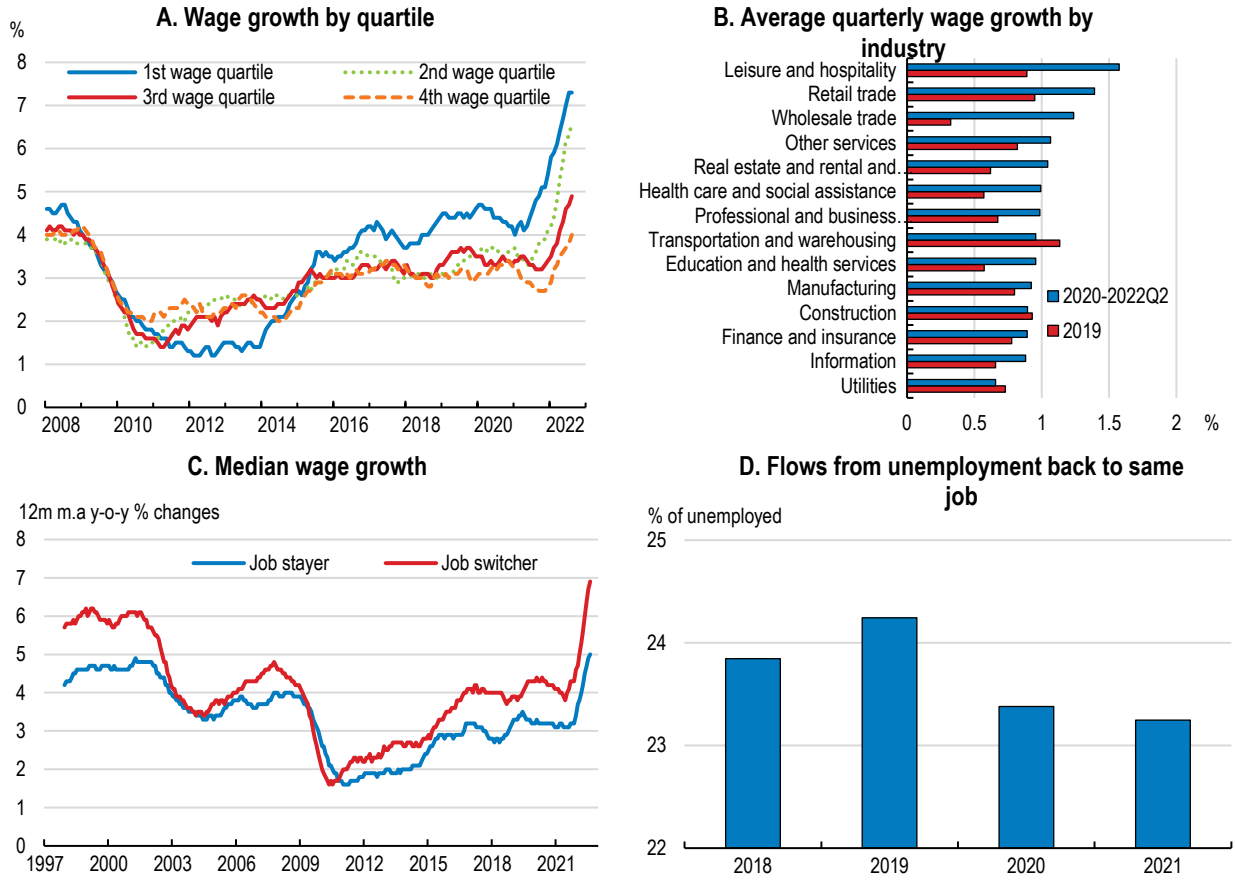
Tightening conditions in the labour market, combined with high price inflation, have translated into stronger wage growth. This has been especially the case for lower wage workers. In contrast to the period following the financial crisis, wage growth of the lowest quartile of wage earners has been rising rapidly (Figure 2.9, Panel A). This reflects large wage gains in industries that typically have a high share of low wage workers such as leisure and hospitality and retail trade (Figure 2.9, Panel B). Job switchers are being rewarded through particularly strong wage growth (Figure 2.9, Panel C) and there is some evidence of stronger rates of labour reallocation relative to the pre-pandemic period. For example, a lower proportion of those moving from unemployment back into jobs returned to their previous job through the pandemic (Figure 2.9, Panel D). There has also been a notable increase in the quit rate that has been associated with strong labour demand (Box 2.2).

Figure 2.9. Lower wage workers are experiencing particularly rapid increases



Note: Panel A shows 12 month moving average of monthly median wage growth for each average wage quartile. Wages are computed on an hourly basis. Panel B is based on nominal wages and salaries for private industry workers. Panel D, shows the proportion of people moving from unemployment back to employment in the same job that they had prior to the bout of employment. It is expressed as a percentage of unemployment in the previous period.
Source: Federal Reserve Bank of Atlanta; Bureau of Labor Statistics.

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Increases to statutory minimum wages have also pushed aggregate wages higher. This has been due to actions by the states, with minimum wages increasing in 25 states in 2021 and 28 states in 2022. In the United States system, the state minimum wage will apply if it is above the federal minimum wage level. A proposal by the administration to raise the federal minimum wage from US$7.25 (where it has been since 2009) to US$15 per hour has not passed Congress. Analysis by the Congressional Budget Office highlights that such a reform would have some negative impact on employment, but would reduce poverty overall and raise the real family income of all but the highest income households (CBO, 2021a).

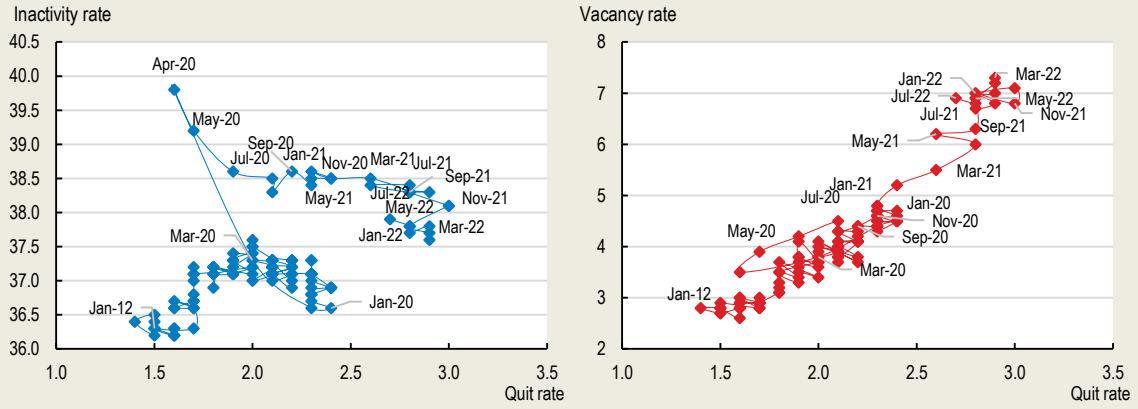
Box 2.2. The Great Resignation: Pull or Push?

After remaining below pre-pandemic levels for over a year during the first year of the pandemic, quits reached record highs in the second half of 2021 in the United States, prompting talk of a "Great Resignation". Increases in quits have been recorded in almost all sectors, but have been particularly pronounced in low-pay service industries such as leisure and hospitality. Quits were also more common among young workers and racial/ethnic minorities groups (Parker and Horowitz, 2022). Outside of the United States, the evidence of a significant increase in quits is more limited. In the United Kingdom, quit rates are unusually high, while in Germany and France quit rates returned to pre-crisis levels.

In principle, rising quit rates could reflect supply-side (i.e. "push") factors, for example due to a pandemic-induced shift in preferences over wages and working conditions, or demand-side (i.e. "pull") factors, due to the expansion of job opportunities and their quality. There is limited evidence of supply side factors eroding the United States labour force: the inactivity rate has broadly continued its steady decline since April 2020 while quit rates increased (Figure 2.10, Panel A). Furthermore, the vast majority of those who quit their job in 2021 found a new job without significant difficulties (Parker and Horowitz, 2022). Instead, the increase in quits mainly reflects the unprecedented rebound of economic activity coupled with a surge in job vacancies (Figure 2.10, Panel B). In the United States, vacancy and quit rates approximately doubled, from a low in April 2020, when the labour market had come to a virtual standstill, to mid-2022. Significant increases in vacancy rates were also observed in many other OECD countries for which data are available (e.g. Australia, Austria, Canada, New Zealand, the United Kingdom, and Switzerland).

Figure 2.10. Resignations have been triggered by the rebound in economic activity

Share of employment, seasonally adjusted



Note: Inactivity rate: the number of inactive persons as a percent of employment, quit rate: the number of quits during the entire month as a percent of total employment, vacancy rate: the number of job openings as a percent of by the sum of employment and job openings.
Source: Bureau of Labor Statistics.

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The surge in vacancies partly reflects a catch-up effect, as firms and workers pursue hiring and job-moving decisions that were placed on hold. In countries that made limited use of job retention schemes to preserve jobs – like the United States – the rebound was particularly robust due to the need to re-fill positions temporarily closed after the various waves of the pandemic. However, the surge in job vacancies was also fuelled by the strong growth in demand observed in the second half of 2021, amid significant government support. In addition, mounting wage pressures represented another pull-factor that is likely to have contributed to the rise in quits.

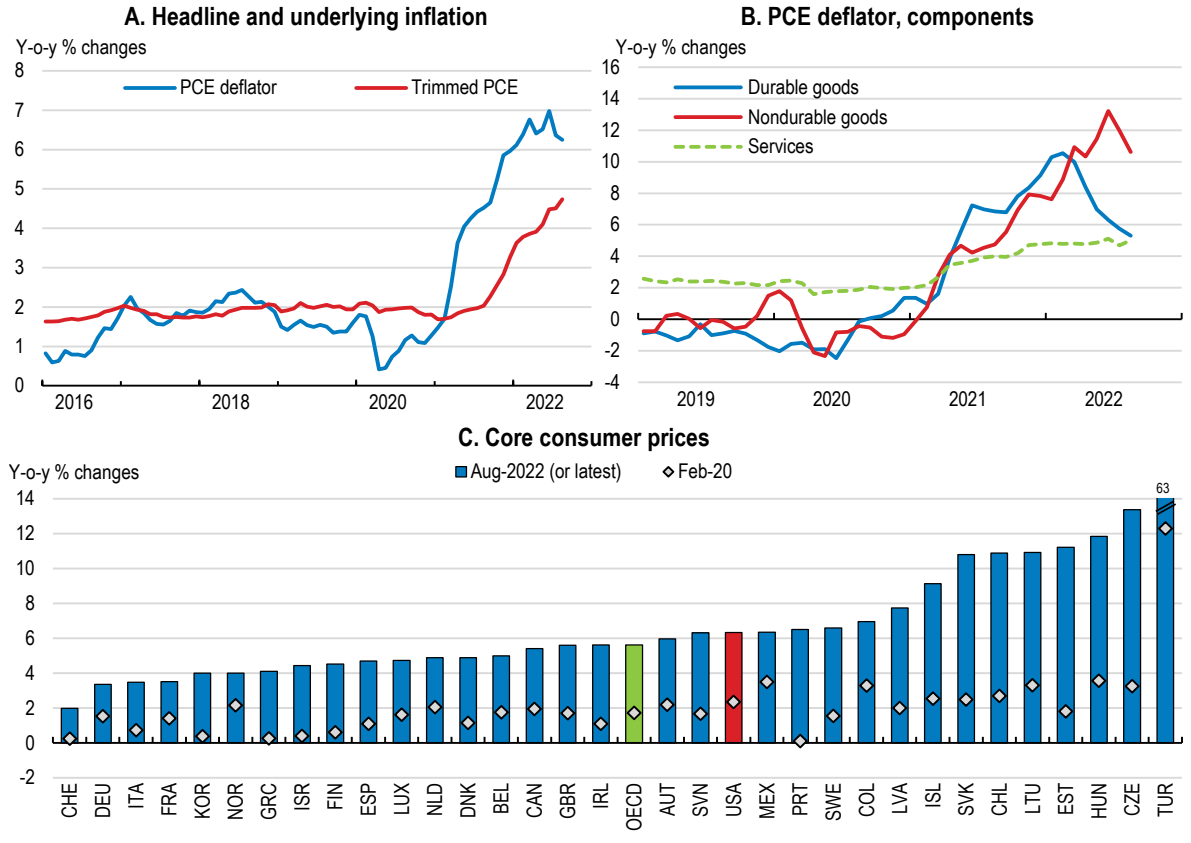
Source: Chapter 1 of OECD Employment Outlook 2022. This contribution was received from the OECD Directorate of Employment, Labour and Social Affairs in the context of the implementation of the OECD Jobs Strategy. The Jobs Strategy goes beyond job quantity and considers job quality and inclusivenss as central priorities, while emphasising the importance of resilience and adaptability for good economic and labour market performance in a changing world of work. For further details see http://www.oecd.org/employment/jobs-strategy/

Inflationary pressures have broadened

The combination of supply shortages and strong consumer demand that unexpectedly pivoted towards goods consumption has contributed to higher consumer price inflation over the past year. Russia's war against Ukraine has also pushed up energy and food prices, exacerbating inflationary pressures. The Personal Consumption Expenditure deflator rose 6.2% over the year to August 2022 (Figure 2.11, Panel A). Indicators of underlying inflation have also increased, with the trimmed mean measure published by the Federal Reserve Bank of Dallas rising at an annual rate of 4.7%. Even so, a cross country comparison of consumer price inflation excluding food and energy prices highlights a number of OECD countries with currently higher inflation rates (Figure 2.11, Panel C).

The pick-up in inflation in the United States was initially most notable for durable and non-durable goods. Particularly fast growing price growth was observed for motor vehicles. Indeed, calculations by the Council of Economic Advisers highlight that inflation, excluding new and used cars, was broadly similar in the United States and the euro area in 2021 (Council of Economic Advisers, 2022). However, home furnishings, food and beverages and gasoline were other categories of goods that also experienced a notable rise in inflation in the United States. Over time, services inflation also began to rise, with sequential price growth in services further accelerating in 2022 (Figure 2.11, Panel B). Prices in transport, housing and utilities, food services and accommodation, professional services, personal care and clothing services and household maintenance services all rose by above 5% over the year to August 2022. This suggests a broadening of price pressures, with services accounting for well over 50% of the personal consumption basket.

Figure 2.11. Inflationary pressures have broadened



Note: In Panel A, the Trimmed Mean PCE inflation rate is published by the Federal Reserve Bank of Dallas and is an alternative measure of core inflation in the price index for personal consumption expenditures.
Source: Federal Reserve Bank of Dallas; Bureau of Economic Analysis; and OECD Analytical Database.

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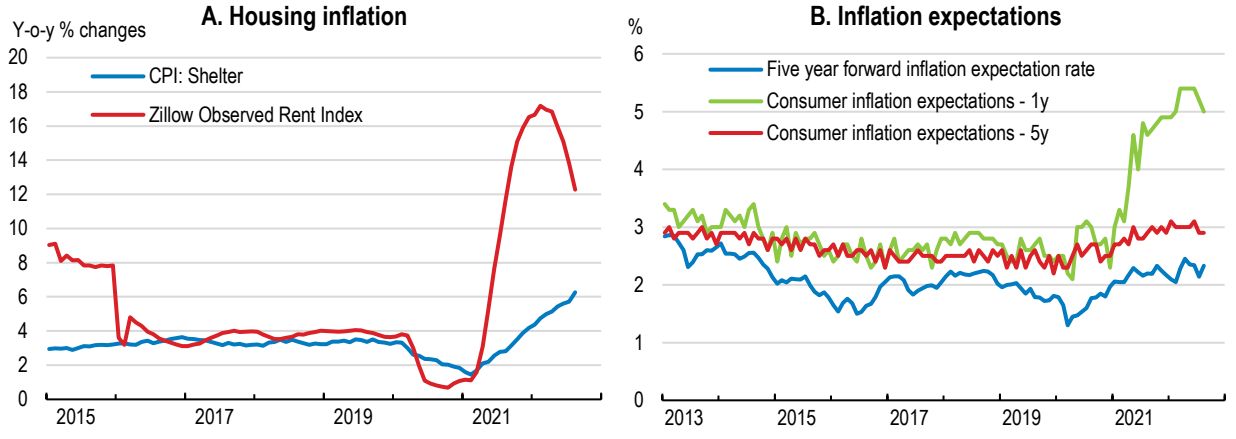
Housing has begun to increasingly contribute to services inflation. The two largest components of residential services, owner's equivalent rent of residence and rent of primary residence, have a large combined weight in inflation aggregates; around 30% in the Consumer Price Index (CPI) and 15% in the PCE deflator. The shelter component of the CPI has accelerated, rising 6.2% over the year to August 2022 (Figure 2.12, Panel A). Indicators of market rent – which can significantly lead official inflation measures given only a small share of housing turns over in each period – picked up swiftly but have now begun to ease. Still, the Zillow Observed Rent Index rose by 12.3% over the year to August 2022, suggesting that housing rents will continue to contribute significantly to inflation for some time.

Agricultural and energy commodity prices were boosted by Russia's war against Ukraine but have recently moderated. Wheat and other crop prices rose strongly through first half of the year before falling. Similarly, retail gasoline prices rose by 50% in the first six months of 2022 before declining by around 30% in subsequent months. In response to rising gas prices, some state governments temporarily suspended state gas taxes (e.g. Connecticut, Georgia, Maryland) and the Federal administration announced the release of strategic oil reserves.

Measures of short-term inflation expectations have risen sharply in response to rising inflation (Figure 2.12, Panel B). Nonetheless, longer-term inflation expectations remain stable, despite having drifted up slightly over the past year. The prospect of persistent inflation has translated into cost of living adjustments in some major union contracts, in order to maintain workers purchasing power. Low rates of unionisation in the United States limit the macroeconomic implications of such adjustments, but they signal workers' and firms' expectations. The impacts of higher inflation will have disparate impacts depending on household consumption patterns. In 2021, the Bureau of Labor Statistics published experimental estimates that incorporated the diverse consumption baskets of households at different points in the income distribution (Klick and Stockburger, 2021). That work highlighted that inflation for the lowest income quintile has moderately outpaced that for the highest income quintile over the past two decades. Given the relevance for policymakers, these estimates could be further refined with a view to publishing them on a regular basis.

Figure 2.12. Long-term inflation expectations remain contained



Note: In Panel B, the measures of consumer inflation expectations are from the University of Michigan Consumer Sentiment Survey.
Source: Bureau of Labor Statistics; Zillow Research; and Refinitiv.

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Economic growth will slow further

The pace of GDP growth is anticipated to weaken further. Real GDP is projected to grow by 1.5% in 2022 and 0.5% in 2023 (Table 2.1). Rising inflation has eroded purchasing power of households and will combine with tightening financial conditions to further crimp spending plans across the economy. With the notable slowing in domestic production, the pressure in the labour market will begin to be relieved: the unemployment rate is projected to rise above 4½% by the end of 2023. Wage growth will moderate in response. The further reorientation of domestic demand back toward the services sector should help attenuate supply shortages, though the ongoing impacts of Russia's war against Ukraine and COVID-related lockdowns in China may linger for some time. Price pressures will recede, but core inflation is projected to remain materially above the Federal Reserve 2% target at the end of 2023. The recent broadening of inflationary pressures increases the risk that sustained higher prices eventually cause long-term inflation expectations to become de-anchored.

Risks to the growth projections are immense and tilted to the downside. Inflationary pressures may prove surprisingly persistent, prompting more aggressive tightening of monetary policy by the Federal Reserve. With fiscal support now having been wound back, this could particularly impact indebted firms in sectors that were heavily impacted by the pandemic or supply chain issues. Further disturbances to global markets in response to Russia's war against Ukraine could also have substantial negative impacts. Another variant of COVID-19 that significantly disrupts economic activity would weaken growth, especially in those parts of the country with more limited vaccine coverage. On the upside, recent easing in supply chain bottlenecks and commodity prices could contribute to a faster moderation in inflationary pressures than is currently projected.

Table 2.1. Growth and inflation are projected to ease

	2019	2020	2021	2022	2023
	Current prices USD billion	Percentage changes, volume (2012 prices)			
GDP at market prices	21 372.6	-3.4	5.7	1.5	0.5
Private consumption	14 428.7	-3.8	7.9	2.3	0.5
Government consumption	2 973.9	2.0	1.0	-1.0	0.4
Gross fixed capital formation	4 492.6	-1.5	6.1	0.9	0.9
Final domestic demand	21 895.2	-2.5	6.5	1.5	0.6
Stockbuilding[1]	73.6	-0.5	0.3	0.7	-0.1
Total domestic demand	21 968.8	-3.0	6.9	2.3	0.5
Exports of goods and services	2 519.7	-13.6	4.5	6.1	3.2
Imports of goods and services	3 116.0	-8.9	14.0	10.0	2.6
Net exports[1]	- 596.3	-0.3	-1.4	-0.8	0.0
Memorandum items					
GDP deflator	_	1.2	4.2	6.9	3.4
Personal consumption expenditures deflator	_	1.2	3.9	6.2	3.4
Core personal consumption expenditures deflator[2]	_	1.4	3.3	4.7	3.1
Unemployment rate (% of labour force)	_	8.1	5.4	3.7	4.3
Household saving ratio, net (% of disposable income)	_	17.1	12.7	6.3	7.8
General government financial balance (% of GDP)	_	-15.4	-11.8	-3.6	-3.9
General government gross debt (% of GDP)	_	134.4	127.9	125.2	125.5
Current account balance (% of GDP)	_	-3.0	-3.7	-4.3	-4.3
Output gap (% of potential GDP)	_	-5.2	-1.5	-1.8	-3.1

1. Contributions to changes in real GDP, actual amount in the first column.
2. Deflator for private consumption excluding food and energy.
Source: OECD Economic Outlook database (September 2022).

There are various other lower probability vulnerabilities that could have a substantial impact on the economic outlook if they were to transpire (Table 2.2). These include deeper US involvement in a military conflict, a large-scale cyber attack in the United States or a ratcheting up of trade tensions with some major trading partners that amplify uncertainty and hamper economic policy processes. A large and catastrophic natural disaster, potentially linked to climate change, would also have substantial impacts on the economic outlook.

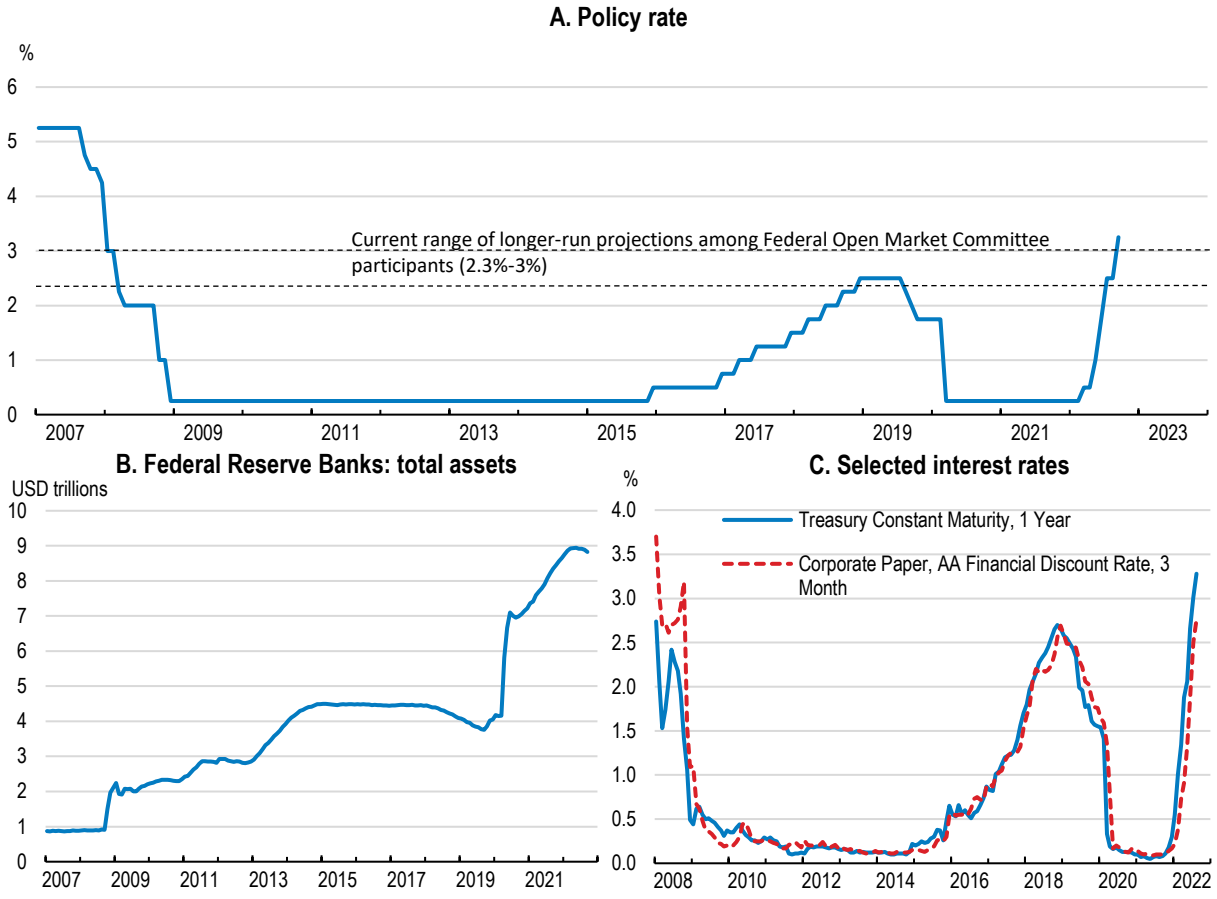
Table 2.2. Events that could lead to major changes in the outlook

Shock	Likely impact	Policy response options
The emergence of a new variant of COVID-19 with increased transmissibility or severity of disease.	A substantial further wave of cases with potentially increased severity of case numbers could put health systems under strain. In turn, this could lead to the imposition of new restrictions for the public.	Reintroduce well targeted fiscal support for businesses or individuals adversely impacted by new restrictions. Draw from the evidence gathered from earlier waves about the most effective interventions for containing the virus at least cost.
Further ramping up of trade tensions with export partners.	The further imposition of bilateral trade restrictions with a major trading partner, such as China, could dent the pace of economic recovery.	Move towards reductions in bilateral trade restrictions. Further explore the potential for trade diversion to other export markets in certain items.
A large and catastrophic natural disaster linked to climate change and other environmental degradation.	A series of extreme weather events could materially lower economic activity in certain sectors and may have significant costs in terms of property damage, the health and wellbeing of the population.	Participate actively in multilateral efforts to curb emissions and lower the rise in global temperatures. Undertake pre-emptive measures to strengthen resilience in addition to crisis and response scenarios. If such an event occurs, provide targeted fiscal support. Coordinate effectively between levels of government to swiftly establish a coherent government policy response.
Military conflict involving US forces	A subsequent increase in military spending could result in public expenditure being diverted from other programmes or an increase in public debt. Depending on the location, a significant military conflict could also result in supply disruptions that push inflation higher.	Continue to buttress public finances through reforms that broaden the tax base. Develop trade diversion strategies based on various conflict scenarios.
Large-scale cyber attack	A cyber attack could disrupt business operations or shutdown domestic infrastructure vital for the functioning of the economy.	Invest further in cybersecurity, with the central government playing a coordinating role.

Monetary policy is being rapidly tightened

The Federal Open Market Committee is now rapidly normalising monetary policy settings in response to the surge in inflation. The Federal Funds Rate has been lifted by 3% since the hiking cycle began at the March 2022 meeting (Figure 2.13, Panel A and B) and central bank holdings of Treasury securities and agency debt and agency mortgage-backed securities are being reduced. Market interest rates have risen sharply, reflecting both actual policy decisions and the expectation of further monetary policy tightening ahead (Figure 2.13, Panel C). Even so, elevated inflation has meant that real market interest rates remain low relative to estimates of the neutral real interest rate, even if the latter has declined somewhat in recent years (Aronovich and Meldrum, 2021).

Figure 2.13. Interest rates have risen sharply



Source: Refinitiv.

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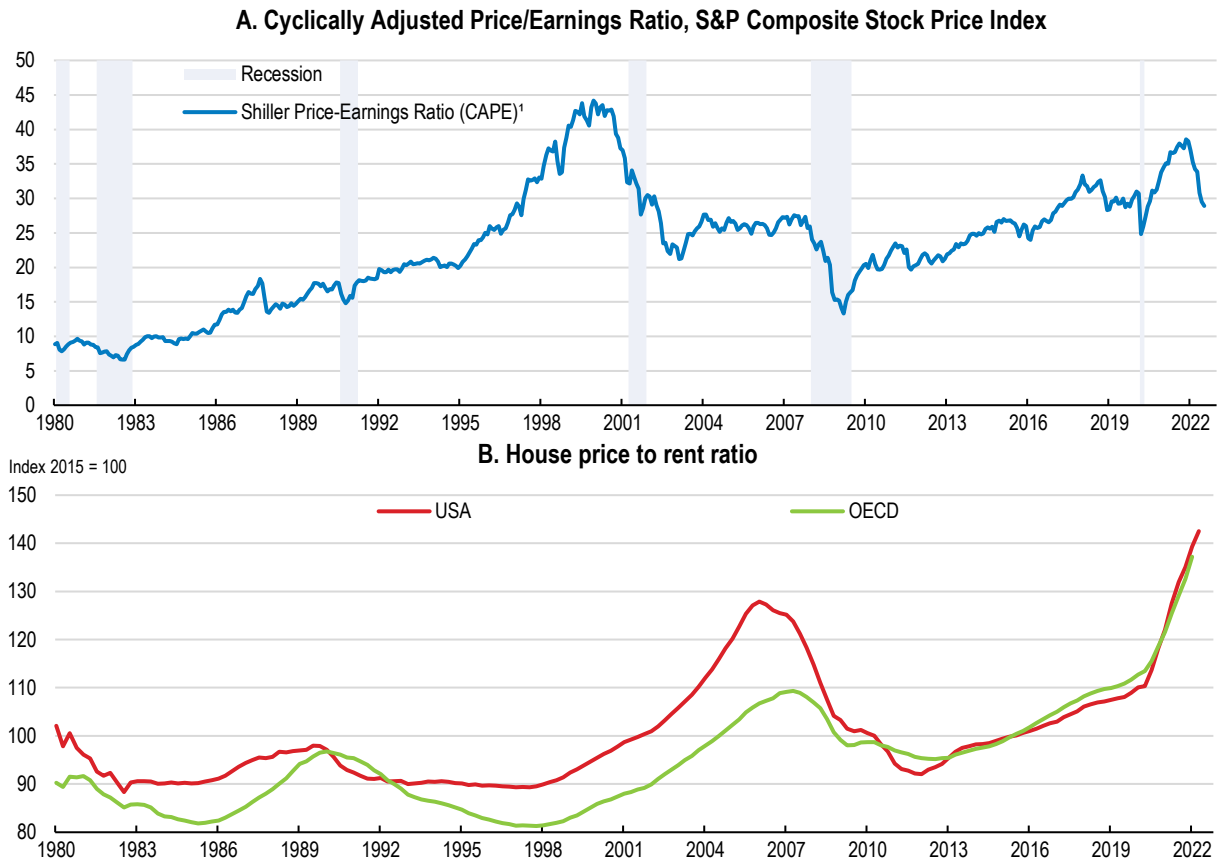
Equity market indices have recently fallen, after recording substantial gains in the low interest rate environment (Figure 2.14, Panel A). House prices also rose strongly through the pandemic, with the aggregate house price to rent ratio elevated (Figure 2.14, Panel B). States in the West of the country experienced particularly rapid house price growth, including Arizona, Utah, Idaho, Montana and Nevada. At this stage, there is little evidence of deteriorating credit standards or highly leveraged investment activity in the housing market. Even so, asset prices remain vulnerable to a decline in investor risk sentiment and the rise in mortgage interest rates. Since early 2022, the Fannie Mae Home Purchase Sentiment Index has shown a steady decline in the net share of consumers who expect home prices to increase. Any sharp decline in asset prices may further weaken economic activity through wealth effects. Post-meeting statements of the Federal Market Open Market Committee typically note that financial developments are taken into account in the assessment of the appropriate stance of monetary policy.

Figure 2.14. Asset prices rose markedly through the pandemic



Source: Panel A shows the Cyclically Adjusted Price Earnings Ratio (CAPE, P/E10). In Panel B, the price to rent ratio is the nominal house price index divided by the housing rent price index.
Source: Refinitiv; and OECD Analytical Database.

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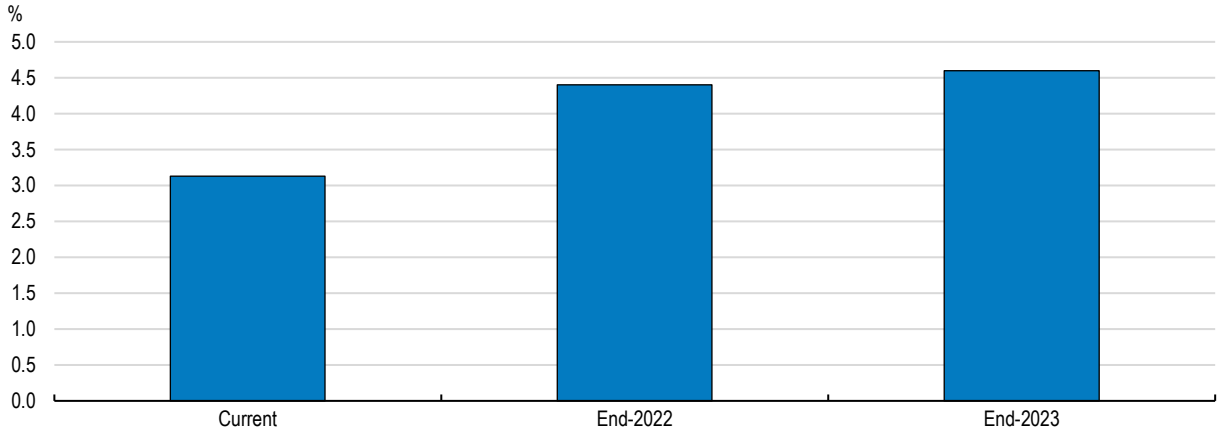
Further tightening of monetary policy is warranted

A flexible approach to monetary policy deliberations is required at the current juncture. Policy decisions should continue to abstract from a temporary spike in commodity prices resulting from Russia's war against Ukraine and carefully monitor the impact of sanctions, production shutdowns and the tightening in financial conditions on the pace of the output recovery. Nonetheless, further tightening of monetary policy is likely to be needed in order to achieve the committee's objectives (See Box 2.3), given strong underlying inflationary momentum. The primary means for adjusting the stance of monetary policy should continue to be through the Federal Funds Rate, as foreshadowed by the Committee (Board of Governors of the Federal Reserve System, 2022b). Based on the current economic outlook, the Federal Funds Rate should be further lifted at the meetings in late 2022 and early 2023, though flexibility is warranted given the currently high level of uncertainty. In September 2022, the median Federal Open Market Committee participant expected the Federal Funds Rate to rise to the target range of 4¼-4½% at end 2022 and 4½-4¾% by end 2023 (Figure 2.15). As of September 2022, Federal Open Market Committee participants' estimates of the long-run Federal Funds Rate were in the 2.3-3% range.

Figure 2.15. A significant increase in the Federal Funds Rate is foreshadowed

Federal Open Market Committee participants' assessment of appropriate Federal Funds Rate, median value (%)



Note: Taken from the Summary of Economic Projections of 21 September 2022.
Source: Board of Governors of the Federal Reserve System.

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The committee is also continuing to reduce asset holdings of Treasury securities and agency debt and agency mortgage-backed securities in the System Open Market Account. Elevated inflation means that the reduction in the size of the balance sheet should be more rapid than during the 2017-19 period of balance sheet reduction. Balance sheet reduction will primarily be achieved by only reinvesting principal payments from securities to the extent that they exceed monthly caps. The initial balance sheet reduction has occurred in two steps. For Treasury securities, the cap was set at US$30 billion per month for the first three months before increasing to US$60 billion per month from September 2022. For agency debt and mortgage-backed securities, the cap was set at US$17.5 billion per month and rose to US$35 billion per month from September 2022. The impact of this process on financial markets should continue to be carefully monitored, given it entails private sector balance sheets absorbing more of the net increase in Treasury and agency mortgage-backed security issuance. Monetary policy normalisation may have implications for those emerging market economies that have experienced strong capital inflows during the period of low US interest rates. This may be especially the case for those countries with relatively high levels of dollar denominated debt, such as Chile and Colombia (Canuto, 2021). The accompanying appreciation in the US dollar may also push inflation higher in those major trading partners that have a high share of imports invoiced in US dollars.

Box 2.3. Changes to the United States monetary policy framework

The framework for conducting monetary policy was updated in August 2020, following a comprehensive and public review. Consistent with the Federal Reserve's statutory mandate, monetary policy objectives are to remain price stability and maximum employment, but key changes to the framework were outlined. These included:

- The adoption of a flexible average inflation targeting regime whereby the committee seeks to achieve inflation that averages 2% over time. The implication is that following periods of inflation running persistently below 2%, policy will aim to achieve inflation moderately above 2% for some time.
- An adjustment to the employment goal, so that monetary policy responds to "shortfalls of employment from its maximum level" rather than the previous "deviations from its maximum level". This suggests the committee will not pre-emptively tighten monetary policy when unemployment is approaching estimates associated with maximum employment if not accompanied by signs of inflationary pressures.
- An update to the framework that views full employment as a "broad-based and inclusive goal" and is consistent with evidence that hot labour markets in the United States disproportionately benefit disadvantaged groups (Aaronson, et. al., 2019; Carpenter, et. al., 2022).
- Updates to the strategy statement explicitly acknowledging the challenges for monetary policy in a persistently low interest rate environment.

The committee intends to review its monetary policy strategy, tools and communication practices every five years. Looking forward, some aspects of the new framework could be further clarified. These include the period over which actual inflation is averaged to judge performance against the target and the factors that are taken into account in determining whether a broad-based and inclusive level of full employment has been achieved.

Financial stability risks remain significant given the high degree of uncertainty

The 2008 financial crisis highlighted the importance of well-functioning U.S. financial markets to global finance. At this time of elevated uncertainty, ensuring financial stability risks are well managed is essential. The financial system weathered the pandemic shock well. Dysfunction in credit markets at the onset of the pandemic prompted the Federal Reserve to introduce a suite of new liquidity facilities (OECD, 2020b) that were discontinued in late 2020 or early 2021 as the economic recovery took hold. Nonetheless, pockets of risk have emerged as interest rates have risen and government support policies have been withdrawn. Furthermore, there could be further impacts on the US financial system from Russia's war against Ukraine. While there are limited direct linkages for US banks, heightened volatility in asset markets (especially in commodity markets), disruptions to payment, clearing and settlement systems due to sanctions and adverse impacts on the European banking system could indirectly create vulnerabilities in parts of the US financial system (Board of Governors to the Federal Reserve System, 2022c).

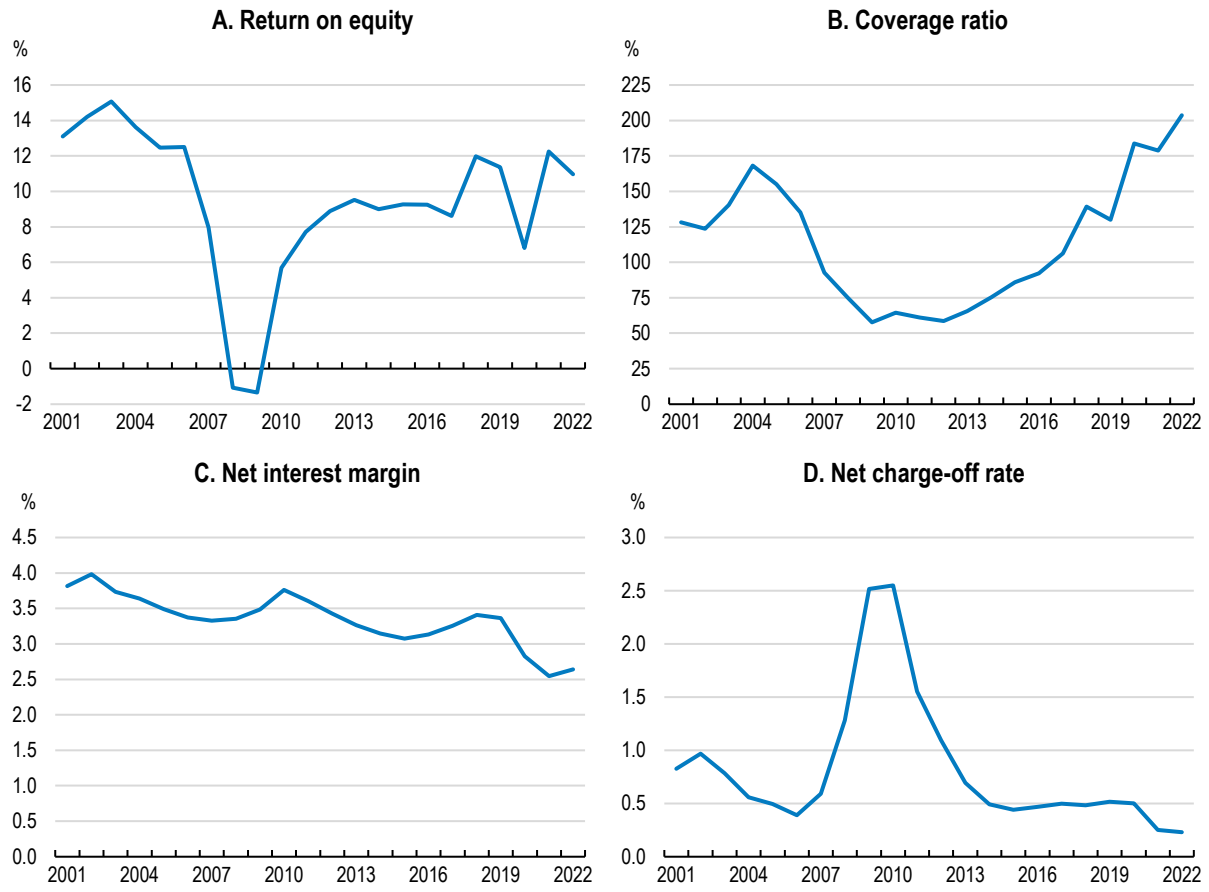
The banking system appears to be well capitalised and profitable. Domestic banks rely only modestly on short-term wholesale funding and have continued to maintain sizable holdings of high-quality liquid assets. The substantial increase in household savings through the pandemic meant strong deposit inflows and reduced funding risks, though this trend has recently begun to reverse. Return on equity in the banking sector has rebounded to be higher than at any time since before the financial crisis (Figure 2.16, Panel A). This is despite net interest margins trending lower with the decline in interest rates (Figure 2.16, Panel C).

Impaired loans have not picked up so far and are at very low levels by historical standards (Figure 2.16, Panel D). The overall Common Equity Tier 1 capital ratio remains at around pre-pandemic levels (Board of Governors to the Federal Reserve System, 2022). In June 2021, the results of Federal Reserve stress tests suggested that the large banks remained well above their risk-based minimum capital requirements during a severe hypothetical recession. These tests included, among other features, substantial stress in US commercial real estate, housing, and corporate debt markets.

There have been several changes to macroprudential policies in recent years. In March 2020, the "stress capital buffer" was introduced for firms subject to the Federal Reserve's CCAR supervisory stress tests. This integrated the Board's stress test results with its non-stress capital requirements, ensuring that required capital levels for each firm more closely match its risk profile and likely losses as measured via the Board's stress tests (Board of Governors to the Federal Reserve System, 2021). Although capital levels are now higher than prior to the changes, some of the associated changes have the potential to weaken required tier 1 capital and common equity for certain financial institutions. In particular, the reduction in the requirements for financial institutions to prefund distributions, the elimination of a stress leverage requirement that would have applied to the Tier 1 leverage ratio and the assumption that a firm maintains a constant level of assets over the planning horizon (rather than a growing balance sheet; Brainard, 2020).

The United States macroprudential framework relies on higher structural capital levels than those in other jurisdictions. However, the stress capital buffer has an element of procyclicality (Kohn, 2021a), as it requires banks to increase their capital holdings as signs of stress become more visible. Following the introduction of this measure, the Federal Reserve may need to consider more active use of other counter-cyclical macroprudential tools. For example, many other central banks released the counter-cyclical capital buffer at the onset of the pandemic, providing substantial liquidity support when needed (Kohn, 2021b). In Sweden, the countercyclical capital buffer was reduced by 250 basis points (Banque de France, 2021). This was enabled by these central banks typically requiring a positive counter-cyclical capital buffer in a normal risk environment. In contrast, the Federal Reserve has chosen to leave the counter-cyclical capital buffer at zero in normal times. Looking forward, it should consider raising the buffer to a positive value in a normal risk environment, allowing it to be released in times of financial stress to have a strong counter-cyclical impact on financial stability. Doing so would likely require other macroprudential tools to be recalibrated to minimise unwanted impacts on lending behaviour.

Figure 2.16. Aggregate indicators of bank balance sheet health have remained stable



Notes: Net charge-offs refer to total loans and leases charged off (removed from balance sheet because of uncollectability), less amounts recovered on loans and leases previously charged off. The difference between interest and dividends earned on interest-bearing assets and interest paid to depositors and other creditors, expressed as a percentage of average earning assets. The coverage ratio is calculated as loss reserve as a percentage of noncurrent loans.
Source: Federal Deposit Insurance Corporation.

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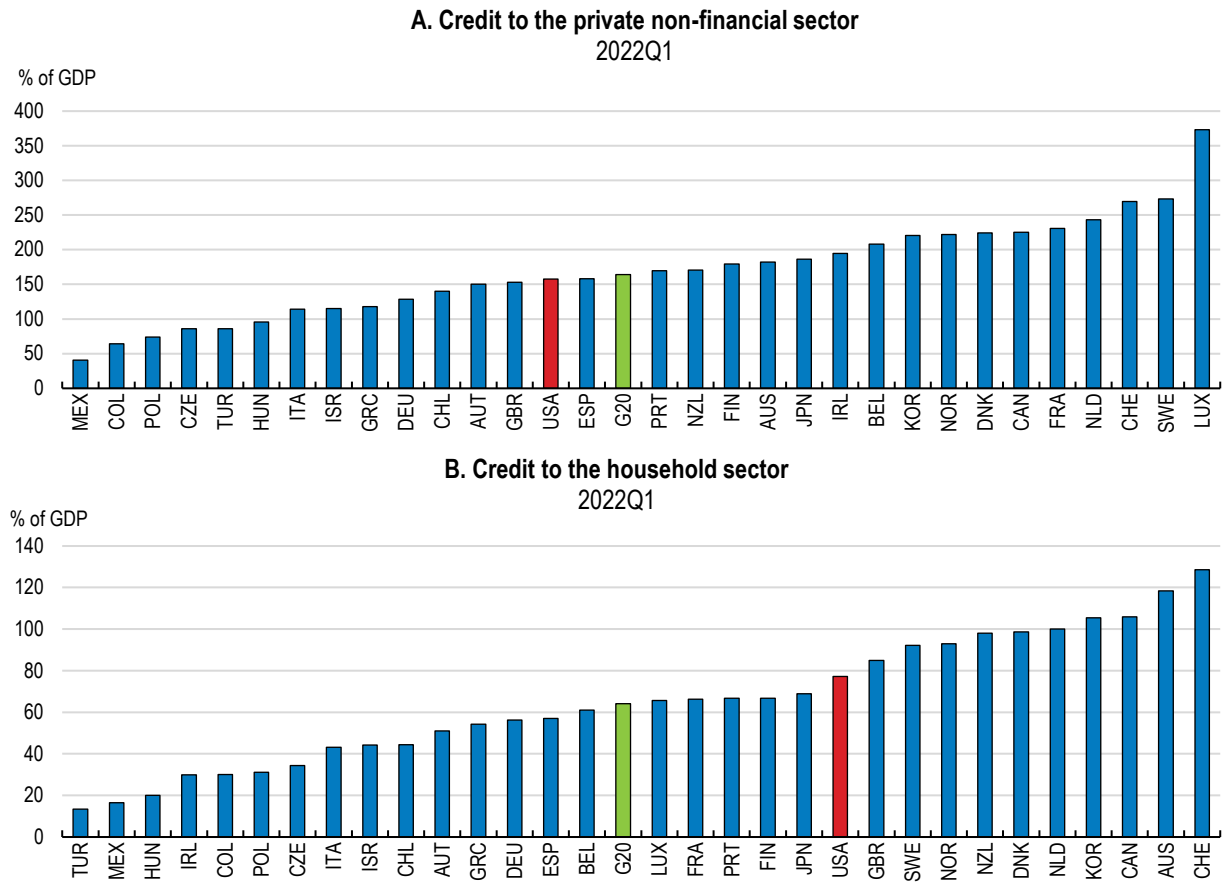
Despite the apparent health of the banking sector, risks to the financial system related to the most COVID-impacted industries remain. Corporate debt as a share of GDP rose through the pandemic (from 151.5% of GDP in Q4 2019 to 159.6% of GDP by Q3 2021), but it has begun to fall over recent quarters and is below the OECD average (Figure 2.17, Panel A). Data from the Shared National Credit Program, which assesses risk in the largest and most complex syndicated corporate loans, suggests a noteworthy decline in credit quality in the leisure and transport sectors during the pandemic (Figure 2.18, Panel A). In entertainment and recreation and commercial real estate, credit quality continued to deteriorate in 2021. For the latter, this was especially pronounced in the hotel, office and retail sub-sectors.

Figure 2.17. Business credit remains relatively low



Source: Bank for International Settlements.

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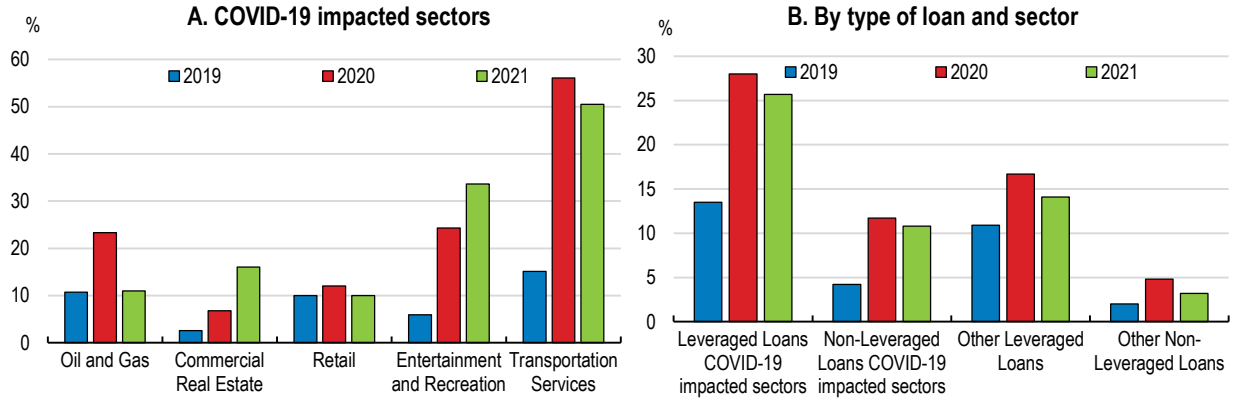
Leveraged loans in COVID-impacted industries are of particular concern. These are a type of syndicated loan to businesses that are highly indebted or have a low credit rating. One in four leveraged loans in COVID-19 impacted sectors had the lowest supervisory rating in the Shared National Credit Program in 2021 (Figure 2.18, Panel B). Loans to COVID-19 sectors in the Shared National Credit Program totalled US$1.08 billion in 2021 (equivalent to 20% of total loans outstanding), with US$475 billion of these being leveraged. The ongoing withdrawal of pandemic-related fiscal support to these sectors may expose further fragilities. The fact that these loans usually have a floating interest rate also means that rising market interest rates may exacerbate pressure on borrowers. The majority of these loans that have the lowest supervisory rating are held in the non-bank financial sector, especially in mutual funds and insurance companies. Direct exposures for banks to leveraged loans typically comprise investment grade equivalent revolving facilities, which are lower risk.

Figure 2.18. Credit quality has declined in COVID-related industries

Percentage of loans with the lowest supervisory rating in the Shared National Credit Program



Source: Board of Governors of the Federal Reserve System (2022d).

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There are also signs that institutions in the non-bank sector have become more highly leveraged. Bank lending to non-bank financial institutions has risen notably and there are signs that leverage at life insurance companies and hedge funds is elevated (Board of Governors to the Federal Reserve System, 2021). Furthermore, these institutions have considerable exposure to lower rated forms of corporate debt. However, monitoring evolving risks in the non-bank sector is a challenge due to data limitations. Addressing data gaps related to parts of the non-bank sector should remain a priority of relevant agencies, including through the interagency Hedge Fund Working Group established by the Financial Stability Oversight Council.

Stablecoins are a new part of the financial system that also pose regulatory challenges. These are digital assets that are issued and transferred using distributed ledger technologies, designed to maintain a stable value relative to a national currency (usually the US dollar) or other reference asset(s) (Board of Governors to the Federal Reserve System, 2021). The value of stablecoins grew threefold over the year to March 2022, to stand at around US$180 billion. This rapid scaling up means that regulators have begun to consider the financial stability implications of these assets. In addition, in March 2022, the President signed the *Executive Order on Ensuring Responsible Innovation in Digital Assets*, which outlined the first ever, whole-of-government approach to addressing the risks and harnessing the potential benefits of digital assets and their underlying technology.

Certain stablecoins, including the largest ones, promise to be redeemable at any time at a stable value in U.S. dollars. However, they are in part backed by assets that may lose value or become illiquid. This raises doubts over the ability for issuers to be able to meet redemptions and leaves them susceptible to runs. Furthermore, regulatory gaps exist, with oversight fragmented across agencies and no consistent set of regulatory standards. In response, the President's Working Group on Financial Markets has recommended to Congress that legislation be enacted that treats issuers similar to insured depository institutions. The working group has also recommended custodial wallet providers be subject to federal oversight, requirements be introduced that limit affiliation with commercial entities (to reduce systemic risk) and standards implemented to promote interoperability among stablecoins (President's Working Group on Financial Markets, 2021). Continuing to consult with this burgeoning industry as the regulatory framework is designed will be important to ensure that the welfare-enhancing elements of these assets are maintained, at the same time as financial stability and consumer welfare risks are managed.

Risks related to unbacked digital assets also need to be carefully monitored. The strong growth in these asset markets over recent years has coincided with increased exposure by financial institutions (Financial

Stability Board, 2022). In addition, such assets do not possess the safeguards associated with bank deposits and other financial instruments, or the basic investor protections that are afforded to other asset classes. In March 2022, the administration released an *Executive Order on Ensuring Responsible Development of Digital Assets.* The Executive Order outlines a national policy for digital assets across six key priorities: consumer and investor protection, financial stability, illicit finance, US leadership in the global financial system and economic competitiveness, financial inclusion and responsible innovation.

Recognising climate-related financial risks

A further challenge for the financial system and regulators relates to both the physical and transition threat posed by climate change. The long-term nature of these risks and difficulty in evaluating them means that they are not adequately priced in many financial market transactions. In May 2021, the President issued an *Executive Order on Climate-Related Financial Risk* that directed relevant agencies to enhance disclosure of climate-related financial risk in a way that is consistent, clear, intelligible, comparable and accurate. In response, the Financial Stability Oversight Council issued its *Report on Climate-Related Financial Risk* in October 2021, which outlined over 30 recommendations to financial regulators (Financial Stability Oversight Council, 2021). Focus areas included building capacity to accurately monitor and report on climate-related financial risks, addressing climate-related data and methodological gaps, enhancing public climate-related disclosures and undertaking scenario analysis for assessing climate-related financial risks.

The Federal Reserve has begun developing a program of climate-related scenario analysis (Board of Governors to the Federal Reserve System, 2021). This is separate from the existing regulatory stress-testing regime. No new capital requirements are expected to be introduced based on the results of the climate-related scenario analysis, but they could be used to inform supervisory reviews. All countries currently face methodological challenges with undertaking such analysis (see Box 2.4 for details of climate risk scenario analysis in three OECD countries). For instance, financial institutions have difficulty assessing market risk over such a long time horizon, the mechanisms for transmitting climate shocks to the real and financial economy are not yet well understood and the exercise remains sensitive to the choice of different scenarios (OECD, 2021a). These exercises also require granular exposure data, ideally by sector and region, and a modelling framework that traces the impact of changes in climate variables through the macroeconomy to the financial sector (Bank for International Settlements, 2021). Nonetheless, climate stress tests or scenario analysis have uncovered important insights in those OECD countries which have undertaken them. Stress testing by the Banque de France showed that insurance companies are particularly exposed to physical risks: the cost of claims could rise by a factor of 5 to 6 in certain French departments between 2020 and 2050 (Banque de France, 2021). Further developing a rigorous framework for this type of analysis is increasingly urgent for effective regulatory oversight given that physical and transition risks are becoming more visible.

Box 2.4. Climate-risk scenario analysis in other OECD countries

Central banks in different countries are integrating climate-risk scenarios in different ways into their risk assessment frameworks. As an example, the main features of climate risk stress tests recently undertaken in three other OECD countries, France, Netherlands and the United Kingdom, are detailed in Table 2.3.

Table 2.3. Main features of recent climate-risk scenario analysis

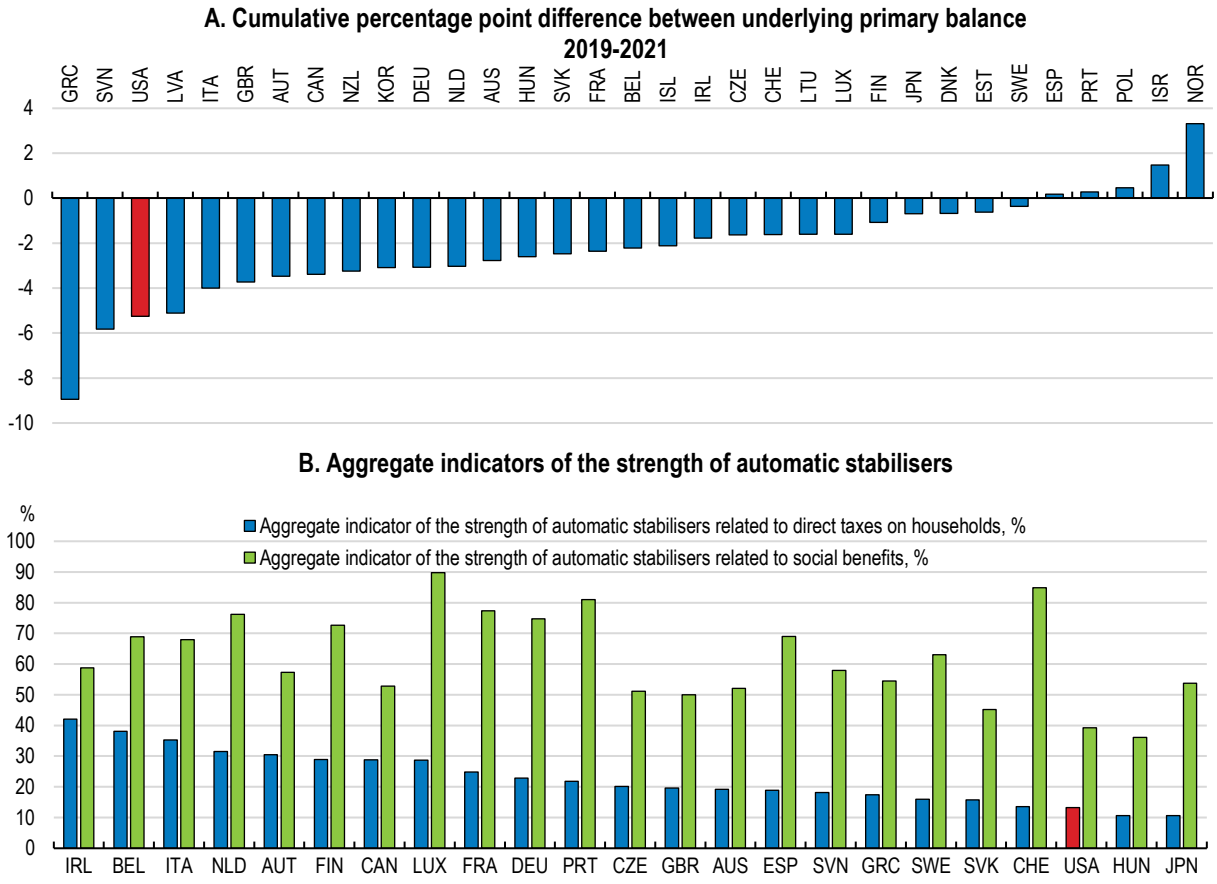
	Bank of France/French Prudential Supervision and Resolution Authority	Netherlands Bank	Bank of England/Prudential Regulation Authority
Sample	Banks and insurance companies	Banks, insurance companies and pension funds	Banks and insurance companies
Scenarios			
- Types of risk	Physical risk and transition risk	Transition risk	Physical risk and transition risk
- Time horizon	30 years	Five years	30 years
- Number of scenarios	Three for transition risk and one for physical risk	Four for transition risk	Two for transition risk and one for physical risk
Modelling approach			
- Model used	Integrated Assessment Modelling (IAM) and National Institute Global Econometric Model (NiGEM)	NiGEM	IAM and NiGEM
- From macro to sectoral breakdown	Static, multi-country model assesses the impact of carbon prices and productivity shocks on 55 WIOD sectors	Sector vulnerability determined through factors based on embedded CO_2 emissions for 56 sectors.	Sector vulnerability determined through factors based on embedded CO_2 emissions and on physical risk exposures.
- Number of scenarios	Bank of France rating model to determine probability of default. Stock market valuation changes based on computed elasticities of valuations to carbon price changes and on credit spreads.	Use of a top-down approach to calculate losses for financial institutions, based on losses in exposures (corporate loans, bonds and equities), with loan losses according to sectoral classification.	Modelled by financial institutions, but some reference yield curves provided by the BoE.
Communication of results	System-wide results disclosed and feedback provided to individual firms.	Impacts on aggregate Common Equity Tier 1 published.	System-wide results disclosed and feedback provided to individual firms.

Source: Bank for International Settlements, 2021.

Fiscal sustainability should be improved

Substantial fiscal support has been key in protecting the economy from lasting damage during the pandemic. The discretionary fiscal stimulus was among the largest across the OECD (Figure 2.19, Panel A) and was delivered swiftly. This required the passage of a series of discrete pieces of legislation and directives by the President given the limited role of automatic stabilisers in the United States (Figure 2.19, Panel B).

Figure 2.19. A very large discretionary stimulus was deemed necessary given relatively weak automatic stabilisers



Source: In Panel B, the measures are taken from Maravelle and Rawdanowicz (2021). The strength of automatic fiscal stabilisers related to direct taxes on households can be approximated by the elasticity of after-tax household income. This elasticity measures the sensitivity of household net income to changes in gross wages, and takes into account most characteristics of the personal income tax system, including tax reliefs, tax allowances, tax credits, tax rate structures, employee and employer social security contribution payable on wage earnings and government household cash transfers. The strength of automatic stabilisers related to social benefits is approximated by the aggregate net replacement ratio for an average household in case of 12-month unemployment.
Source: OECD Economic Outlook Database; Maravelle and Rawdanowicz (2021).

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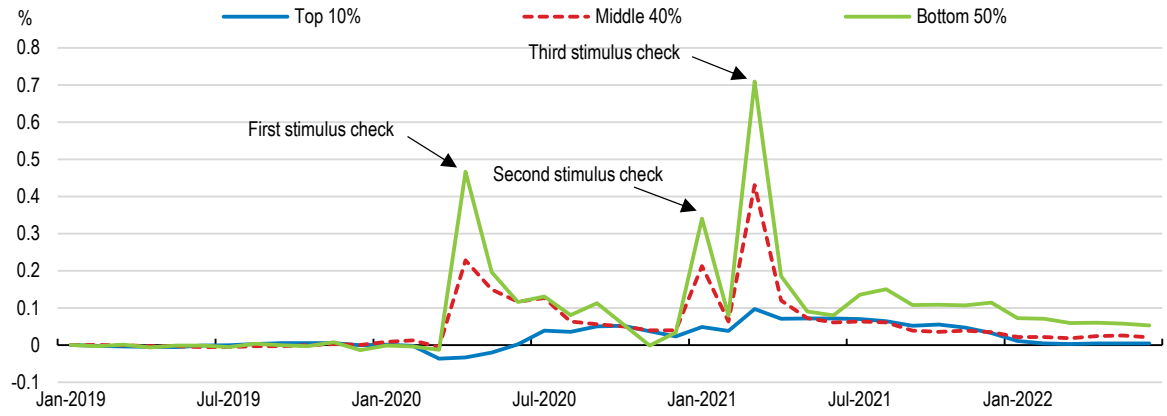
Core components of the United States pandemic stimulus programme were eligibility expansion and supplements to unemployment benefits, Economic Impact Payments (direct stimulus payments to households) and the Paycheck Protection Programme (low-interest loans to firms with under 500 employees, forgivable if employment and wage levels were maintained). Such measures boosted household and corporate incomes. Personal disposable income grew 7½% in 2020, far exceeding the 3.8% reported in 2019. Disposable income grew particularly strongly for lower income households (Figure 2.20). One estimate suggests that nearly 50 million additional Americans would have been in poverty in 2021 without the government benefits in place (Wheaton et. al., 2021). Economic Impact Payments were found to have a particularly large overall antipoverty impact (ibid.), with the Expanded Child Tax Credit being found to have reduced child poverty without having disincentive effects on labour supply (Curran, 2021).

Figure 2.20. Government support boosted household income of low and middle income households

Real household disposable income growth, by group in the income distribution



Source: Realtime Inequality.

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As discussed earlier, fiscal support has been unwound. In the short-term, the stance of fiscal policy will need to carefully monitor the macroeconomic impacts of Russia's war against Ukraine and the tightening of monetary policy, exercising considerable flexibility in response. Any new government support to cushion the impact of Russia's war against Ukraine will be distinct from the types of measures put in place during the pandemic. As in other countries, the priority in the United States may be offsetting the impact of energy price rises on certain vulnerable groups. New policy measures need to be well targeted towards these groups and temporary, such as cash transfers, while ensuring that they do not distort price signals and avoid subsidising energy demand.

Buttressing the fiscal framework against further economic shocks

While public spending played an effective role in insulating the economy from the pandemic shock, some of the main tools were not very precisely targeted. For instance, Economic Impact Payments and the Payment Protection Program loans issued in 2020 were not conditional on recipients proving they were adversely impacted by the pandemic. The Paycheck Protection Program issued loans to 94% of all small and medium-sized businesses in the country in just two months, with estimates suggesting the programme cost US$170-US$257,000 per job-year retained (Autor et. al., 2022). Weak targeting partly reflected the speed with which programmes were designed and deployed, but also the limitations of administrative systems for targeting payments more tightly.

Economic and fiscal resilience to future shocks could benefit from ensuring that the administrative infrastructure can deliver targeted stimulus at short notice. A tradeoff between speed of delivery and targeting was experienced across the OECD, but various countries made substantial use of subsidies that were confined to businesses with a specified revenue decline or Short-Time compensation programmes limited to businesses that cut worker hours or employment (OECD, 2020a). While the latter were available in 27 US states following the passage of the CARES Act, weak take up was partly attributed to administrative bottlenecks (Box 2.5). Employers were typically required to complete and mail a form detailing the information of affected workers to state agencies and then wait for approval. Such approvals were slow, with agencies facing inadequate funding and administrative capacity to process applications (Dube, 2021). Looking forward, enabling online applications that leverage pre-existing data from regular employer filings would streamline the process and make wider participation in Short-Time work schemes possible. Consideration could also be given to establishing a federal system of job retention support (Box 2.5).

Box 2.5. Supporting jobs and income – complementary policies in an economic downturn

The comparison of the labour market policy response to the COVID-19 crisis between the United States and Europe is often framed in terms of a choice between supporting incomes or jobs, with the United States having invested massively in unemployment benefits and European countries in scaling up job retention support (Landais, Lapeyre and Giupponi, 2022). However, supporting incomes and supporting jobs are best seen as complementary strategies. Economic downturns typically represent a combination of temporary shocks, which can in part be weathered through labour hoarding, particularly when public support for job retention is available, and permanent shocks that require structural adjustments along with effective income and employment policies to support displaced workers.

- **The United States invested strongly in unemployment insurance.** Compared with European countries, unemployment benefits normally have a short maximum duration in the United States, the share of benefit recipients among the unemployed is low and social assistance is less developed. In response to the pandemic, the United States strengthened its unemployment benefit system by extending eligibility, increasing its maximum duration and raising its generosity. Eligibility was extended to the self-employed. Before the pandemic, the United States was one of 11 OECD countries (out of 32 with available information) where the self-employed had no access to unemployment benefits. To extend coverage, the *CARES Act* introduced Pandemic Unemployment Assistance for the self-employed, gig-workers and other non-standard workers on the same basis as for dependent employees. Nearly all other OECD countries expanded income support for the self-employed as well, by extending coverage and increasing generosity. However, the emergency extensions to the self-employed in the United States expired in September 2021.
- **The United States also invested in job retention support.** Supplements paid to unemployment benefit recipients were also paid to recipients of the state-run short-time work compensation programmes, irrespective of the reduction in working time. Since the reduction in working time is subject to a maximum (between 40 and 60% depending on the state), this made short-time compensation in the United States more generous for workers than anywhere else in the OECD (OECD, 2021). Yet, take-up rose only mildly. These schemes were not sufficiently attractive for employers due to administrative bottlenecks, the requirement for employers to continue paying social security contributions for hours not worked and the limit on the maximum reduction in working time. In most other OECD countries with similar programmes, the administrative process of applications, approvals and payments was largely automated, the cost of short-time work for employers was temporarily set to zero and there were no maximum limits on the reduction in working time (OECD, 2021). In addition, the US had other programmes designed to promote job retention. These included the Employee Retention Tax Credit (a refundable tax credit of up to 50% of up to US$10,000 in wages) and the Paycheck Protection Program (low interest loans for payroll and certain other costs).

An important question is whether a new federal system of job retention support should be put in place to complement state-run short-time work compensation programmes. This would not have to be a permanent programme but could be a temporary one that may be triggered along with federal extensions of unemployment insurance. While the possibility of recalling workers who have been laid off at will reduces incentives for labour hoarding and the attractiveness of job retention schemes for employers, well-designed job retention programmes could still play a useful role by helping firms internalise the value of job matches for workers and society.

Source: Chapter 2 of the OECD Employment Outlook 2022. This box was contributed by the OECD Directorate of Employment, Labour and Social Affairs in the context of the implementation of the *OECD Jobs Strategy*. For further details see http://www.oecd.org/employment/jobs-strategy/

The pandemic experience of the unemployment insurance system also highlighted the need for investment in greater administrative capacity. New programmes were rapidly established that expanded eligibility and benefit amounts and applications skyrocketed; unemployment insurance payments rose from less than US$50 billion in Q1 2020 to more than US$1 trillion in Q2 2020 (Boesch, et al., 2021). With this dramatic increase, delays in processing unemployment insurance claims were experienced in most jurisdictions (Stettner and Novello, 2020). The proportion of unemployment insurance payments more than 21 days past due rose across states in 2020 and have remained elevated (Figure 2.21). As at July 2022, around 16% of payments were 21 days past due in the median state. To expedite payments through the pandemic, some programmes relied on claimants to self-certify their eligibility, but this resulted in a significant increase in fraudulent payments (Weidinger, 2022). In addition, outdated software systems placed limitations on the design of the scheme (Dube, 2021); it was not technically possible in most state systems to provide supplementary benefits through an increased wage-replacement rate (i.e. a specified percent of previous wages). As a consequence, a flat weekly supplement across all workers was adopted. This resulted in some recipient's wage replacement rates rising well above 100% (Boesch, et al., 2021).

Acknowledging the shortcomings of existing processes, the administration set aside US$2 billion for modernising the unemployment insurance system in the *American Rescue Plan* in early 2021. This included funding to tackle common short-term problems across states, while also working to address long-term challenges. For example, it was intended that new centrally developed systems would be designed to integrate with state systems and address shared challenges, while continuing to encourage jurisdictions to make state-specific upgrades (Department of Labor, 2021). Coordination is being overseen by a new Office of Unemployment Insurance Modernization in the Department of Labor.

The modernisation of state unemployment insurance systems presents an opportunity to more closely link benefit payments with active labour market services, such as job search assistance, public works programmes, up-skilling and retraining programmes. While income support measures aim to prevent households from falling into poverty, active labour market policies aim at increasing the quantity and quality of jobs and matches between employers and employees (see Box 2.7 for a quantification of the economic benefits). Past *OECD United States Economic Surveys* have highlighted the need for the United States to raise spending on the latter (OECD, 2020b). Faced with labour shortages, implementing such policies effectively has become increasingly important. As discussed in Chapter 3, these programmes will also be critical amid the climate transition and the need to reallocate workers from emission intensive activities to new jobs and industries. Systems that integrate unemployment insurance and active labour market policies can improve policy targeting and contribute to more efficient allocation of labour. Better use of data is a key channel for improving the integration of these services and the targeting of programmes to the most suitable participants. This is a challenge currently being addressed by other OECD countries, such as Finland (Box 2.6).

Box 2.6. Finland's attempt to develop a holistic approach to supporting the long-term unemployed

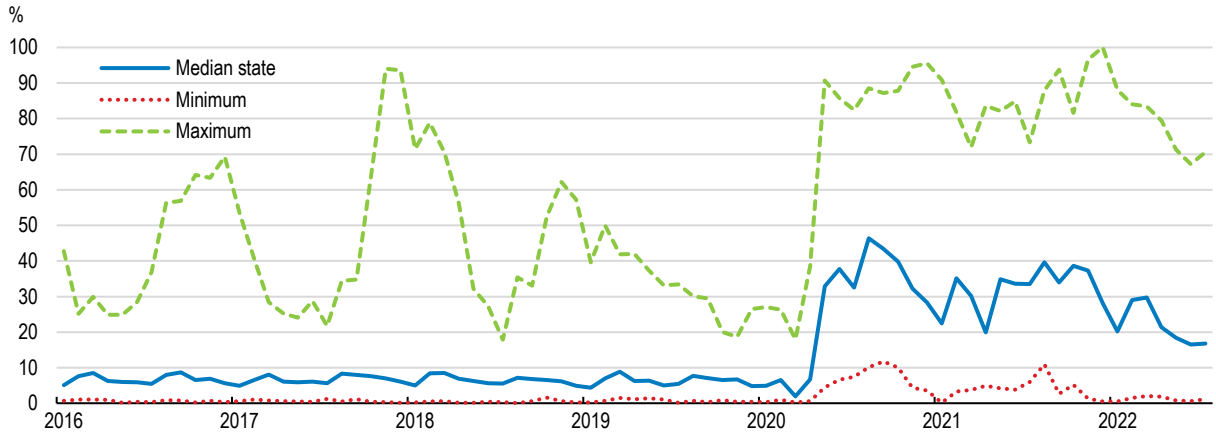
Finland has been testing different approaches to integrating social service providers and public employment services. For example, joint services called Labour Market Service Centres were introduced in 2004 to support long-term unemployed people with multiple challenges. The joint services started as voluntary co-operation between public employment services, the social insurance institution KELA and municipalities. Regardless of formalising this co-operation across country in 2015, the services have stayed fragmented, particularly due to data exchange challenges.

For youth not in employment, education or training "Ohjaamo centres" have been established to provide platforms for one-stop-shops that bring together service providers from both the public and private sectors. The key staff are youth and employment counsellors from Public Employment Services and social workers from municipalities, but also study counsellors, psychologists, nurses, outreach workers and role models.

Source: OECD (2021b)

Figure 2.21. Delays in processing unemployment insurance claims have been significant

Proportion of total unemployment benefit payments more than 21 days past due, by State



Note: Based on first payments within the state and includes regular unemployment insurance, unemployment compensation for ex-service members and unemployment compensation for Federal employees.
Source: Department of Labor, OECD calculations.

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Box 2.7. Quantifying the GDP impact of proposed structural reforms

Quantification of the impact on GDP per capita of selected structural reforms are quantified in the table below. Some of the estimates reported are based on empirical relationships between past structural reforms and productivity, employment and investment. These relationships allow the potential impact of structural reforms to be gauged. The effects are based on estimates, not necessarily reflecting the particular institutional settings of the United States. This includes how representative changes in policies under the control of the states are for the whole country. As such, these quantifications are illustrative.

Table 2.4. Potential impact of structural reforms on per capita GDP

Reform	Long-run effect
Labour market policies	
- Increase in spending on active labour market policies per unemployed spending (as a percentage of GDP per capita) that is typical of recent policy changes in OECD countries (i.e. an increase of 3.2).	1.3%
Housing reforms	
- Remove restrictive land use planning and increase housing supply in growth areas.	0.7-2.0%
Product market reforms	
- A reform that reduces US product market regulations to be equivalent to that in Germany (i.e. a 9.4% reduction).*	1.0%
Social safety net	
- An increase in family benefits in kind equivalent to 0.1% of GDP (equivalent to a typical reform observed in OECD countries)	0.7%

* The variable in the model is the OECD Product Market Regulation indicator fo Energy, Transport and Communication sectors. The OECD Product Market Regulation indicators measure the regulatory barriers to firm entry and competition in a broad range of key policy areas, ranging from licensing and public procurement, to governance of SOEs, price controls, evaluation of new and existing regulations, and foreign trade.
Source: OECD calculations based on Egert and Gal (2017) and OECD (2020b).

The pandemic has also highlighted the strong reliance of discretionary policy decisions in delivering fiscal support in the United States. This was evident in the case of unemployment benefit supplements (i.e. Federal Pandemic Unemployment Compensation), that faced expiration several times during the pandemic, with last minute extensions pieced together when bipartisan agreement could not be established, through either Presidential memorandum or budget reconciliation. During this process, the rate of the supplement was cut significantly and 26 states ended payments before the expiry of the Federal programme. These developments produced considerable uncertainty for households relying upon the payments. Such uncertainty in the policy path in a crisis is undesirable, not least because it reduces the likelihood that recipients will spend the associated payments and hence may dampen the macroeconomic impact.

There was similar uncertainty related to federal financial aid to state and local governments through the pandemic. Faced with balanced budget constraints and declining state revenues as economic activity plunged, these governments were faced with significantly cutting spending and employment (Green and Loualiche, 2021). The potential pro-cyclical influence of state and government finances was seen clearly through the great recession (Bivens, 2016). Despite that experience, after an initial disbursement as part of the CARES Act, additional funding from the federal government as subsequent waves of the pandemic unfolded was slow to arrive. Most states were able to draw down on rainy day funds that they had accumulated, but there was significant heterogeneity across jurisdictions. Some states, including New Jersey and Nevada, had exhausted their savings by the end of the 2020 fiscal year (Rosewicz et al., 2021).

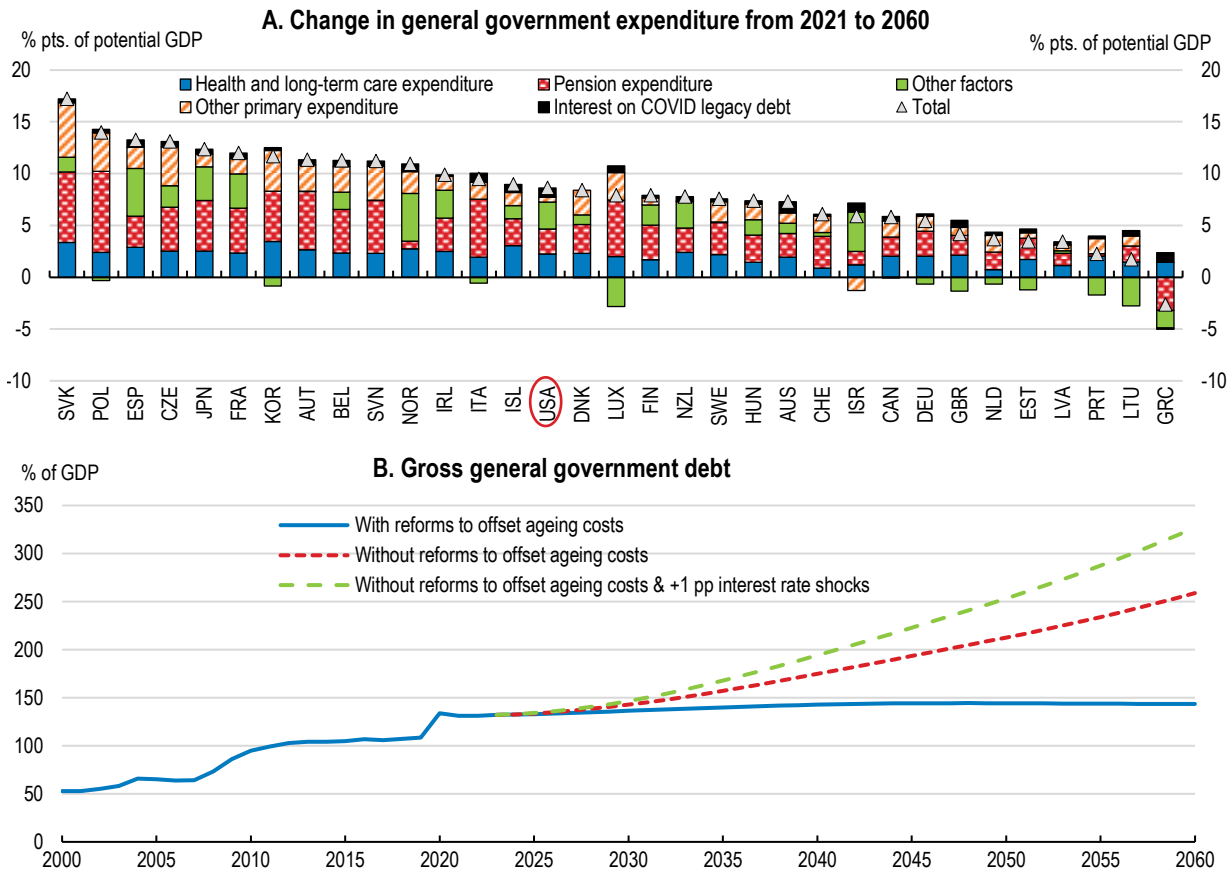
Looking forward, the government should consider making some disbursements in times of an economic shock automatic once specific economic indicators move through pre-defined thresholds. Automatic stabilisers would effectively be strengthened as a result, without fundamentally changing the size of the public sector as a share of the economy. This would reduce the information, decision, design and implementation lags in fiscal policy in a future downturn (Rawdanowicz, et al., 2021). The budgetary cost of automatically raising transfers could be met through the establishment of a federal rainy-day fund, financed by broadening the tax base, or reduced transfers being triggered when the economy is in an upswing.

Fiscal pressures will mount

The government will need to address the fiscal cost legacy of the pandemic in terms of larger deficits and higher debts in coming years. However, more substantial fiscal pressures will arise from the fast ageing population (Figure 2.22, Panel A) and important societal challenges such as much-needed improvements in the social safety net and the ongoing fight against climate change. A significant step in addressing the latter was made in August 2022 with the passage of the *Inflation Reduction Act*, which contained a range of spending initiatives on climate mitigation. It also included tax reforms that meant the overall legislation was estimated to reduce the fiscal deficit by an estimated US$90 billion over the 2022-2031 period (Congressional Budget Office, 2022a). Nonetheless, subsequent legislation that provides student debt relief for borrowers earning less than US$125,000 per year (or US$250,000 for married couples) will more than offset the deficit reduction from the *Inflation Reduction Act*, though the full cost of student debt relief will depend on behavioural responses (Penn Wharton Budget Model, 2022). The Congressional Budget Office estimates that the cost of student loans will increase by about an additional US$400 billion in present value as a result of the action (Congressional Budget Office, 2022b).

The OECD Long-term Model estimates that ageing- related fiscal costs will increase by over 8% of GDP between 2021 and 2060 (Figure 2.22, Panel A) in the absence of policy reforms. Over half of this is attributed to increases in public spending on health and pensions, according with projections from the Congressional Budget Office that show spending on social security, Medicare and Medicaid rising 4.8% of GDP between 2021 and 2051. The implication is that a similar reduction in spending or increase in revenue (or combination thereof) will be needed just to stabilise the gross debt-to-GDP ratio (Figure 2.22, Panel B). Prospects for future interest costs are highly uncertain at present and a further upward shock could push the debt to GDP ratio notably higher.

Figure 2.22. The ageing population will push fiscal spending higher



Note: In Panel A, "Other primary expenditure" is projected based on the assumption that governments will seek to provide a constant level of public spending per capita in real terms. Under some reasonable assumptions, the evolution of this expenditure category relative to GDP becomes an inverse function of the projected evolution of the population-to-employment ratio, as expenditure (numerator) follows population whereas GDP (denominator) follows employment. The "other factors" component captures anything that affects debt dynamics other than the explicit expenditure components (it mostly reflects the correction of any disequilibrium between the initial structural primary balance and the one that would stabilise the debt ratio). In Panel B, underlying projected growth rates, interest rates, etc., are from the baseline long-term scenario (for further details, see Guillemette and Turner, 2021). The debt path in the "With measures offsetting ageing-related costs" scenario assumes the primary budget converges to -2% by 2030 and then to -1% by 2050 and stays there over the next decade.
Source: OECD Long-Term Model.

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In addition, the social security system in the United States has a long-term financial shortfall that will need to be addressed. Social Security is largely a pay-as-you-go programme. The Old-Age Survivors Insurance Trust Fund and the Disability Insurance Trust Fund are the intermediaries that receive payroll taxes and other earmarked income and are responsible for paying social security benefits and administrative expenses. For many years these funds collected more than they paid out, but in 2021 they began redeeming reserves to help pay benefits. With the ageing population, it is estimated that the combined trust funds will be depleted around 2034 (Board of Trustees of the Federal Old-age and Survivors Insurance and Federal Disability Insurance Trust Funds, 2021). At that time, Social Security would only be able to finance 78% of promised benefits, absent new measures put in place to close the funding gap. Similarly, the Highway Trust Fund (which funds various transport projects financed by transport-related taxes) and the Medicare Hospital Insurance Trust Fund (which provides inpatient hospital payments financed by payroll tax) will also become insolvent in coming years, requiring abrupt cuts to spending and

benefits. Potential steps to close the gap include future increases in the retirement age and adopting an alternative measure of consumer price inflation (i.e. the chained CPI) for indexing various Federal programmes (Box 2.9 further down). Thereafter, indexation of the retirement age to life expectancy could be considered. At present, the full retirement age depends on a workers year of birth, but is not especially low compared with other OECD countries (for workers born after 1959, the full retirement age is currently 67). Furthermore, substantial differences in life expectancy between different income and racial/ethnic groups would need to be taken into account in the indexation of the retirement age to avoid exacerbating existing inequalities.

The favourable debt dynamics in a world where nominal GDP growth surpasses the nominal interest rate has been well documented (Blanchard, 2019), but in an environment of considerable uncertainty and these long term fiscal pressures, fiscal prudence should not be abandoned. The administration publishes fiscal deficit and public debt projections to 2050 based on current and proposed policies in the Budget of the United States Government. For Fiscal Year 2023, alternative scenarios were also produced that outline the fiscal impacts of alternative assumptions related to climate change, healthcare costs and discretionary outlays. Looking forward, the medium-term budgetary framework should continue to be developed, with transparent medium-term fiscal objectives and ongoing monitoring of progress against them.

While fiscal retrenchment does not need to be overly rapid in the short-term, the administration should aim to gradually reduce budget deficits so as to eventually stabilise the public debt to GDP ratio. This will require both improvements in public spending efficiency and revenue collection. Key areas for improving the former are covered in the Issues Notes further below: improving health spending efficiency and the governance of large-scale infrastructure projects. In addition, the administration should consider channels for broadening the tax base.

Broadening the tax base to meet rising fiscal costs

In broadening the tax base, the first priority should be reducing existing distortions in the tax code that erode the revenue base and have unwanted economic consequences. The administration has emphasised the need to address the significant rise in income and wealth inequality observed over recent decades, meaning that distributional implications of various tax reforms warrant careful consideration. As part of the *Inflation Reduction Act*, the administration introduced a 15% minimum corporate tax on large corporates and a 1% tax on share buybacks by corporations (Box 2.8). Looking forward, there are additional tax reforms that should be considered that would reduce distortions and help fund further public expenditures.

Box 2.8. The Inflation Reduction Act

In August 2022, Congress passed the *Inflation and Reduction Act*, a major climate and tax bill that included spending initiatives and tax changes to finance them.

The legislation included the following measures that have fiscal implications:

Lowering consumer energy costs

- US$9 billion in consumer home energy rebate programs, focused on low-income consumers, to electrify home appliances and energy efficient retrofits.
- The existing credit for energy efficiency home improvements (e.g. for heat pumps, rooftop solar and water heaters) increased from 10% to 30% and extended until 2032.
- A consumer tax credit of up to US$4,000 for lower/middle income individuals to buy second hand clean vehicles,
- An extension of the existing US$7,500 tax credit to buy qualified new clean vehicles. Eligibility is partly based on local-content requirements that consider the country of production and assembly of the vehicle and battery components.
- US$1 billion grant programme to make affordable housing more energy efficient.

Improving energy security and domestic manufacturing

- Production tax credits to accelerate U.S. manufacturing of solar panels, wind turbines, batteries, and critical minerals processing, estimated to cost US$30 billion.
- A US$10 billion investment tax credit to build clean technology manufacturing facilities (e.g. those producing electric vehicles, wind turbines and solar panels).
- US$500 million in the Defense Production Act for heat pumps and critical minerals processing.
- US$2 billion in grants to retool existing auto manufacturing facilities to manufacture clean vehicles.
- Up to US$20 billion in loans to build new clean vehicle manufacturing facilities across the country.
- US$2 billion for National Labs to accelerate breakthrough energy research.

Decarbonising the economy

- Expanded clean energy tax credits for wind, solar, nuclear, clean hydrogen, clean fuels and carbon capture (includes production tax credits and the extension of the investment tax credit).
- US$30 billion in grant and loan programs for states and electric utilities to accelerate the transition to clean electricity.
- Tax credits and grants for clean fuels (e.g. a new low-carbon transportation fuel production credit) and clean commercial vehicles.
- Grants and tax credits to reduce emissions from industrial manufacturing processes, including almost US$6 billion for a new Advanced Industrial Facilities Deployment Program to reduce emissions from the largest industrial emitters.
- Over US$9 billion for Federal procurement of American-made clean technologies to create a stable market for clean products.
- US$27 billion clean energy technology accelerator to support deployment of technologies to reduce emissions, especially in disadvantaged communities.

- The introduction of a methane emissions charge on applicable oil and gas facilities that report emissions in excess of 25,000 metric tons of carbon dioxide equivalent gas per year and exceed certain waste emissions thresholds.
- A Methane Emissions Reduction Program to reduce leaks from the production and distribution of natural gas.

Environmental justice

- US$3 billion in grants to invest in community-led projects in disadvantaged communities and capacity building centers to address disproportionate environmental and public health harms related to pollution and climate change.
- US$3 billion in grants to support neighbourhood equity, safety, and affordable transportation access.
- US$3 billion in grants to reduce air pollution at ports.
- US$1 billion for clean heavy-duty vehicles, like school and transit buses and garbage trucks.

Agriculture and rural communities

- US$24.9 billion to support climate-smart agriculture practices.
- US$5 billion in grants to support healthy, fire resilient forests, forest conservation and urban tree planting.
- Tax credits and grants to support the domestic production of biofuels and to build the infrastructure needed for sustainable aviation fuel and other biofuels.
- US$2.6 billion in grants to conserve and restore coastal habitats and protect communities that depend on those habitats.

Health care

- The extension of Affordable Care Act subsidies for an additional three years. Financial assistance for those enrolled in Affordable Care Act plans for three years, extending programme expiring this year and expanding the eligibility to allow more middle-income people to receive assistance and an increased amount overall.
- Empower Medicare to begin negotiating directly for the price of prescription drugs in 2023. It would start with a list of 10 high-cost, single-source drugs in 2026, rising to 20 drugs by 2029, with a ceiling on the negotiated price.
- Expand premium and co-pay assistance on prescription drugs for low-income individuals.
- Institute a new “inflation rebate” under Medicare. This measure requires drug companies to rebate back the difference to Medicare if they raise prices higher than inflation.
- Cap Medicare patients’ out of pocket costs at US$2,000 per year.
- Provide free vaccines for seniors.

Taxation

- The introduction of a 15% minimum corporate tax that applies to corporations that, for three taxable years, have average annual adjusted financial statement income greater than US$1 billion. The Joint Committee on Taxation estimates that about 150 taxpayers annually will be subject to the proposed book minimum tax (Joint Committee on Taxation, 2022). This provision is estimated to raise US$313 billion in revenue over the next 10 years.
- Investing US$80 billion in the Internal Revenue Service to improve tax enforcement and compliance.
- 1% tax on share buybacks by corporations.

The mortgage interest tax deduction should be further phased out. This deduction is a longstanding feature of the United States tax code, though it was scaled back as part of the 2017 *Tax Cuts and Jobs Act*. In the United States system, taxpayers claim the greater of a standard deduction or the sum of various itemized deductions, including mortgage interest. While there is a justification for interest payments on a taxable investment return being deductible, this is not the case for mortgage interest as imputed housing rents (the investment return) are untaxed. In addition, the deduction encourages housing investment at a time when measures of housing affordability have fallen significantly. The deduction is also highly regressive (Gale, 2020) and disproportionately favours white households (Slemrod, 2022), running counter to a key priority of the current administration to improve racial equity. One option for further phasing out the deduction is to incrementally reduce the maximum mortgage principal eligible for deductible interest.

Similarly, the ability to deduct state and local government taxes paid from federal tax bills is highly regressive: almost all of the benefit is received by the top 20% of the income distribution (Pulliam and Reeves, 2021). Other OECD countries with federal systems, such as Australia and Canada, do not have such deductions. This is because state taxes are typically used to fund state services, meaning there is no issue of double taxation. Some proponents of the deduction argue that its elimination would result in mass emigration of high income households from high taxing jurisdictions. However, the evidence of departures following the 2017 implementation of a cap on the state and local tax deduction is limited so far. Looking forward, the administration should aim to phase out the state and local tax deduction once the existing cap expires in 2025.

There are other base broadening reforms that would expand revenues while not raising marginal tax rates. As detailed in the previous *OECD Economic Survey*, taxing pass-through owners on the basis of the Self-Employment Contributions Act rather than the Federal Insurance Contribution Act would raise an additional US$20 billion per year and treat different types of owners equally (OECD, 2020b). It would also remove incentives to use different business forms for tax planning and help simplify the tax code. The administration previously proposed adjusting the step up provision that currently bases capital gains on inherited assets on the difference from the value on transfer to the original purchase price. Such an adjustment is estimated to raise an additional US$11 billion per year (Box 2.9) and would promote greater equality in the distribution of wealth.

Box 2.9. Fiscal policy effects

The following estimates roughly quantify the fiscal impact of selected recommendations and options to enhance fiscal sustainability. The estimated fiscal effects abstract from short-term behavioural responses that could be induced by the given policy change. These estimates are savings (+) and costs (-) and give the average budgetary impact over the 2021-2030 period.

Table 2.5. Illustrative impact of selected reforms

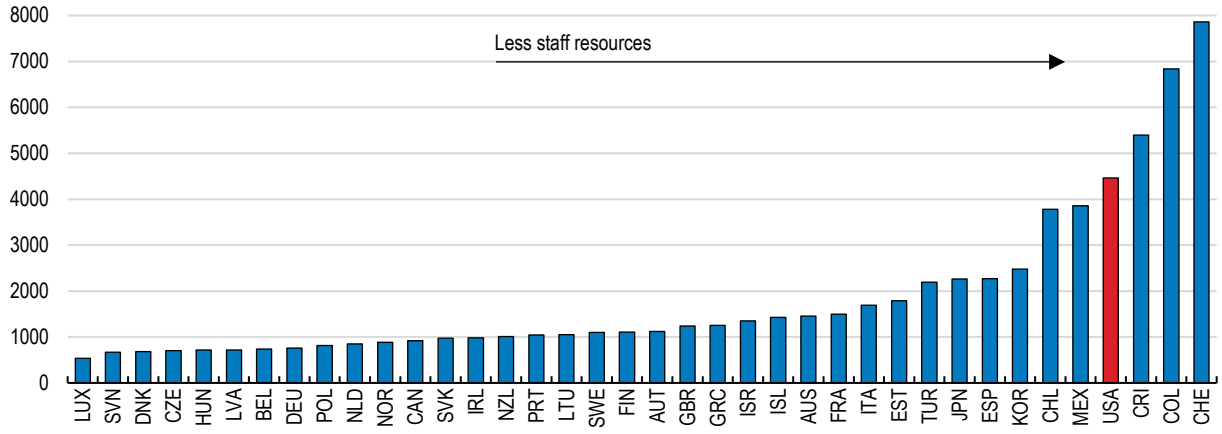
Policy	Measure	Impact on the annual fiscal balance, US$ billion	Impact on the fiscal balance, % of GDP
Spending initiatives	Active labour market policies	-12	-0.1
Tax base	Eliminate itemized deductions	171.8	0.7
Tax base	Change the tax treatment of capital gains from sales of inherited assets	11.0	0.05
Indexation	Use the chained consumer price index (instead of the headline CPI) to index social security and other mandatory programmes.	22.3	0.1
Indexation	Raise the full retirement age for social security by two months per birth year for workers born between 1961 and 1978, so the retirement age increases to 70 for workers born in 1978 or later.	7.2	0.03

Notes: The estimate presented here is the net of US$2 billion in additional outlays on IRS funding and an estimated increase in revenues of US$6 billion.
Source: CBO (2020), CBO (2021c), Committee for a Responsible Federal Budget (2021).

Investment in the tax administration can also yield notable revenue gains. The capacity of the Internal Revenue Service has been negatively impacted by a 20% real decline in its Budget over the past decade (Department of the Treasury, 2021), which has manifested in a notable fall in audit rates. From 2010 to 2020, full-time personnel declined by over 33,000 with more than one third of those in key enforcement positions (Internal Revenue Service, 2021). Compared to other OECD countries, full time equivalent staff in tax administration is limited in the United States (Figure 2.23). As part of the *Inflation Reduction Act*, the administration will increase the funding for the IRS by US$80 billion over ten years. The Congressional Budget Office estimates that this could increase revenues by approximately US$200 billion (CBO, 2021b), though the payoff could be even larger if these investments have a significant deterrent effect on tax evasion (Center for American Progress, 2021). Looking forward, continued investment in the Internal Revenue Service will be needed to combat tax evasion. An area that should continue to be reinforced is the capacity to use Big Data in tax administration. Such efforts will be enhanced by the improved exchange of information on cross border activities that has accompanied Country-by-Country reporting, the exchange of rulings and the OECD/G20 Common Reporting Standard (OECD, 2021c).

Figure 2.23. The tax administration is under-resourced

Population per total tax administration full time equivalents, 2019



Source: OECD Tax Administration 2021.

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The United States has taken significant steps to strengthen the international aspects of its tax system in recent years, including by implementing key recommendations of the OECD/G20 Base Erosion and Profit Shifting (BEPS) project. In addition, the introduction of the Global Intangible Low-Taxed Income (GILTI) regime has provided an important impetus for the reform of the international tax rules, which culminated in the historic international tax agreement reached in October 2021. The United States authorities have played a leading role in the negotiations, carried out through the OECD/G20 Inclusive Framework on BEPS, which resulted in 137 jurisdictions agreeing to the two-pillar solution to address the tax challenges arising from the digitalisation of the economy.

The timely and widespread implementation of the agreement would provide a variety of benefits to the United States, as well as to jurisdictions globally. The agreement would provide additional tax certainty to the international environment faced by US businesses and would support cross-border trade and investment at a critical time for the global economy. In particular, the swift, successful and widespread implementation of the agreement would help limit the negative impacts that could result from unilateral actions taken by other jurisdictions to address the tax challenges of the digitalisation of the economy, such as digital services taxes, which would disproportionately impact US businesses. Implementation of the agreement should also raise additional revenues for the United States.

Issues Notes

Improving health spending efficiency

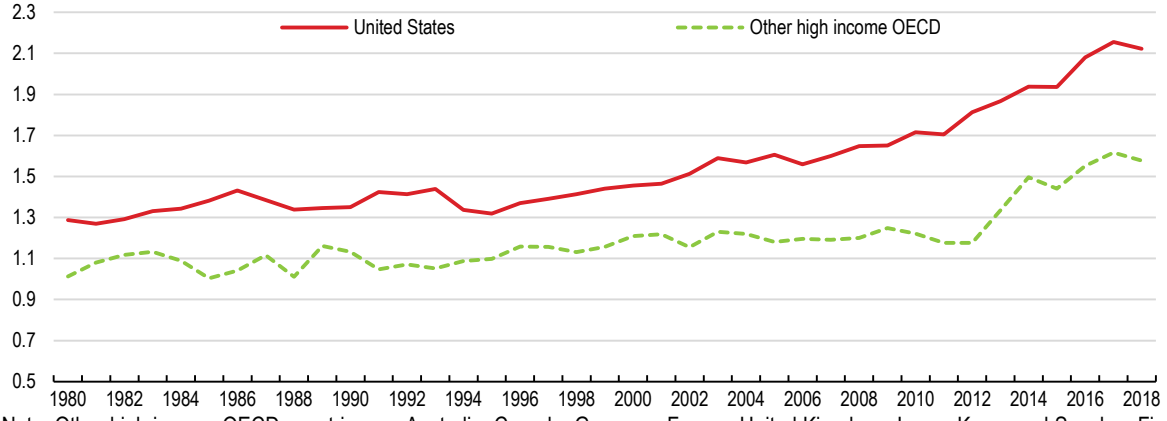
Improving health spending efficiency should be a focus given the projected rise in future health expenses and the fact that it already makes up a substantial share of fiscal outlays (i.e. around 18% of total spending). The United States healthcare system is largely based on private providers and private insurance, but a rising share of healthcare funding has been provided by government over time, with around 35% of households in 2020 receiving care either through government insurance or direct public provision (Keisler-Starkey and Bunch, 2021). Estimates suggest that the United States spends almost twice as much on health per capita than comparable OECD countries (Kurani and Cox, 2020) and such spending has risen more rapidly in the United States over the past decade. Despite this, and that fact that the United States is a leader in medical technology innovation, life expectancy at birth is comparatively low and has not increased over the past decade to the same extent as in other OECD countries.

About three quarters of the health cost differential between the United States and OECD countries is accounted for by inpatient and outpatient care (Kurani and Cox, 2020). This includes payments to hospitals, clinics, and physicians for services and fees such as primary care or specialist visits, surgical care, and facility and professional fees. A key factor cited for high and rising health costs in the United States has been strong market power of healthcare providers that can lead to anticompetitive practices.

There has been substantial consolidation in the healthcare industry over recent years, through increased vertical and horizontal merger and acquisition activity between hospitals and physicians (Fulton et. al, 2021). As a result, market concentration has risen in these markets (ibid), with it likely to increase further in the wake of the pandemic given the financial difficulties faced by many providers (Gustaffson and Blumenthal, 2021). Rising concentration is not necessarily a bad thing. It may reflect economies of scale that benefits patients. However, various US-specific studies have highlighted the role of market concentration in raising prices paid by private insurance (Gaynor and Vogt, 2003; Haas-Wilson and Garmon, 2011; Dafny et. al., 2019; Koch and Ulrick, 2017) and negatively impacting patient outcomes (Short and Ho, 2019; Koch et. al., 2018). Indeed, markups (charges over cost) in the United States health sector are notably higher than in other high income OECD countries and have risen steeply in recent years (Figure 2.24). This suggests anticompetitive practices may be accompanying burgeoning market concentration.

Figure 2.24. Markups in the United States health sector are comparatively high

Median markups in healthcare, US compared to other high income OECD countries



Note: Other high income OECD countries are Australia, Canada, Germany, France, United Kingdom, Japan, Korea and Sweden. Firms in the healthcare sector encompass healthcare equipment, healthcare providers and services, pharmaceuticals, and medical research. The analysis is based on Worldscope data and the methodology for calculating the markups follows the work of Diez et al. (2018).

Source: Lin et. al., 2021.

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In response to these trends, antitrust enforcement in the health sector is being prioritised by the administration. The *Executive Order on Promoting Competition in the American Economy* encouraged the Justice Department and Federal Trade Commission to review and revise merger guidelines in the health sector. Antitrust suits that break up dominant firms are uncommon (Gaynor, 2021), but competition authorities are now more actively monitoring these markets. In 2020, the Federal Trade Commission ordered six insurance companies to provide information to allow the effects of consummated physician group and healthcare facility mergers during the 2015-2020 period to be studied. In addition, in January 2022, the Federal Trade Commission and Antitrust Division of the Department of Justice sought public comment on how the agencies can modernise enforcement of the antitrust laws regarding mergers. An area for consideration includes removing the exemption of merging parties in smaller transactions in healthcare from reporting (Gustaffson and Blumenthal, 2021). Any such reform should be accompanied by additional resources being allocated to the Federal Trade Commission and Department of Justice for merger review. Public spending on antitrust enforcement has declined by around 18% since 2000, despite the increasing concentration in US markets (Baer, 2020).

Table 2.6. Past OECD recommendations on promoting competition

Key recommendations in previous *Survey*	Actions taken since the previous *Survey* (July 2020)
Anti-trust policy should police markets vigorously to ensure competition remains healthy.	The Whitehouse Competition Council has taken a series of actions-to-date in promoting competition in the areas of healthcare, labour markets, finance, food and agriculture, technology and transportation.
Encourage states to delicense occupations with very limited concerns for public health and safety and act against anticompetitive behaviour.	As part of the *Executive Order on Promoting Competition in the American Economy*, the President encouraged the Federal Trade Commission to ban unnecessary occupational licensing restrictions that impede economic mobility. At the same time, the Executive Order acknowledged the public safety rationale for occupational licensing in industries such as skilled construction trades.
Use federal law to impose recognition of out-of-State licensures, allowing States to set stricter requirements only if they can prove it is necessary to protect the public.	As above
Address excessive employment barriers that create obstacles for ethnic minorities and foreign nationals.	
Outlaw the use of non-competes except where employers can prove benefit to workers. Set a minimum earning or minimum skill threshold for using non-competes to protect low-income workers.	As part of the *Executive Order on Promoting Competition in the American Economy*, the President encourages the Federal Trade Commission to ban or limit non-compete agreements.

Competition in health markets can also be enhanced by ensuring that unnecessary barriers to firm entry are alleviated. There are a range of regulations, at both the federal and state level, put in place to improve patient wellbeing but that may negatively impact on competition. These include Any Willing Provider Laws (requiring insurers to include any provider who desires to be in their network, paying them at set rates) and Certificates of Public Advantage (which shield merging health providers from antitrust scrutiny, with the promise of oversight by state authorities who may or may not have the requisite capability; Gaynor, 2021). The latter are of particular concern for competition authorities, with the Federal Trade Commission undertaking ongoing market studies on these laws since 2017 (Federal Trade Commission, 2017).

The potential anticompetitive impact of Certificate of Need laws should also be closely evaluated. These regulations exist in thirty six states and the District of Columbia and require a state health planning agency to approve the construction of any new healthcare facility. The laws are intended to avoid costly duplication of technology or facilities in a system where cost-based reimbursement and third-party payments could result in excessive proliferation of health services (Conover and Bailey, 2020). However, past studies highlight that the regulations have often not reduced health costs while having anticompetitve effects, functioning as a form of industry protection (Federal Trade Commission and Department of Justice, 2004). In some jurisdictions, the laws have reduced the number of facilities providing a given regulated service

without changing the number of procedures undertaken overall (Conover and Bailey, 2020), suggesting they have contributed to increased market concentration. Certain states have begun to scale back their Certificate of Need laws, with New Hampshire repealing them in 2016 and Florida repealing most of the requirements in 2019. The evidence suggests that the net costs of these laws can outweigh their benefits and states should be encouraged to continue evaluating the extent to which their provisions are welfare enhancing.

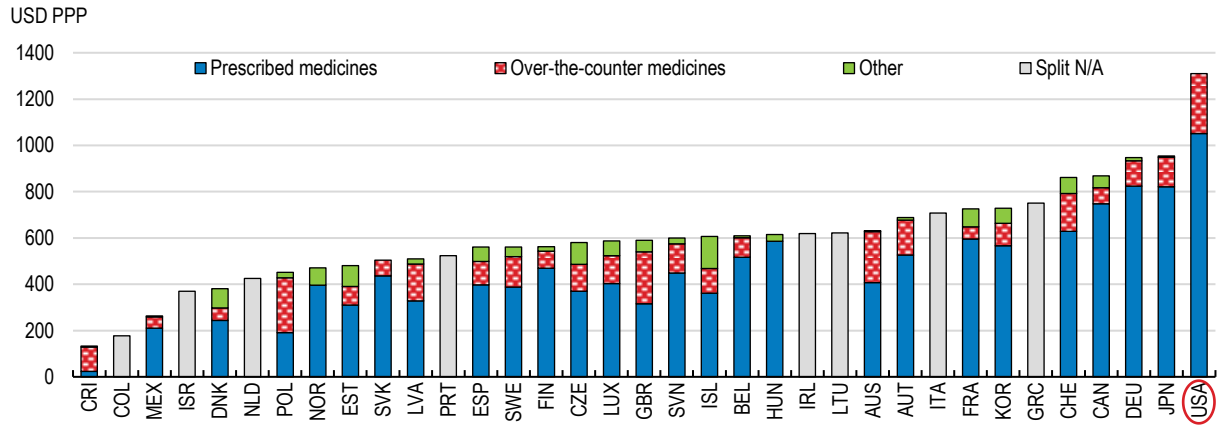
Promoting greater patient choice could also be an important channel for injecting competition into the health sector (OECD, 2018). An impediment has been data blocking practices aimed to prevent or impede the clinical information of patients flowing to alternative providers. However, the Office of the National Coordinator finalised rules in 2020 to increase penalties for data blocking and to mandate technologies to allow patients access to their health data (Peters and Testa, 2021). Opportunities for data portability would be enhanced by comprehensive laws at the national level related to data protection (Castro, 2021). At present, there are a patchwork of sectoral and state-level data protection laws that contain data portability requirements. Looking forward, enhanced portability of health data can best spur competitive dynamics if combined with incentives for those choosing services to select lower-cost and higher-quality providers (Sinaiko, et. al., 2021), aided by the availability of reliable price and quality information. It is also important that regulators play an active role in supervising interoperability standards so that any data portability requirements have the greatest effect.

Further upward pressure on health spending is being exerted by prescription drug prices, which are significantly above those in most OECD countries and lead to comparatively high spending on pharmaceuticals per capita (Figure 2.25; Dubois et al. 2021). In 2018, brand name drug prices in the United States were 344% of those in 32 OECD comparison countries (Mulcahy et. al., 2021). Prescription drug prices under Medicare have been higher than under other federal programs (CBO, 2021d), partly reflecting the inability of Medicare to directly negotiate prices, unlike the Veterans Health Administration, the Department of Defense or Medicaid (Martin, 2021). Other OECD countries, such as the United Kingdom, leverage the position of the public health system as a single buyer to effectively control overall spending on medicines. As part of the recent *Inflation Reduction Act*, Medicare will be able to directly negotiate prescription drug prices with manufacturers and impose a tax penalty if drug companies increase their prices faster than inflation. Prior to the legislation being enacted, estimates suggested that this would reduce public health spending by about US$160 billion over a decade (0.7% of GDP; CBO, 2021c).

Under the new arrangement, drugs become eligible for negotiation once they have been on the market for a fixed number of years: 9 years for small molecule drugs and 13 years for biologics. Medicare will eventually negotiate up to 20 drugs per year and all insulin products. While this is a very small subset of available drugs, the rise in prices has been particularly pronounced for a narrow group of “specialty” drugs that treat chronic, complex or rare conditions. Brand-name specialty drugs have accounted for about 30% of net spending on prescription drugs under Medicare Part D, but only 1% of prescriptions dispensed (Anderson-Cook, 2019). In future, the authorities should consider expanding the number of drugs subject to negotiation by Medicare, after monitoring the impact of the recent changes on prices and pharmaceutical innovation.

Figure 2.25. Spending on pharmaceuticals is much higher than other OECD countries

Expenditure on retail pharmaceuticals per capita, 2021 or latest available



Note: Data for Italy, Lithuania, Greece, Ireland, Portugal and the Netherland includes medical non-durables (resulting in an overestimation of around 5-10%). Data for Mexico only include private expenditures.
Source: OECD Health Statistics.

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Improving governance of large-scale infrastructure projects

In November 2021, the United States Congress passed the *Infrastructure Investment and Jobs Act*, which provided around US$550 billion of additional infrastructure spending over a ten year horizon. The legislation included new spending on road, rail, port and broadband infrastructure. It also emphasised environmental objectives, through funding for environmental remediation (e.g. cleaning up brownfield sites and reclaiming abandoned mine land), modernising the electricity grid and for zero- and low emission public transport infrastructure. In total, the additional annual spending is equivalent to over 15% of pre-pandemic public infrastructure spending.

Most OECD countries have emphasised infrastructure spending in recovery plans (OECD, 2021d), but the need for upgrades to infrastructure in the United States was well recognised prior to the pandemic. While the United States boasts world leading infrastructure in some sectors, such as commercial freight, it lags behind in other areas. In recent years, the United States ranking in cross-country measures of infrastructure quality, such as that from the World Economic Forum Global Competitiveness Report, slipped. Many of the initiatives in the *Infrastructure Investment and Jobs Act* accord with the spending priorities outlined in past *OECD United States Economic Surveys*. For example, the need to increase public spending on transport infrastructure, broadband and clean technologies have been emphasised in recent *Surveys* (Table 2.7). Work by the Congressional Budget Office has highlighted the potential for substantial positive productivity benefits from the initiatives (CBO, 2021e). Such benefits can come directly through raising the value added of infrastructure sectors (i.e. utilities, telecommunications and transport) and indirectly through the positive impact on downstream sectors that use such infrastructure as an intermediate input. Even so, the productivity payoff from infrastructure spending is highly uncertain and depends critically on the frameworks determining the selection and implementation of projects.

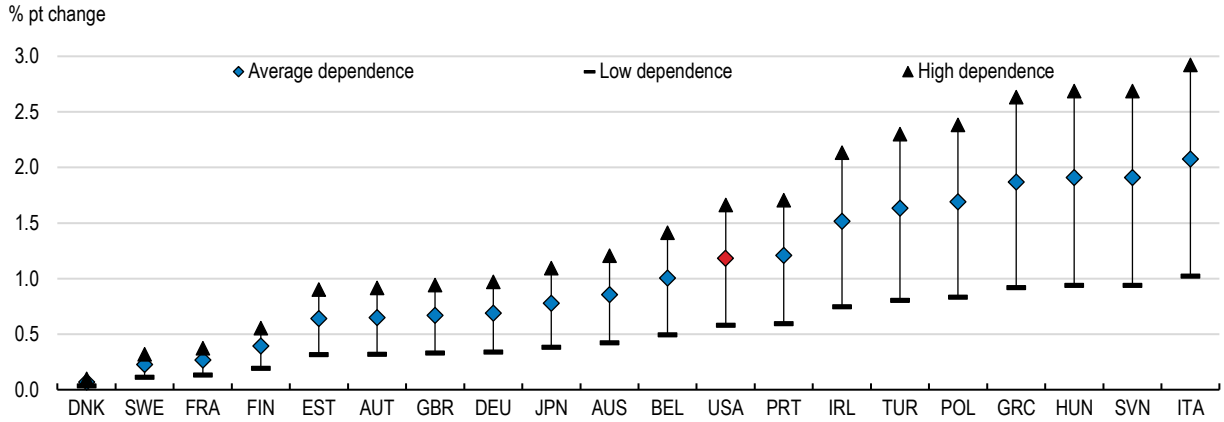
Table 2.7. Past OECD recommendations on building physical infrastructure

Key recommendations in previous *Survey*	Actions taken since the previous *Survey* (July 2020)
Invest in new telecommunication infrastructure where supported by appropriate evaluation such as cost benefit analysis.	
Improve the maintenance of the road network.	The *Infrastructure Investment and Jobs Act* included US$110 billion in additional funding to repair roads and bridges and support major transformational projects. The legislation also included the first ever Safe Streets and Roads for All program to support projects to reduce traffic fatalities.
Provide fiscal incentives for states and localities to relax land use restrictions and promote multi-use zoning.	As part of the *American Jobs Plan* (released March 2021), the administration proposed a new competitive grant programme that awards flexible and attractive funding to jurisdictions that take concrete steps to eliminate exclusionary zoning and harmful land use policies.
Help states and localities better co-ordinate land-use, transportation and housing policies. Require metro mass transit fund recipients to integrate transport policy with land-use and housing policy.	
Invest in extreme weather and climate-resilient infrastructure.	The *Infrastructure Investment and Jobs Act* included US$50 billion to protect against droughts, heat, floods and wildfires, in addition to a major investment in weatherisation.

Demmou and Franco (2021) estimated noteworthy effects of differences in infrastructure governance across countries on productivity growth. Infrastructure governance can be understood as the policies, frameworks, norms, processes and tools used by public bodies to plan, make decisions, implement and monitor the entire life cycle of public infrastructure (OECD, 2020d). The increase in productivity growth following a significant reform to governance practices could be over 1½ percentage points for an average US firm in an infrastructure dependent sector (Figure 2.26). Some infrastructure governance challenges in the United States have been identified, including inadequate capacity in some states for managing projects, excessive project scope (i.e. overenginnering), insufficient coordination between governments, poor regulatory standards for some infrastructure and abusive use of permitting processes (Demsas, 2021).

Figure 2.26. Improving infrastructure governance could bring significant productivity gains

Productivity gains of raising infrastructure governance to those of the best performing country



Note: The figure shows the downstream productivity growth increase from moving to infrastructure governance best practices (Netherlands in the estimation sample) for the average firm in a low (professional services)/average (manufacture of food products, beverages and tobacco products)/high (manufacture of paper and printing of media) infrastructure dependent sector. Infrastructure governance is proxied by the overall index from the Hertie Business School.
Source: Demmou and Franco (2020).

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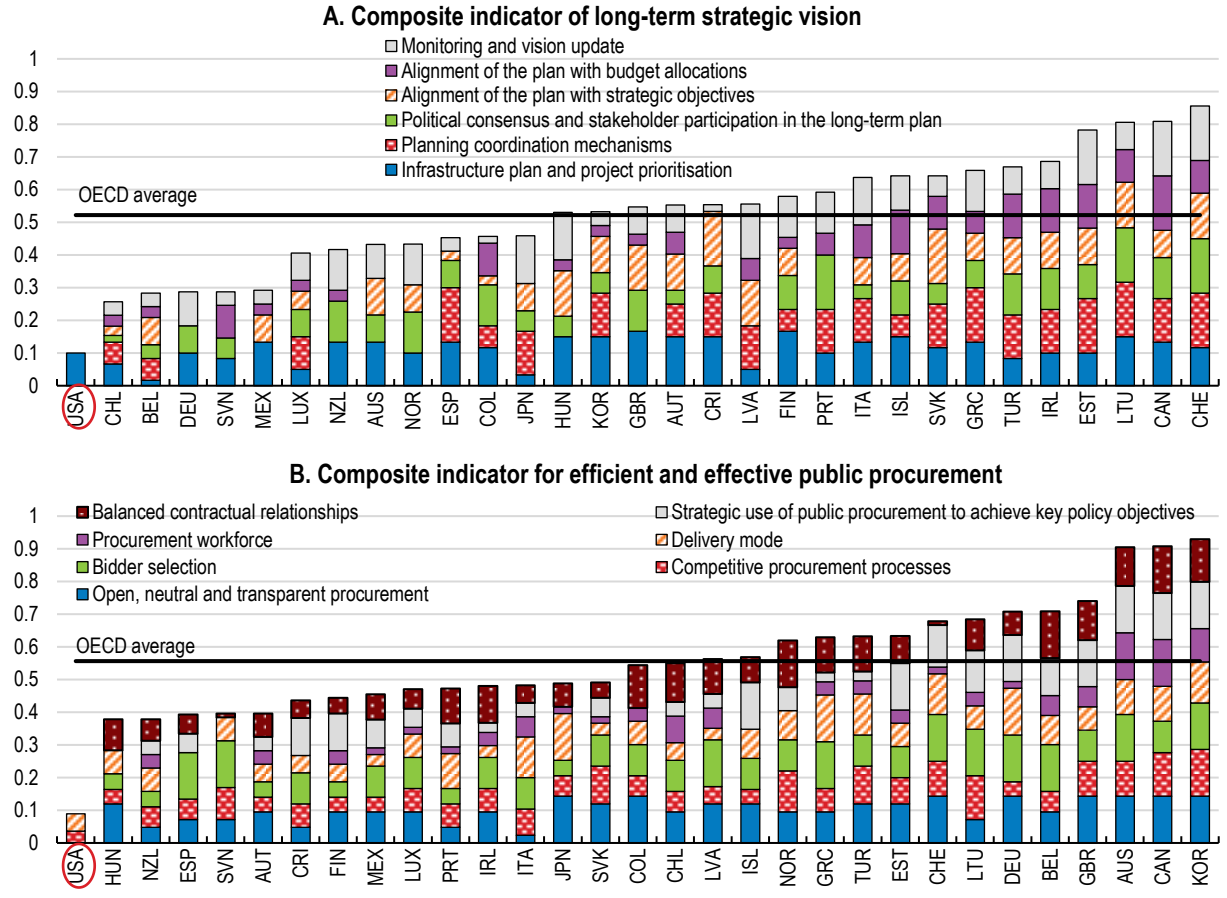
The OECD is currently developing *Infrastructure Governance Indicators* to support member countries in the assessment of decision-making processes, tools and monitoring strategies for infrastructure investment and delivery. Based on the 2020 *Survey on the Governance of Infrastructure*, these indicators highlight some shortcomings in the governance of infrastructure in the United States. These are most apparent in the composite indicators related to "long-term strategic vision for infrastructure" and "efficient and effective procurement" (Figure 2.27).

Figure 2.27. There is scope for improved infrastructure governance



Note: In Panel A, the composite indicator of long-term strategic vision for the United States is based on long-term national cross-sectoral infrastructure plans. The country currently does not have a long-term national cross-sectoral infrastructure plan, which explains the low indicator value. In Panel B, the United States does not traditionally rely on public procurement of major infrastructure at the Federal level, with such projects instead being carried out at the sub-national level and subject to the legal frameworks and requirements of those sub-national jurisdictions. The composite indicator for efficient and effective public procurement looks at national-level public procurement thus explaining the low indicator value for the United States.
Source: OECD Infrastructure governance.

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A sound long-term strategic vision for infrastructure involves rigorous planning and coordination mechanisms with strong stakeholder engagement and alignment with strategic objectives and budget allocations. Strategic infrastructure planning is critical to support resilient critical and networked infrastructure and to meet climate objectives (OECD, 2021e). In the United States, sectoral plans tend to be shorter than 10 years and there is no explicit alignment with other strategic objectives, such as climate change. In addition, the United States has traditionally not made use of national cross-sectoral

infrastructure plans. Such plans recognise the interlinkages between different types of infrastructure (i.e. transport, water, energy, communications and social) and align infrastructure project decisions accordingly. Digital and energy infrastructure have been identified as having particularly important linkages to other sectors, as most forms of infrastructure are energy-dependent and have become increasingly reliant on digital control systems (ITF, 2021). If well executed, cross-sectoral plans should improve the resilience of infrastructure networks (ibid.). The United Kingdom and Australia are two countries that have recently acknowledged that interconnected risks between infrastructure sectors may increase vulnerability through potential cascading failures (NIC, 2020; Infrastructure Australia, 2019).

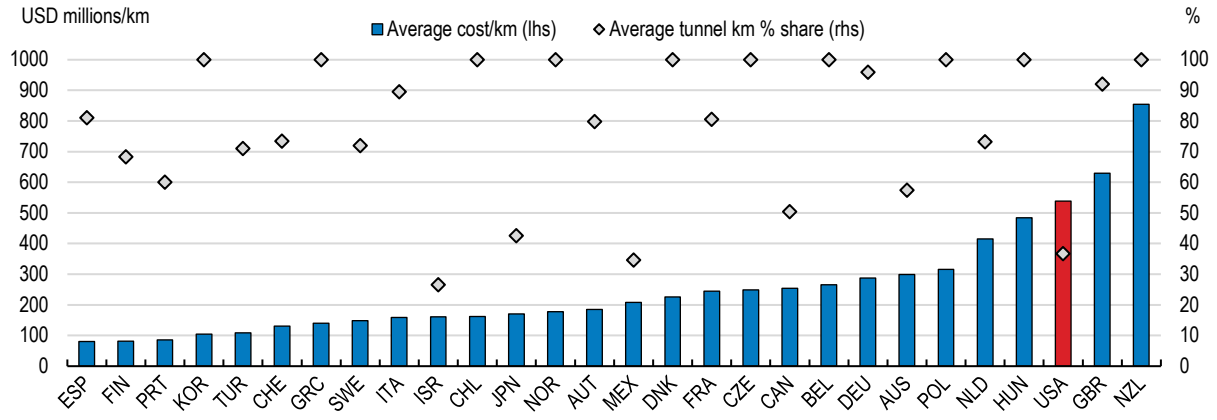
The need for a cross-sectoral infrastructure plan at the national level reflects the presence of interjurisdictional spillovers (both positive and negative) that are unlikely to be taken into account by state-level authorities. Infrastructure projects with strong network effects may be undervalued if such spillovers are not incorporated in decision-making (Bivens, 2017). National-level planning can also play an important role in maximising the compatibility and interconnection of infrastructure between states. This may be especially important as the country transforms the existing energy infrastructure amid the climate transition.

Various OECD countries have established independent infrastructure advisory bodies in recent years to take an ongoing role in national cross sectoral infrastructure planning (ITF, 2021). A welcome development in the United States has been the establishment of a Secretary-level task force and a senior adviser in the White House for coordinating the implementation of the *Infrastructure Investment and Jobs Act*. Looking forward, the administration should consider retaining some of these temporary institutional arrangements on an ongoing basis. The need for an infrastructure bank – like the European Investment Bank – is debatable in the United States context given federal government financial support is already provided in the form of tax incentives on municipal bonds, which local governments mostly rely upon to finance infrastructure projects. However, there is value in considering a new federal institution tasked with ongoing cross-sectoral and cross-state advisory about infrastructure priorities and best practices. In many OECD countries these institutions are strictly independent from the government in order to ensure impartiality. In the United Kingdom, the National Infrastructure Commission provides expert impartial advice on infrastructure, undertaking specific studies and shaping the national infrastructure assessment. Infrastructure Australia is also an independent government advisory agency which updates the Australian Infrastructure Plan (not a politically sanctioned document) every five years and regularly publishes a shortlist of priority investments based on consultation with states, local governments and the private sector. In addition, US infrastructure planning could further benefit from an overview of infrastructure stock, condition and performance at all levels of government, similar to the model of Canada's Core Public Infrastructure Survey.

The OECD *Infrastructure Governance Indicators* also suggest scope for improving the mechanisms used to ensure open, neutral and transparent procurement processes and identifying proposals offering the best value for money. Some measures highlight relatively high costs of infrastructure projects in the United States (Figure 2.28). While there is significant heterogeneity in the quality of implementation of US infrastructure projects (Brooks and Liscow, 2020), various factors have been identified for inflated costs in some instances. These include poor procurement practices, poor project management and regulatory constraints, including “Buy American” laws (Levy, 2021).

Figure 2.28. Indicators of infrastructure costs are elevated

Cost of selected urban rail projects



Note: The data covers only a portion of rail projects in each city/country and, in many instances, is not representative of all the lines constructed in that city/country. The indicator value from the United States is based on 19 rail projects.
Source: Transit Costs Project.

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Many OECD countries face challenges in developing public procurement practices that effectively deliver the desired infrastructure at least cost. This is due to the complexity of infrastructure projects and the multitude of decisions that can influence their outcome. The fact that there is no "one size fits all" approach to procurement has meant that choices often rely on subjective judgment that may not always be evidence based. The OECD is addressing this through developing the Support Tool for Effective Procurement Strategy (OECD 2021f). This not only guides decisions around conceptualisation (i.e. bidder selection and choice of delivery model) but also on the preceding decisions of contract scoping and the capabilities that should be outsourced in a particular project or developed in-house.

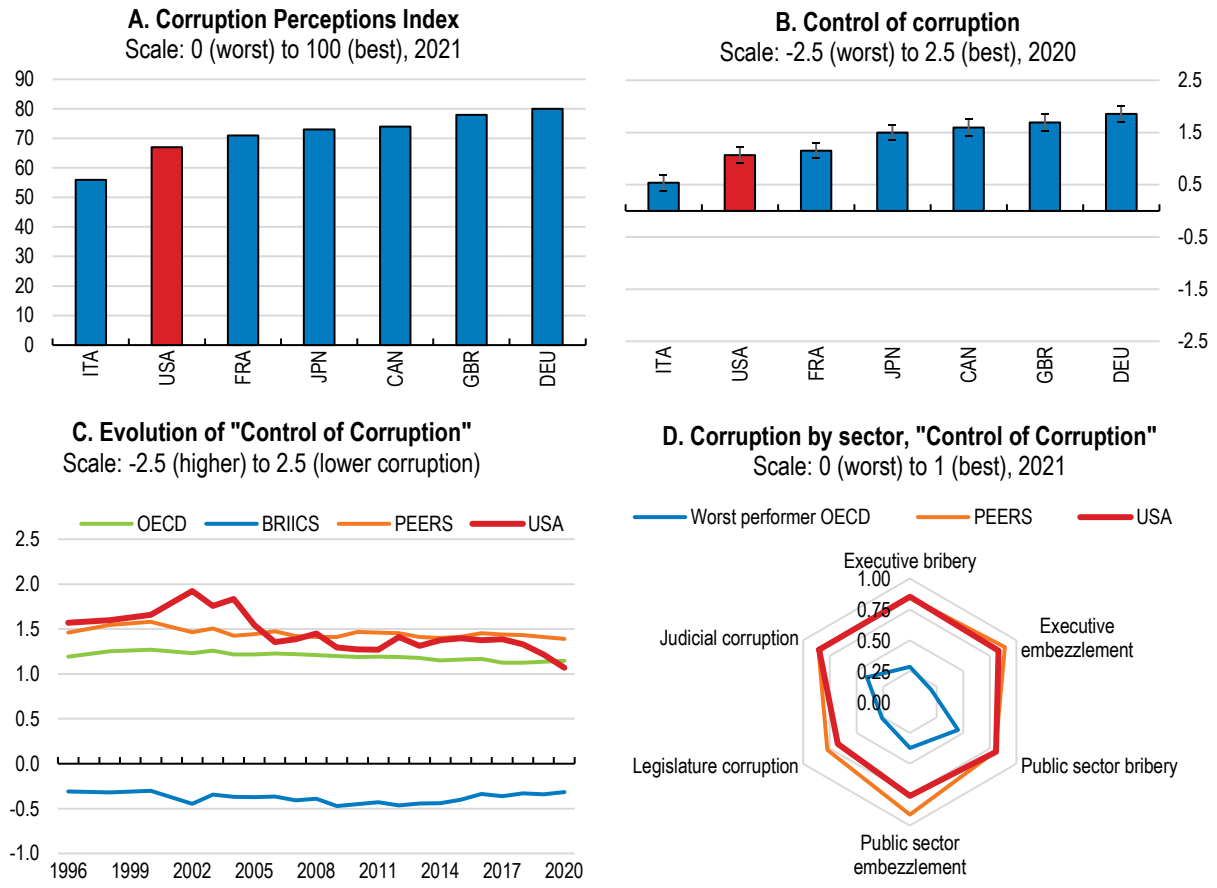
In procurement choices and in selection of infrastructure projects more broadly, impacts on climate pollution should be systematically taken into account. The federal government plays a major role in funding infrastructure investments, but project selection decisions are largely the purview of state governments. Hence, state governments could work together to identify good practices in the management and sustainability of procurement of construction and related services, particularly in terms of lowering costs. Regarding sustainability, a social cost of carbon is already incorporated into regulatory cost-benefit analysis. This is an estimate of the monetised damages associated with incremental increases in carbon. However, there is no mandate that federal grants to states for infrastructure projects require a calculation of the social cost of greenhouse gases in the projection selection phase. Not doing so risks locking in high emissions infrastructure that is not consistent with the goal of reaching net zero emissions by 2050.

In January 2021, an Executive Order announced the re-establishment of the Interagency Working Group on the Social Cost of Greenhouse Gases. This group was tasked with updating estimates of the social cost of carbon, social cost of nitrous oxide and social cost of methane. The group will also provide recommendations to the President regarding areas of decision making, budgeting and procurement where these estimates should be applied. Decisions related to infrastructure projects should be one such area. Going forward, these estimates should also be updated regularly and transparently, based on the best available science, in order to provide some certainty to businesses and households.

Continuing to buttress the anti-corruption framework

The perception of corruption is low in the United States, but remains somewhat weaker than in most other G7 countries (Figure 2.29, Panel A). The control of corruption indicator is also relatively weak and has dipped lower in the past few years (Figure 2.29, Panel B and C). According to the Varieties of Democracy Project, the main areas of weakness compared with peer countries relate to public sector embezzlement and legislature corruption (Figure 2.29, Panel D).

Figure 2.29. Indicators of control of corruption dipped in recent years



Note: Panel B shows the point estimate and the margin of error. Panel D shows sector-based subcomponents of the "Control of Corruption" indicator by the Varieties of Democracy Project.
Source: Transparency International (Panel A); World Bank (Panels B & C); Varieties of Democracy Project (Panel D).

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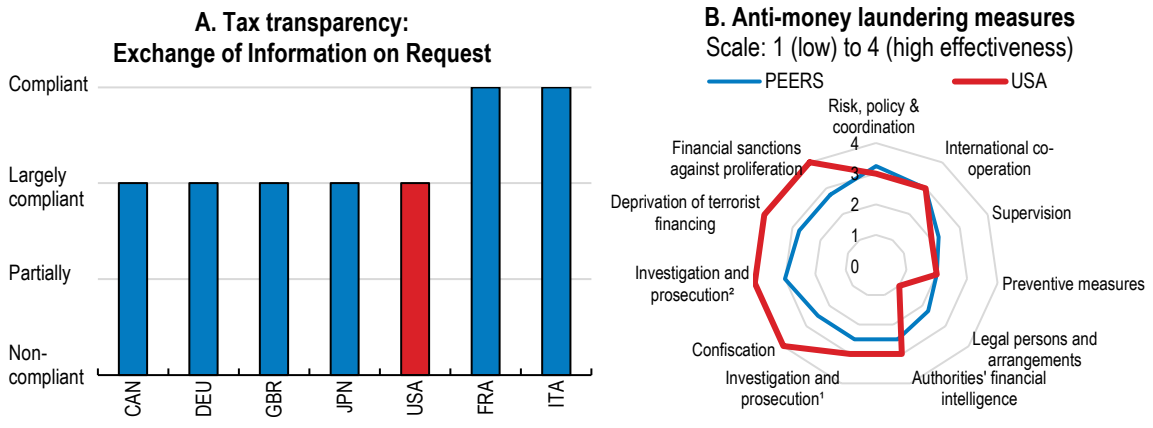
In recent years, the administration has put a strong emphasis on improving the anti-corruption framework. In mid-2021, the fight against corruption was established as a Core United States National Security Interest. A National Strategy on Countering Corruption was subsequently published in December 2021. This sought to provide a whole-of-government response to the issue, with a particular emphasis on understanding and responding to transnational corruption risks. The strategy was organised around five pillars; i) modernising, coordinating, and resourcing U.S. Government efforts to fight corruption, ii) curbing illicit finance, iii) holding corrupt actors accountable, iv) preserving and strengthening the multilateral anti-corruption architecture, and v) Improving diplomatic engagement and leveraging foreign assistance resources to achieve anti-corruption policy goals. Federal departments and agencies will report annually to the President on progress made against the Strategy's objectives.

In terms of tax transparency, which reduces the scope for tax evasion, the United States is largely compliant and similar to other G7 countries (Figure 2.30, Panel A). With respect to the effectiveness of anti-money laundering measures, the United States performs better or at least equivalent to other G7 countries (Figure 2.30, Panel B). However, concerning the technical compliance of anti-money laundering measures, the Financial Action Task Force judged the United States non-compliant in four areas as of March 2020: transparency and beneficial ownership of legal persons, customer due diligence, other measures and regulation and supervision of designated non-financial businesses and progressions (Financial Action Task Force, 2020). Looking forward, achieving continued progress in technical compliance in all anti-money laundering measures should be a priority.

In January 2021, Congress passed the *Corporate Transparency Act*. The legislation requires all entities formed in or registered to do business in the United States to report beneficial ownership information to the Financial Crimes Enforcement Network by no later than 1 January 2022. Before this measure was introduced, very few states required information about beneficial owners when a corporation or limited liability company was formed. This lack of information could be exploited by criminals for a variety of illegal activities, including money laundering and tax evasion. It is expected that the new provisions will significantly enhance the ability of the United States authorities to detect and investigate financial crimes. In addition, new legislation has been proposed (called the *Enablers Act*) that would amend the *Bank Secrecy Act* to require various intermediaries including trust companies, financial advisers, lawyers and art dealers to investigate clients seeking to move money and assets into the American financial system. Banks are already required to undertake such due diligence, but these other intermediaries would also be required to report any suspicious activity to the Treasury Department under the proposal.

Figure 2.30. Tax transparency and anti-money laundering measures are mostly effective



Note: Panel A summarises the overall assessment on the exchange of information in practice from peer reviews by the Global Forum on Transparency and Exchange of Information for Tax Purposes. Peer reviews assess member jurisdictions' ability to ensure the transparency of their legal entities and arrangements and to co-operate with other tax administrations in accordance with the internationally agreed standard. The figure shows first round results; a second round is ongoing. Panel B shows ratings from the FATF peer reviews of each member to assess levels of implementation of the FATF Recommendations. The ratings reflect the extent to which a country's measures are effective against 11 immediate outcomes. "Investigation and prosecution" refers to money laundering. "Investigation and prosecution" refers to terrorist financing.
Source: OECD Secretariat's own calculation based on the materials from the Global Forum on Transparency and Exchange of Information for Tax Purposes; and OECD, Financial Action Task Force (FATF).

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Table 2.8. Policy recommendations from the Key Policy Insights

MAIN FINDINGS	RECOMMENDATIONS (Key recommendations in bold)
Ensuring a sustained recovery in output and jobs	
The pace of COVID-19 vaccination has slowed, with significant heterogeneity in vaccination rates across states. Most unvaccinated individuals cite their doctor's office as the preferred location for vaccination. However, independent primary care practices have had limited engagement in the vaccine campaign so far.	Further raise COVID-19 vaccination rates, including by boosting primary care capacity to administer vaccines and by building confidence in accurate information about vaccines.
Inflation has spiked and there are signs of broadening price pressures. However, these have not yet translated into long-term inflation expectations becoming de-anchored. Experimental estimates suggest that inflation has been higher for the lowest income quintile than the highest income quintile over the past two years.	Publish inflation aggregates for separate households in the income distribution, based on their different average consumption baskets.
Monetary policy has begun to tighten. Elevated inflation and convergence to full employment will likely require further tightening of monetary policy.	**Continue to raise the Federal Funds Rate and further reduce asset holdings, with the pace of normalisation remaining highly responsive to changes in economic conditions.**
The banking system appears to be well capitalised and profitable. However, capital requirements under some macroprudential tools exhibit procyclicality. There are signs that institutions in the non-bank financial sector have become more highly leveraged and have significant exposure to leveraged loans that have experienced declining credit quality. However, assessment of non-bank risks is complicated by data limitations.	**Improve data collection on the activities of non-bank financial institutions, including hedge funds and life insurance companies.** Consider targeting a positive countercyclical capital buffer, instead of zero, in a normal risk environment. Develop the regulatory framework for Stablecoins, including clear assignment of responsibilities across regulators.
The Federal Reserve is developing a programme of climate-related scenario analysis. However, methodological challenges exist related to both obtaining the necessary granular data and developing a modelling framework.	Continue to develop a rigorous framework for climate-related scenario analysis that can provide regulators and markets with timely insights on climate-related financial risks.
The pandemic-related fiscal measures announced in 2020 and early 2021 have now expired. Even so, earlier stimulus checks, supplementary unemployment benefit payments and expanded benefit coverage, have resulted in accumulated savings that could continue to support consumer spending in the short-term. Russia's war against Ukraine is likely to negatively impact output growth at the same time as the rise in commodity prices pushes inflation higher.	**Further reduce the fiscal deficit while continuing to invest in combatting climate change and improving the social safety net.** Continue to develop the medium-term budgetary framework. Consider introducing new temporary fiscal measures targeted at vulnerable groups if the impacts of Russia's war against Ukraine or an economic slowdown are unexpectedly pronounced.
Expansions in unemployment insurance eligibility and benefit amounts during the pandemic were accompanied by significant delays in processing claims in most states. In addition, outdated software systems placed limitations on the design of supplementary unemployment benefits.	**Continue to modernise and streamline unemployment insurance systems, strengthening integration with job search assistance and training schemes.**
The ageing population, low interest rates, heightened uncertainty and fiscal policy playing a more active role in cyclical stabilisation have altered the environment in which fiscal policy is operating. The extent to which shocks to household income are offset by automatic stabilisers is relatively low.	Consider automatically linking expanded unemployment benefits and federal fiscal aid for state and local governments to pre-specified economic triggers. More closely index long-term fiscal commitments to their underlying drivers (e.g. indexation of retirement age to life expectancy).
To eventually stabilise the public debt to GDP ratio, additional revenue and improvements to public spending efficiency will be needed. Mortgage interest tax deductibility and the state and local tax deduction push up property prices, disproportionately benefit high-income families and have limited economic justification.	**Phase out regressive distortions from the tax code, including the mortgage interest tax deduction and state and local tax deductions.** **Reduce tax evasion, by investing further in the Internal Revenue Service.**
Improving public spending efficiency and the anti-corruption framework	
Estimates suggest that the United States spends almost twice as much on health per capita than comparable OECD countries. There has been substantial consolidation in the healthcare industry over recent years which has been accompanied by increased markups.	Remove reporting exemptions for smaller merger transactions in the healthcare sector. More closely monitor the anticompetitive effects of Certificate of Need laws. Ensure adequate resources for antitrust authorities to combat anti-competitive practices and fully implement the Executive Order on Promoting Competition in the American Economy.
Enabling greater data portability by consumers may promote competition in the health sector. However, there is a patchwork of sectoral and state-level data protection laws that contain data portability requirements.	**Identify opportunities for introducing data portability policies at the national level and give regulators an active role in supervising interoperability standards.**
Pharmaceutical prices are much higher than in most OECD countries, pushing up public spending. The passage of the *Inflation Reduction Act*	**Consider further expanding the number of pharmaceutical drugs subject to negotiation by Medicare.**

will mean Medicare will be able to directly negotiate pharmaceutical prices with manufacturers, but this will only be for a small subset of available drugs.	
Infrastructure gaps are being addressed through the legislated *Infrastructure Investment and Jobs Act*. Particular governance challenges relate to cross-sectoral planning at the national level and public procurement processes. Estimates of the social cost of greenhouse gas emissions are currently being updated and an interagency group is reviewing areas of public decision-making where these estimates should be applied.	**As in other OECD countries, establish a dedicated federal institution tasked with ongoing cross-sectoral and cross-state advisory about infrastructure priorities and best practices.** Review public procurement processes and explore the application of the OECD Support Tool for Effective Procurement Strategy to procurement decisions in the United States context. Mandate that federal grants to states for infrastructure projects require an adequate estimate of the social cost of greenhouse gases to be applied in the project selection phase. Encourage state governments to work together to identify good practices in the management and sustainability of procurement of construction and related services.
The United States performs better or at least equivalent to other G7 countries with respect to the effectiveness of anti-money laundering measures. However, the Financial Action Task Force judged the United States still non-compliant in four areas.	Make continued progress in achieving technical compliance in all anti-money laundering recommendations of the Financial Action Taskforce.

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3 Selected policy challenges for the American Middle Class

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The American middle class has shrunk in size since 1970 according to most definitions. This “hollowing” out of the United States income distribution could result in disillusionment, diminished political engagement, and declining trust in institutions. The American middle class faces two major challenges, among others. First, child care costs in the United States are high and availability is low. Improving enrolment in child care has the potential to reverse the fall in female labour market participation since the financial crisis and result in improved well-being and economic growth. Public funding for child care programmes should be raised, and programme eligibility should be widened to benefit middle-income parents. Second, the climate transition will entail major changes to middle-class lifestyles. Reductions in US household emissions from housing and transportation will be key to achieving the overall emission reduction targets, and may prove costly. Workers in carbon-intensive sectors of the economy and households living in regions that rely on carbon-intensive activities will be affected as resources shift to greener sectors. A national climate strategy should be developed that explicitly takes into account emissions inequalities and the redistributive effects of climate policies. Active labour market policies will be key to achieving a just transition, and existing home weatherisation programmes should be expanded to cover the middle-class.

Disposable incomes of the US middle class have stagnated relative to those of higher- and lower-income households. Over the past few decades, the US income distribution has become more polarised, or more "hollowed out", as the share of households in the middle class has steadily fallen. The same has occurred, and to an even greater extent, with the distribution of wealth.

At the same time, the middle class has faced rising costs of living. The costs of important components of the middle class consumption basket, such as housing, quality education, health care, child care and energy, have steadily risen. These rising costs, coupled with stagnating incomes, have resulted in increases in household indebtedness, which can have important consequences in terms of disincentivising enrolling in education, investment in health care and financial stability.

The presence of a strong and prosperous middle class supports a healthy economy and society through their investments in health and education, and their support for quality institutions and public services. Across countries, the middle class tends to invest heavily in their own education and that of their children, thus increasing human capital accumulation. Countries with a strong middle class also tend to enjoy high rates of entrepreneurship and innovation, which contribute to stronger economic growth. On the other hand, a shrinking middle class and the perception that the American Dream is reserved only for a select few can lead to disillusionment, diminished political engagement, populism, declining trust in institutions and political instability.

Unprecedented government support during the COVID-19 pandemic prevented a collapse in the incomes of low- and middle-income households despite large employment losses. As government support fades, inequality could rise as disparities across occupations, industries and regions are no longer compensated by fiscal policy. Many households have also reported struggling both financially and psychologically through the pandemic, faced with difficulties keeping up with mortgage, medical and energy bills.

This chapter discusses how the US middle class has fared over the last decades, the growing polarisation of income and wealth, and two major challenges that the US middle class faces going forward; the high cost and low availability of child care and the climate transition. While these are not the only challenges faced by the middle class, they are pressing issues that are a focus of the current administration with important implications for families and the economy as a whole. All else equal, middle-class family incomes would have been flat or possibly even falling had it not been for the rise in female labour market participation that occurred between 1970 and 2000. This rapid increase in participation highlighted the importance of accessible and affordable child care alternatives. Policies that improve access to child care have the potential to reverse the fall in female labour market participation since the financial crisis and result in improved well-being and higher economic growth. The climate transition will entail major changes to middle-class lifestyles. Reductions in US household emissions from housing and transportation, which account for a large part of total greenhouse gas emissions, will be key to achieving the overall emission reduction targets, and may prove costly for households. Workers in carbon-intensive sectors of the economy and households living in regions that rely on carbon-intensive activities will be affected as resources shift to greener sectors.

Key trends for the US middle class

The benefits of a strong middle class

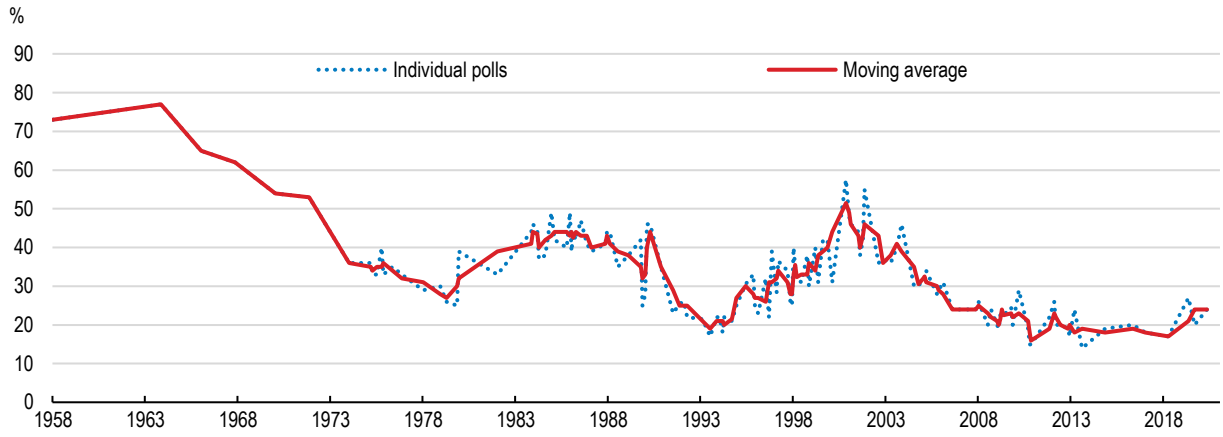
Countries with a strong a prosperous middle class tend to enjoy higher levels of wellbeing and trust in institutions, greater political stability, better governance, and lower crime rates (OECD 2019). A healthy middle class enhances political stability, which in turn is conducive to investment and economic growth (Alesina and Perotti, 1996). The middle class is also an important source of investment in education: in the presence of liquidity constraints, a wealthier middle class can afford to invest in quality education while a more financially constrained middle class would not be able to (Perotti, 1993; Thorson, 2014). This results

in faster human capital accumulation and better economic prospects for the country as a whole (Brueckner et al., 2017). A strong middle class can also be a major source of tax revenue as well as a source of demand for quality public services, regulations and rule of law, which are public goods that benefit the country as a whole (Birdsall, 2016). It is also a source of entrepreneurship and innovation (van Stel et al., 2005; OECD, 2010).

Studies show that growing inequality can result in disillusionment, lower political engagement, nationalist sentiment and higher crime incidence (Bettiza, 2010; Stiglitz, 2012; Kelly, 2000; Kuziemko et al, 2015). The same may be true of growing polarisation and a shrinking middle class (OECD, 2019). Public trust in government is near an all-time low in the United States, as shown in Figure 3.1 (Pew Research Center, 2021; Gould and Hijzen, 2016). It was also low compared to other countries at the onset of the COVID-19 pandemic, with only 36.3% of American respondents to an OECD survey saying they had confidence in their government in 2019 (see Figure 3.2).

Figure 3.1. Public trust in government is near a historic low

Public trust in government (% of Americans who say they can trust the government to do what is right "just about always" or "most of the time")



Source: Pew Research Center.

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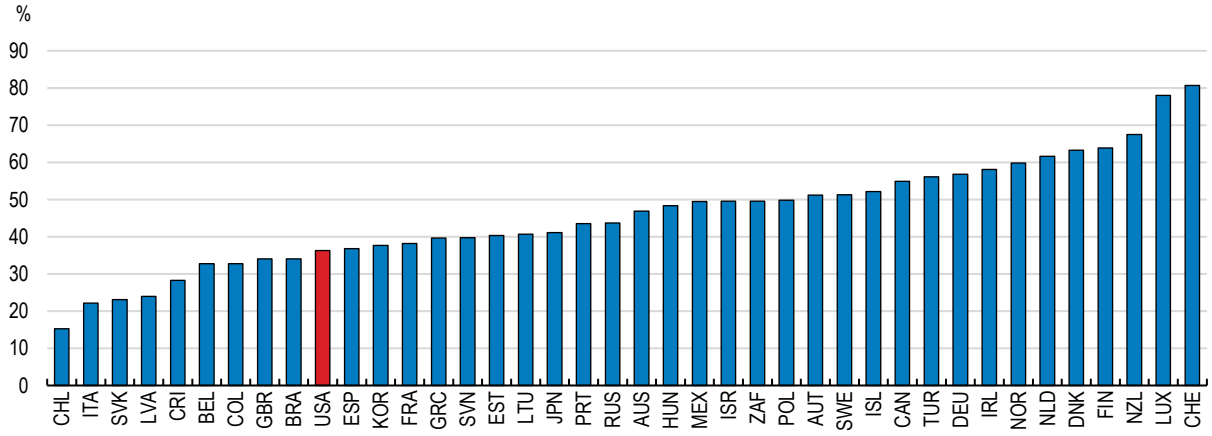
Figure 3.2. Public trust in government was among the lowest in the OECD before the pandemic

% of survey respondents saying they have confidence in their national government, 2019



Source: OECD (2022), Trust in government (indicator). doi: 10.1787/1de9675e-en (Accessed on 09 March 2022).

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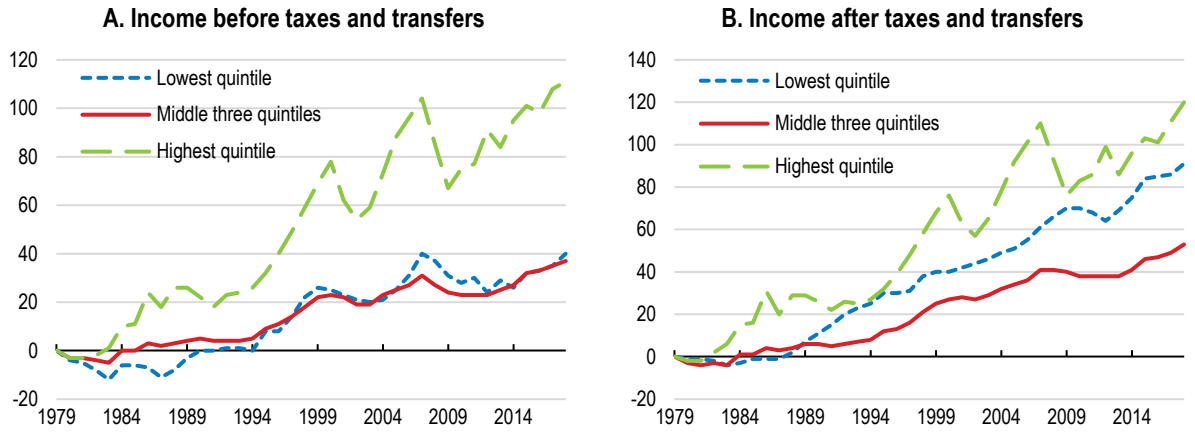
Stagnating incomes and rising costs

According to data compiled by the Congressional Budget Office (CBO, 2021), growth in incomes of the US middle class has lagged those of higher- and lower-income households during the last decades after accounting for taxes and transfers. Earnings at the top of the income distribution have risen rapidly, driven by increases in labour, business and capital income and capital gains and a downwards trend in taxes. Incomes at the bottom of the distribution have benefited from declines in taxation and increases in means-tested transfers such as Medicaid. Meanwhile, the incomes of the middle class have not kept up despite a falling tax burden and a gradual increase in transfers (see Figure 3.3). From 1979 to 2018, the average income after taxes and transfers rose by 53% for the middle three quintiles of the income distribution, while it rose 91% and 120% for the lowest and highest quintiles, respectively (while this result is sensitive to the definition of the middle class, disposable income growth has been sluggish for the middle class under most common definitions thereof and this chapter shows a rising measure of income polarisation which is independent of any definition). Moreover, Boushey and Vaghul (2016) and Sawhill and Guyot (2020) estimate that a large part of the growth in middle class incomes has been due to the rise in earnings and hours worked of middle class women, without which middle class real income growth would have been almost flat over the past 40 years. The rising contribution of women to family incomes has been accompanied by a family “time squeeze” as the average middle class couple now works 600 hours more per year than in 1975 and the proportion of dual-earning couples has risen from 50% to 70% (Sawhill and Guyot, 2020).

Figure 3.3. Middle-class incomes have lagged those at the top and bottom of the distribution

Cumulative growth in average income by income quintile, 1979-2018



Note: Real incomes in 2018 dollars using the Bureau of Economic Analysis's price index for personal consumption expenditure. Incomes are adjusted for household size using a square root equivalence scale. Taxes and transfers include federal taxes (individual income tax, payroll taxes, corporate income tax and excise taxes) and means-tested transfers (Medicaid and CHIP, SNAP, SSI and other transfers).
CHIP = Children's Health Insurance Program; SNAP = Supplemental Nutrition Assistance Program; SSI = Supplemental Security Income.
Source: Congressional Budget Office.

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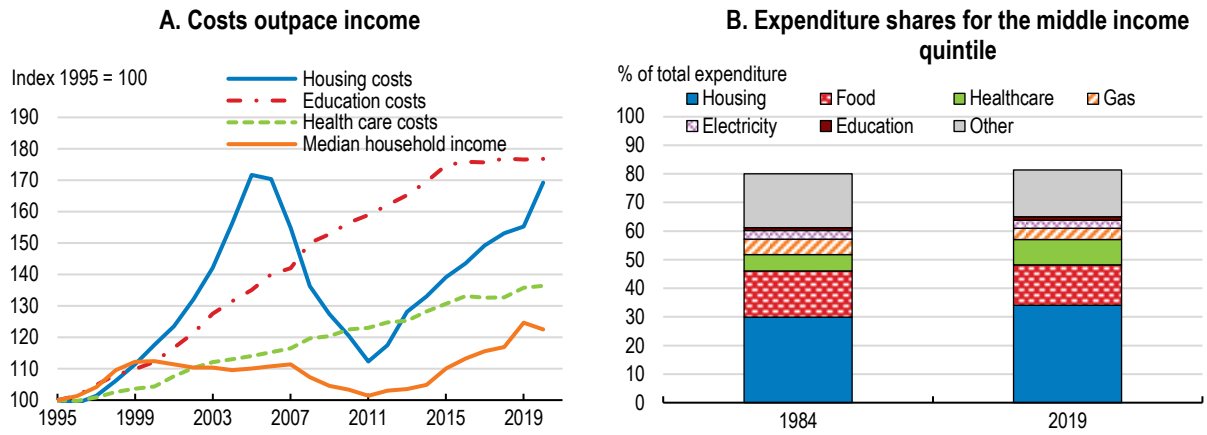
The Biden administration's actions to improve competition in the labour market are welcome. There is mounting evidence of labour market concentration in particular industries and locations leading to lower pay and fewer benefits for workers (Azar et al 2020 and Treasury 2022). In addition, non-compete agreements, non-disclosure agreements and other practices that limit labour market competition have become common in certain industries and can result in reduced labour market mobility and wages. There is also evidence of the growing use of worker misclassification, when a company misclassifies a worker as an independent contractor when the worker should be an employee to reduce costs and avoid certain legal obligations. The Biden administration has proposed a number of measures on these issues, including encouraging the Federal Trade Commission to consider banning or limiting the use of non-compete agreements, scaling back occupational licensing and directing a government-wide effort to improve labour market competition. These measures can help improve competition in the labour market, raise productivity growth by improving labour reallocation, raise investment incentives and help foster a stronger middle class.

Sluggish middle-class income growth has been accompanied by rising costs of core components of the middle-class consumption basket. The real national average price of housing, measured as the Case-Shiller National Home Price Index, is now above the peak it reached in 2006 when house prices subsequently declined steeply amid the subprime mortgage crisis. While the share of final consumption expenditures on housing in the United States is below the OECD average, the share for the US middle class is high and has been rising in recent years. The cost of housing, which includes mortgage interest and charges, property taxes, and rent, accounted for 36% of yearly expenditures for the typical middle-class household in 2020, up from 30% in 1985 (Consumer Expenditure Survey, BLS). While this rise may partly reflect shifting preferences and the natural decrease in the proportion spent on food and other necessities as household incomes rise, it has been accompanied by a significant increase in housing-related debt (shown below in Figure 3.6). While soaring house values have benefitted home-owners, those who do not own a house now face much higher costs than previous generations. Total housing debt has

also risen along with house prices, although it still remains 14% below its peak in 2008 (see the section below on the trends in the distribution of net wealth in the United States).

The cost of healthcare has also outpaced middle-class incomes, as the prices of drugs, medical services and health insurance have all risen. This partly reflects increased market concentration in these sectors that has contributed to rising price markups (see Chapter 2). In 2020, middle-class households spent almost 10% of their total expenditure on out-of-pocket health care expenses (including co-payments for medical services, drugs, and insurance premiums and deductibles), double the share they spent in 1985. Not only do elevated prices inflict a significant costs on families, they can also lead to worse health outcomes: in 2018, close to half of Americans skipped medical care because of high costs (NORC and West Health Institue, 2018). This can have generational impacts and result in lower health and economic mobility (Krondstat 2008, Fletcher and Jajtner 2019).

Figure 3.4. The middle-class has faced rising costs of important components of its consumption basket



Source: Consumer Expenditure Survey, BLS.

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The net costs of tertiary education in the United States have remained high despite a rise in financial aid for students. The average tuition and fees for a bachelor's degree in public institutions in the United States is high compared to other OECD countries (Figure 3.5), and these costs are even higher for private institutions. According to the College Board (2021), the average price of private non-profit four-year colleges (including published tuition and fees) rose from US$19,360 to US$38,070 between 1991 and 2021, both in 2021 dollars, a real increase of more than 95%. The average cost of public four-year colleges rose from US$4,160 to US$10,740 in the same time period, and that of public two-year colleges rose from US$2,310 to US$3,800, in 2021 dollars. At the same time, the average amount of grant aid for colleges has also risen, resulting in relatively stable net tuition and fees. The share of college students receiving direct public financial support is higher than 85%, among the highest in OECD countries. Nevertheless, the real average total cost of attendance (which includes accommodation, living expenses, books and supplies, etc) net of grant aid has risen for all types of colleges (by 9.8% between 2006 and 2021 for public four-year institutions, and by 4.3% for private nonprofit four-year institutions).

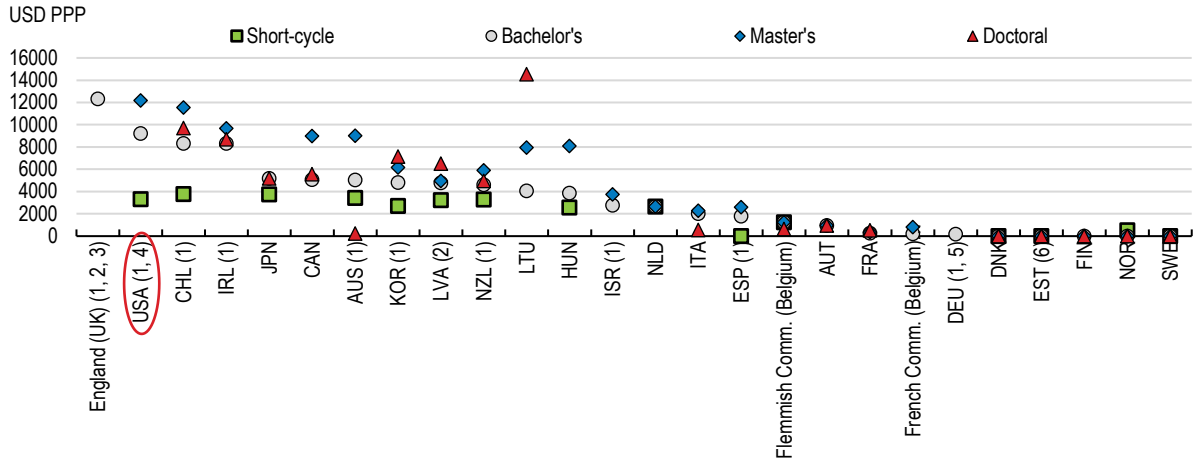
These high costs of higher education have led to an increase in college debt, with total student loan debt reaching US$1.6 trillion in Q2 2022 according to the Federal Reserve Bank of New York. Student loan debt now accounts for more than 10% of total outstanding household debt in the United States, up from 3% in 2003, and more than 30% of outstanding debt for individuals between 18 and 29 years old. Before the student loan repayment moratorium which was introduced during the pandemic in the CARES Act and extended until the end of 2022, student loans were the loan type with the highest delinquency rates. High

costs have also led some individuals, particularly but not only poorer and credit constrained individuals, to forgo higher education altogether, resulting in lower capital accumulation in aggregate and lower economic mobility (Chakrabarty et al 2020, Mankiw, Romer and Weil 1992, Barrow and Lee 2010, Boushey and Hersh 2012). Low- and middle-income individuals are significantly less likely to be enrolled in college than higher-income individuals in the United States (Chetty et al, 2017). According to the U.S. Department of Education, 50 percent of high-scoring students from middle-income backgrounds do not pursue a college degree, compared to only a quarter of high-scoring high-income students (Department of Education, 2005). Additionally, Bailey and Dynarski (2011) show that college completion rates have risen faster for the top income quartile than for the rest of the income distribution.

The Biden administration announced in August 2022 that it would provide student debt loan relief. Under this plan, the Department of Education will provide up to US$10,000 in debt cancellation to recipients of student loans held by the Department of Education, with a further US$10,000 for Pell Grant recipients (Pell Grants are subsidies by the federal government for undergraduate students with exceptional financial need). This debt relief will only be available for borrowers earning less than US$125,000 a year (or US$250,000 for married couples). Additionally, the plan also includes measures to limit student debt repayments to 5% of discretionary income and to forgive loan balances after 10 years of payments for borrowers with original loan balances of US$12,000 or less. This plan will bring significant relief to indebted students and could increase both geographic and economic mobility (Di Maggio, Kalda and Yao, 2020). These measures, however, do not directly address the drivers of the high cost of tertiary education in the US and rising indebtedness. High costs have been attributed to a variety of factors, including declines in state-level investment and an elevated college wage premium (Webber, 2017; Gordon and Hedlund, 2020).

Figure 3.5. College tuition fees are high by international standards

Annual average tuition fees charged by public institutions to national students, by level of education (2019/2020)



1. Reference year: calendar year 2018 for Australia and Germany and 2019 for Chile, Israel, Korea and New Zealand; academic year 2018/19 for England (UK), Estonia, Spain and the United States and 2020/21 for Finland and Ireland.
2. Government-dependent and independent private institutions are combined.
3. Government-dependent private institutions instead of independent private institutions.
4. Government-dependent private institutions instead of public instituions.
5. Tuition fees for foreign students typically refer to tuition fees for out-of-state national students. However, in a minority of institutions, tuition fees can be lower for out-of-state national students.
6. Public and government-dependent private institutions combined.
Source: OECD (2021).

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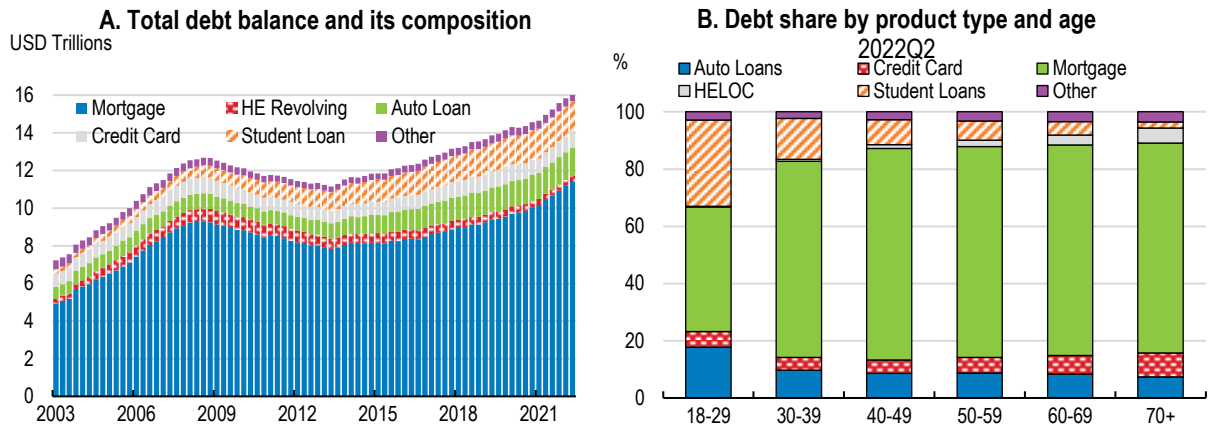
While the high costs of health care, higher education and housing in the United States have received much attention, reported child care costs are also very high in the United States by international comparison, and have risen significantly in recent years. Additionally, financial aid for child care is very limited, with only a fraction of eligible households receiving public aid despite it being targeted towards the poorest households (see section 3.2). Both poor and middle-class families with young children spend significant amounts of their disposable income on child care, which has led the Biden administration to propose a programme that would cap household spending on child care to 7% of income. Energy costs have also risen since the late 1990s, although they have been volatile due to swings in demand and supply (OECD 2022). The climate transition, the distributional consequences of which have not yet been extensively examined, will impose further costs on US households and represents a new major challenge for the middle class. The implications of the rising costs of child care and the climate transition for the middle-class are discussed in Sections 3.2 and 3.3.

Figure 3.6. Housing and student loan debt have risen and account for a significant part of total household debt



Source: Federal Reserve Bank of New York, Quarterly Report on Household Debt and Credit 2022:Q2.

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Low intergenerational mobility, rising inequality and a shrinking middle class

Low wage growth, rising costs, and foregone education and medical care, among other factors, have all coincided with a rise in income and wealth inequality and low and stagnant intergenerational mobility in the United States in recent decades (Piketty and Saez 2003, CBO 2021, Piketty, Saez and Zucman 2018, Chetty et al 2014a and 2014b, Chetty et al 2017, Boushey and Hersh 2012). Labour market mobility has fallen as accessing quality jobs and earnings growth opportunities has become more difficult, leading to a deterioration of the "job ladder" (Causa, Luu and Abendschein 2021, Haltiwanger and Spletzer 2020, Azzopardi et al 2020). Inter-regional migration has also fallen, partly due to rising housing costs, with implications for regional inequality and economic mobility (Cavalleri, Luu and Causa 2021, Molloy and Smith 2019). Additionally, business dynamism has declined and between-firm inequalities have risen (Autor et al 2017, Gutiérrez and Philippon 2017, Akcigit and Ates 2021).

Low intergenerational mobility and rising income inequality have been accompanied by a rise in the polarisation of the United States income distribution, or a "hollowing out" of the middle class (see also OECD 2019). A measure of polarisation of the US household income distribution, calculated using household-level data from the Bureau of Labor Statistics' Current Population Survey, has steadily risen since 1970 (see Table 3.1 and Figure 3.7). During the period between 1970 and 2020, the polarisation index rose more than 35%, while the Gini coefficient rose 30% (see Box 3.1 for an explanation of the

polarisation index). This result is consistent with the description in Pew Research Center (2020) of a falling share of US aggregate income held by middle-income households since 1970. Alichi, Mariscal and Muhaj (2017) also show that income polarisation varies significantly across states and is greater in southern and coastal states than in the middle of the country.

Other measures reiterate that the relative size of the middle class has shrunk. The share of households earning between 67% to 200% of median income (the definition taken by Pew Research Center 2020) fell from 61% in 1970 to 50% in 2020, equivalent to roughly 14 million fewer middle-class households in 2020 household population numbers (there are 127 million households according to the 2020 Census). Taking the definition of households earning between 75% to 150% of median income, the middle class has shrunk from 43% of US households to 33% between 1970 and 2020. While this is partly the result of a rising share of upper-income households, the share of lower-income households has also risen, which suggests that the middle class has "shrunk from both sides". According to research using linked parent-child tax records data, intergenerational mobility has not improved since 1971, and the probability of reaching the top income quintile has remained broadly constant for the children of parents from all income quintiles (Chetty, 2014a). While there are a variety of factors behind rising earnings inequality and polarisation in the United States, including globalisation, low real minimum wages and the diminished role of collective bargaining, rapid technological developments and automation have been identified as possibly the most important factors (Acemoglu and Restrepo, 2017, 2021; Alichi, Mariscal and Muhaj, 2017; Rusticelli et al, 2018). As technology advances, the premium on skills increases and the proportion of tasks that can be performed by capital expands, reducing demand for low-skilled labour (IMF, 2017). Acemoglu and Restrepo (2021) estimate that over half of the changes in the US wage structure over the past four decades are explained by the declining earnings of workers specialised in routine tasks in industries experiencing rapid automation.

Table 3.1. Inequality and polarisation of United States household incomes

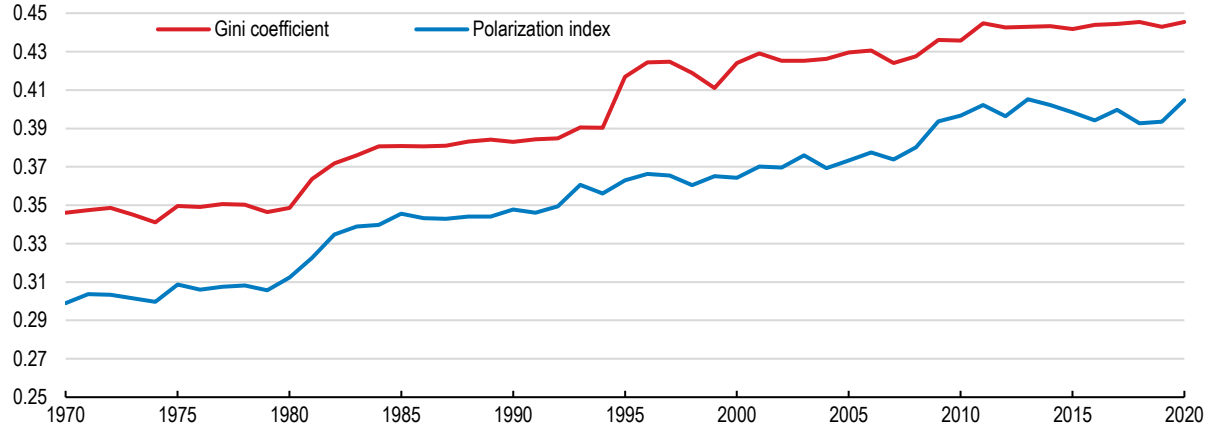
Measures of inequality and polarisation

	1970	1980	1990	2000	2010	2020
Inequality						
Gini	0.346	0.349	0.383	0.424	0.436	0.445
P90/10	6.2	6.5	7.8	8.0	9.7	9.7
P90/50	1.2	1.2	1.3	1.4	1.4	1.5
Polarisation						
Household share(%) in income range:						
67%to200% of median income	61%	60%	56%	54%	50%	50%
75%to150% of median income	43%	41%	37%	37%	34%	33%
Range of income divided by median covering middle:						
40% to 60% of households	0.303	0.324	0.353	0.375	0.408	0.401
30% to 70% of households	0.634	0.665	0.750	0.784	0.849	0.842
20% to 80% of households	1.052	1.101	1.238	1.299	1.392	1.401
Median / mean	0.847	0.864	0.833	0.768	0.761	0.743
Polarisation index	0.299	0.312	0.348	0.364	0.436	0.445

Note: Pre-tax income. Calculated with survey data from the Annual Social and Economic Supplement of the Current Population Survey. The sample was restricted to households with a household head between 24 and 64 years old and annual household income above US$1000. Household income was size-adjusted using the OECD equivalence scale.
Source: Annual Social and Economic Supplement of the Current Population Survey.

Figure 3.7. Both income inequality and polarisation have risen since 1970

Income polarisation index and income gini coefficient, 1970-2020



Note: Calculated with pre-tax income data from the Annual Social and Economic Supplement of the Current Population Survey. The sample was restricted to households with a household head between 24 and 64 years old and annual household income above $1000. Household income was size-adjusted using the OECD equivalence scale.

Source: Annual Social and Economic Supplement of the Current Population Survey.

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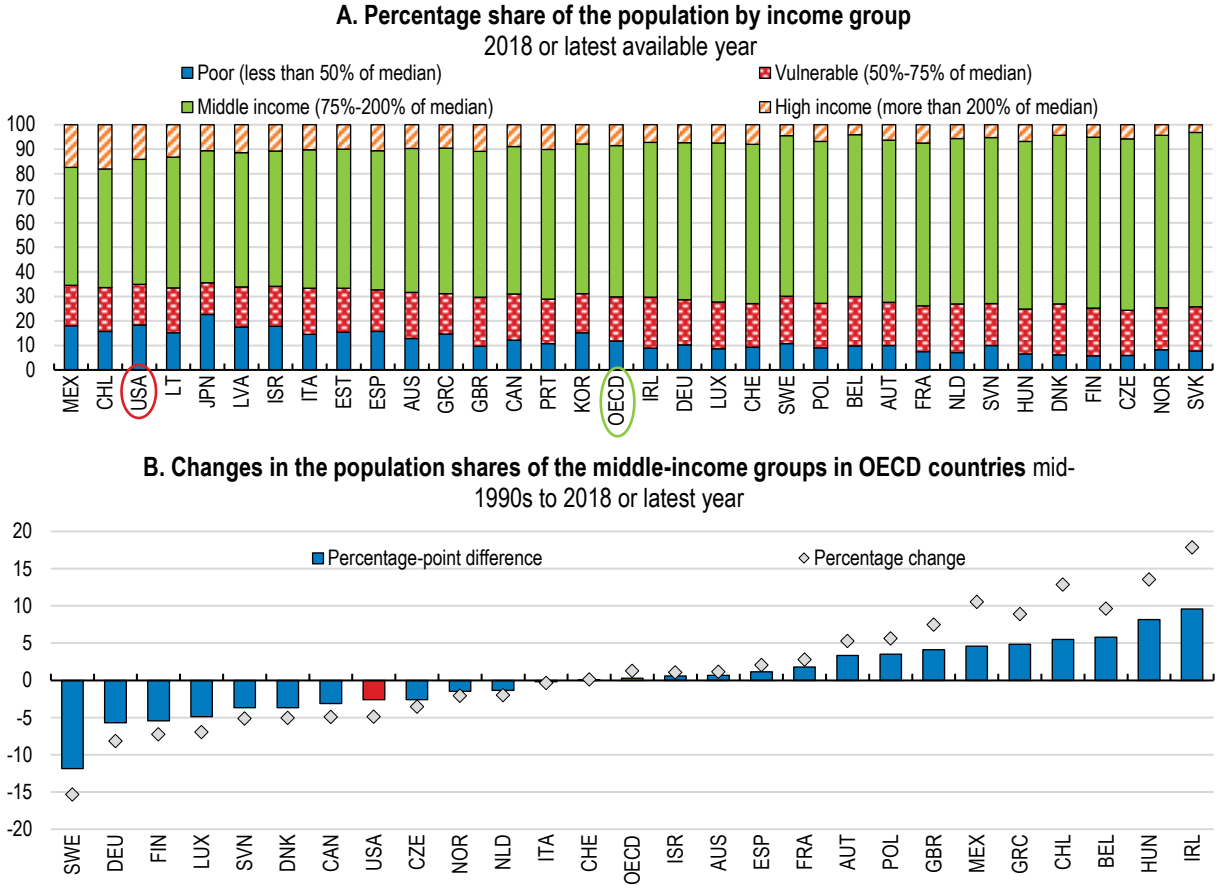
While the relative size of the US middle class is small compared to other OECD countries, other countries have also experienced a growing polarisation of incomes and a shrinking middle class (see Figure 3.8). In Germany, for example, the proportion of the population earning between 75% and 200% of median income has shrunk by 5.7 percentage points since 1990, compared to 2.6 percentage points in the United States (OECD, 2021d).

Figure 3.8. The US middle class is relatively small, and has shrunk faster than the OECD average



Note: Results refer to the year 2018, except for the United States (2019), Belgium, Canada, Chile Israel, Switzerland (all 2017), Austria, the Czech Republic, Denmark, Estonia, Finland, Greece, Italy, Norway, Poland, Spain (all 2016), Hungary, Slovenia (2015), Australia (2014), Japan, Luxembourg (2013), and Korea (2012). In Panel A, the OECD average gives the unweighted average over the 33 countries included in the figure. In Panel B, OECD refers to the unweighted average across 26 countries with available data.

Source: OECD calculations based on data from the LIS Cross-National Data Center, except for France, Latvia, Portugal and Sweden, which are based on data from the European Union Statistics on Income and Living Conditions (EU-SILC).

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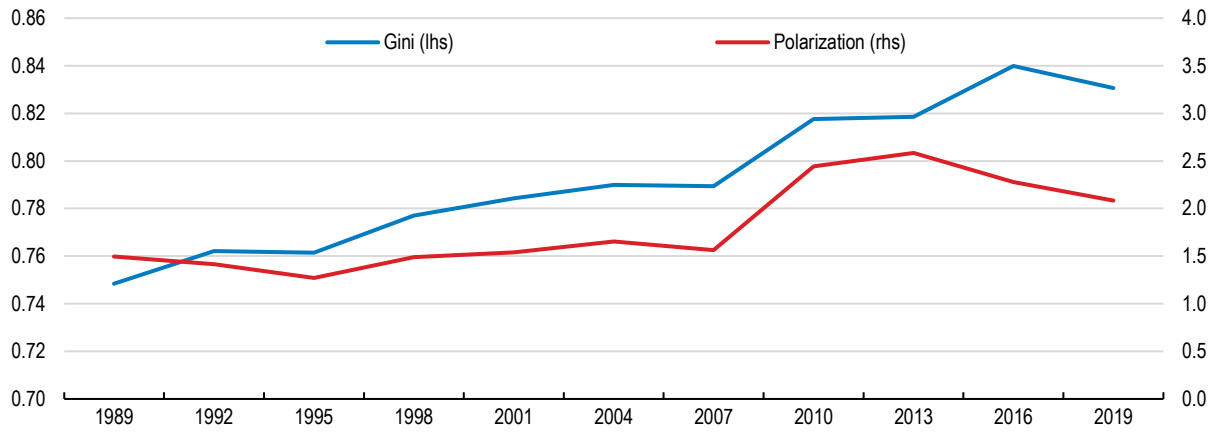
Net wealth inequality is greater than income inequality in the United States, and has been growing more rapidly in recent decades (Pew Research Center 2020). The same is true of net wealth polarisation. The share of US aggregate wealth held by middle-income households (defined as those earning between two-thirds and double the median income) has fallen from 32% in 1983 to 17% in 2016, while the share of wealth held by upper-income households rose from 60% to 79%. The net wealth polarisation index, calculated using household-level data from the Survey of Consumer Finances (see Figures 3.9), rose sharply in the aftermath of the financial crisis as middle-income households that are more dependent on home equity were more affected by the crash in house prices than upper-income households that benefited more greatly from the stock market recovery after the recession (Pew Research Center, 2020; OECD, 2021h).

Figure 3.9. The polarisation of net wealth has risen in the United States

Wealth polarisation index and wealth gini coefficient, 1989-2019



Note: Calculated with household data from the Survey of Consumer Finances. The sample was restricted to households with a household head between 24 and 64 years old.
Source: Survey of Consumer Finances.

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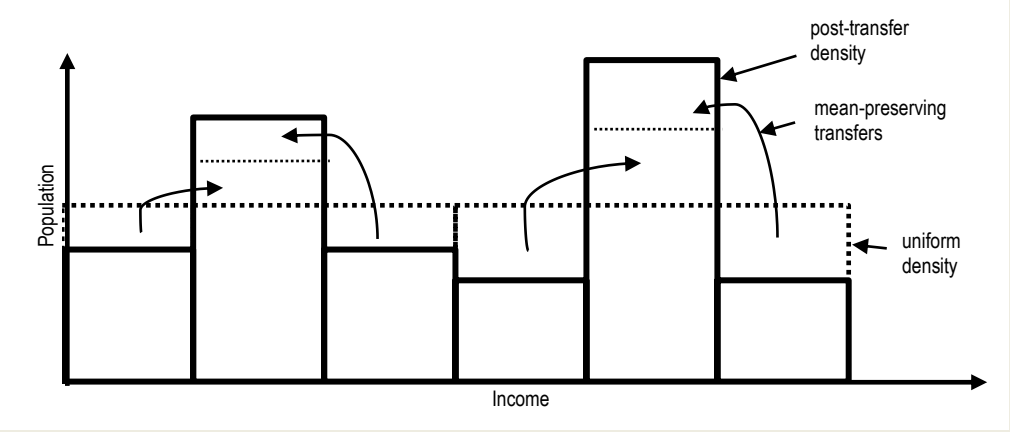
Racial and ethnic inequality is an important component of overall income and wealth inequality in the United States. According to data from the Census Bureau, Black-headed households are significantly over-represented in the bottom-half of the income distribution, and under-represented particularly at the very top of the distribution: in 2019, only 5% of Black-headed households had incomes higher than US$200,000, whereas 10% of all US households were in this category. The results are broadly similar for Hispanic-headed households (Congressional Research Service, 2021). Additionally, the average white family has eight times the wealth of the average Black family and five times the wealth of the average Hispanic family, and wealth inequality has not improved in recent years (Bhutta et al, 2020). This inequality in wealth is related to lower access to housing and education, lower participation in retirement accounts and emergency savings accounts, and the lower prevalence of inheritances or gifts in Black and Hispanic families (ibid.).

Box 3.1. Measuring the polarisation of the income distribution

Since the 1980s, a growing number of studies have mentioned the phenomenon of a "disappearing middle class" or a "hollowing out" or "polarisation" of the income distribution (Causa et al, 2014). Levy and Murnane (1992) noted that standard inequality measures cannot distinguish polarisation, which they define as a distribution in which observations move from the middle of the income distribution towards both tails, from other forms of inequality. In Wolfson (1994, 1997), the author defined the conceptual differences between polarisation and inequality and constructed a comparable index that measures the polarisation of a given distribution. The author also showed, using data on Canadian incomes, that "the divergence between polarization and inequality is not merely a theoretical curiosity; it occurs in practice as well".

Polarisation and inequality

Wolfson (1994, 1997) defined a more polarised income distribution as one that is more *spread out* from the middle and with a tendency toward *bimodality* (a grouping of observations at both higher and lower levels of income). The figure below illustrates the difference between polarisation and inequality. It shows two hypothetical income distribution density functions: The first is a uniform density, shown by a dashed line; the second, shown by a black line, shows a clearly more bimodal and polarised distribution density that is the result of a set of progressive mean-preserving transfers. While the distribution has become more polarised, these transfers have been designed so that the resulting distribution is more equal under any inequality measure that is consistent with the Lorenz criterion, such as the Gini coefficient. This is therefore an example in which polarisation and inequality go in different directions.



Source: Wolfson (1994)

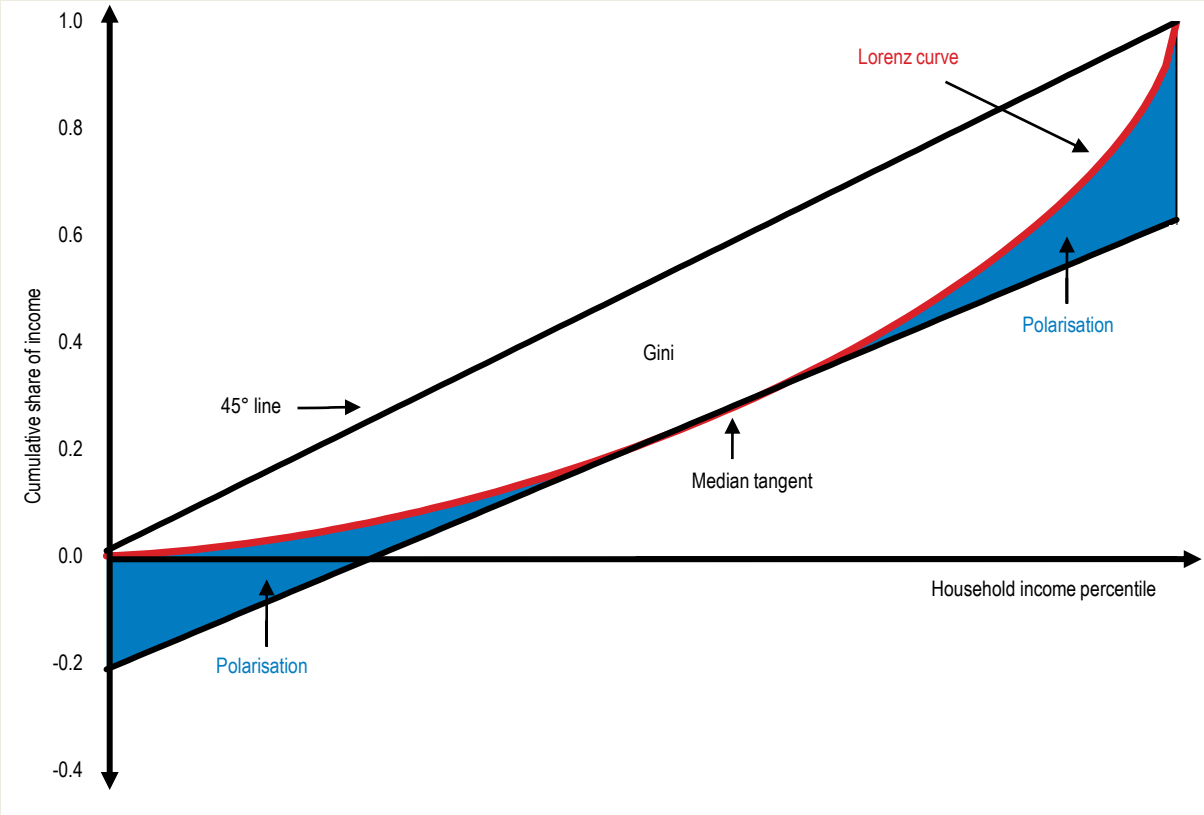
Wolfson's polarisation index

Wolfson (1994) built an index that measures the polarisation of a distribution based on the Lorenz Curve of the income distribution, which shows the cumulative proportion of income held by the bottom x% of people (or households, depending on the unit of observation). Specifically, the polarisation index constructed by Wolfson is a function of the area between the Lorenz Curve and the tangent at the 50th population percentile (the median), which is shown as the shaded area in the figure below. Income distributions that have a higher concentration of the population in the middle of the distribution will result

in a Lorenz Curve that is closer to the median tangent and lower polarisation. The polarisation index can be written as follows:

$$P = 4 * \left(0.5 - Income\ share\ of\ Bottom\ 50\% - \frac{Gini\ coefficient}{2}\right) * \left(\frac{mean\ income}{median\ income}\right)$$

The polarisation index *P* has a minimum of zero for a perfectly equal distribution and a maximum of one for a perfectly bimodal distribution with half the population at zero income and the other half at twice the median income. However, *P* can take values higher than one if negative values are considered (this is the case when we calculate the polarisation of the distribution of net wealth of the United States, where a significant part of the distribution has negative net wealth).



Source: Wolfson (1994)

The US middle class and inequality during the COVID-19 crisis

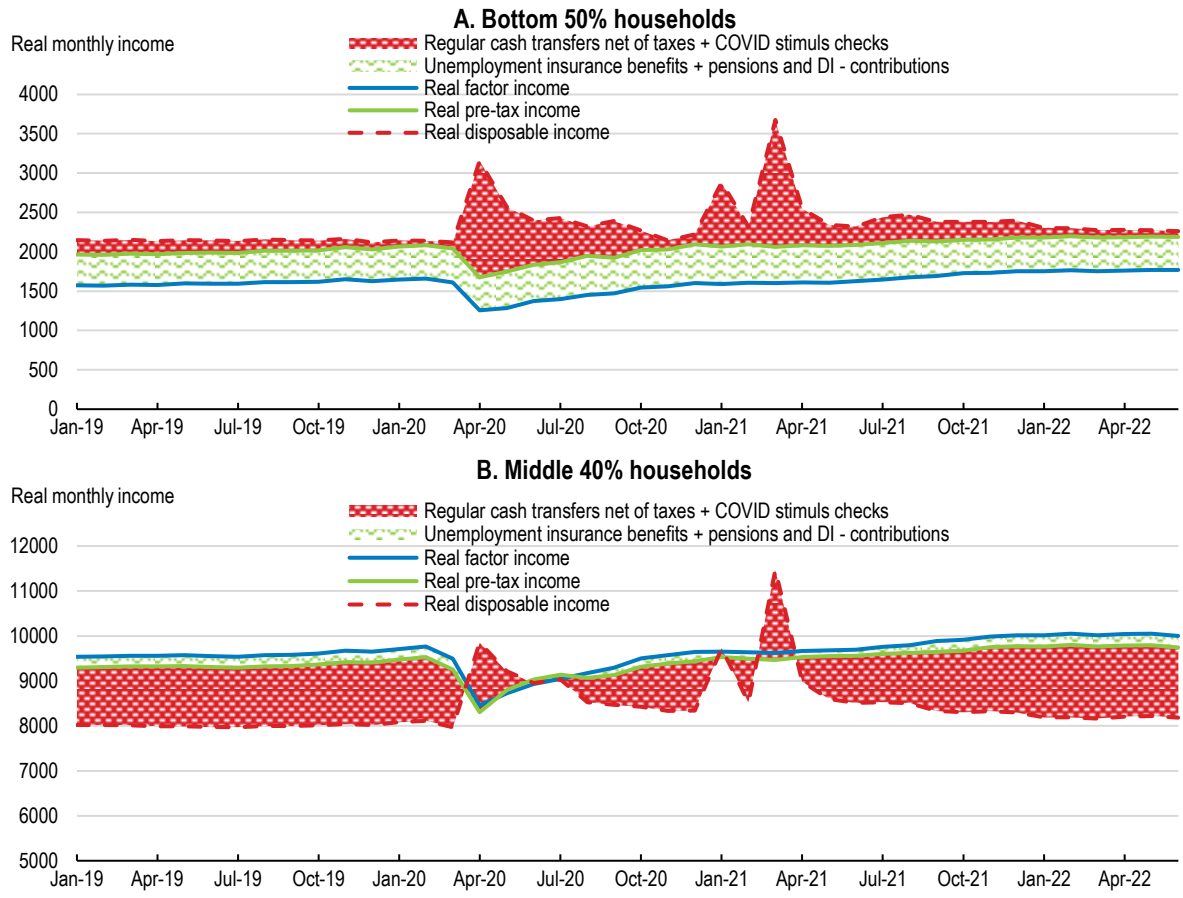
While the COVID-19 crisis impacted lower-wage US households the most, the middle class was also significantly affected (see Stantcheva 2022 for a survey of the literature on the impact of the COVID-19 crisis on inequality). Employment losses in the United States were concentrated in low- to mid-wage sectors and occupations in food services, recreation, accommodation and health services. According to data collected by the Bureau of Labor Statistics, employment in leisure and hospitality decreased by close to 50% by mid-April 2020 compared to the beginning of the year. Employment losses were also severe in retail, transportation, education and health services. As a result, employment rates decreased by 37% by mid-April among workers in the bottom wage quartile and 23% among workers in the two middle wage quartiles (those earning between US$27,000 and US$60,000 a year), while employment losses for high-

income workers were much more modest (-13% by mid-April) according to the Opportunity Insights Economic Tracker. Data on employment by level of education show a similar pattern: the employment-to-population ratio for workers with less than a high school diploma fell more sharply than that for high-school graduates, which in turn fell more than that for those with a bachelor's degree and higher. Employment rates also recovered more quickly for those with a bachelor's degree and higher.

Despite significant employment losses at the bottom and middle of the income distribution, disposable incomes actually rose on average for these same households on account of the unprecedented fiscal response from US federal and state governments (Blanchet, Saez and Zucman, 2022; see Figure 2.17 in Chapter 2). The CARES Act passed by Congress in March 2020 provided a US$1,200 cash payment to every tax-filing adult (with an additional US$500 per child), expanded tax credits (the expanded child tax credit and the expanded earned income tax credit for adults with children) and expanded unemployment benefits. As a result, the average disposable income of the households in the bottom 50% of the income distribution rose by more than 45% in April 2020 (Figure 3.10). These cash payments and extended unemployment benefits also benefited the middle class, whose average income rose more than 20% in April 2020. With expanded unemployment benefits extended and new rounds of cash payments introduced (US$600 in January 2021 and an additional US$1400 in March 2021), the disposable incomes of households at the bottom and middle of the income distribution remained higher in December 2021 than pre-pandemic. This was despite an incomplete labour market recovery, with more than 3 million fewer jobs than before the COVID-19 crisis. In fact, the Urban Institute's Supplemental Poverty Measure fell significantly in 2020 (Urban Institute 2021).

Figure 3.10. Fiscal policy supported low- and middle-income households during the COVID-19 crisis

Average real monthly income of the bottom 50% and middle 40% of households, decomposed



Note: In 2021 dollars. Factor income is income from labour and capital. Pre-tax income is factor income after net pension, unemployment and disability insurance benefits (net of contributions). Disposable income is pre-tax income minus taxes, plus all transfers (e.g. food stamps and COVID stimulus checks). Transfers net of taxes, shown as the red area, are positive when disposable income is above pre-tax income and negative when it is below. Likewise, net pension, unemployment and disability insurance benefits, shown as the green area, are positive when pre-tax income is above factor income, and negative when it is below.
Source: Realtime Inequality.

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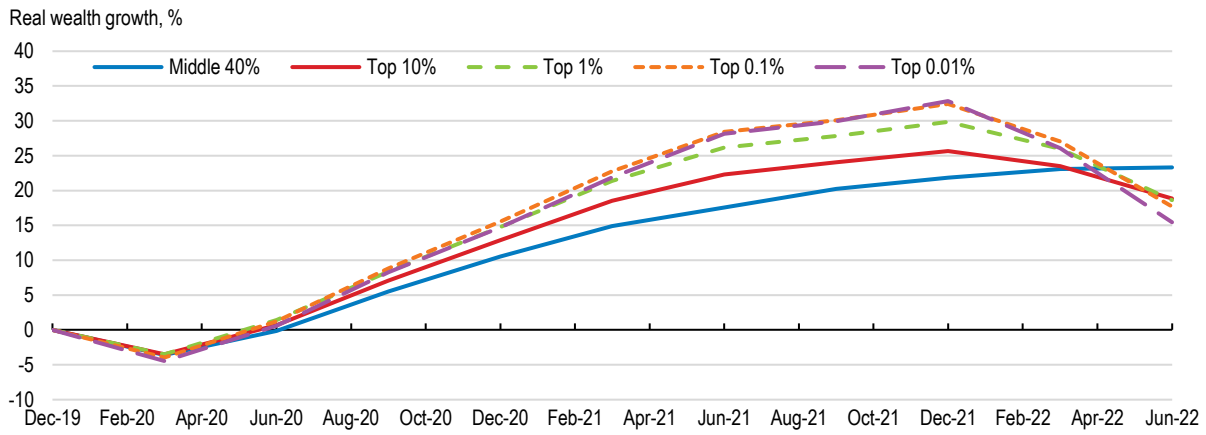
As government support fades, inequality could rise again as disparities across occupations, industries and regions resurface (Stantcheva, 2022). There is also evidence that the pandemic had an unequal impact on education and learning as schools closed and learning moved online. According to data from Opportunity Insights, participation in online math coursework was significantly more impacted for lower- and middle-income students than for higher-income students (Bacher-Hicks et al 2021 show similar findings). The unequal loss of learning could have longer-term impacts for inequality and for the productivity of the US economy as a whole (Psacharopoulos et al, 2020; Fuchs-Schündeln et al 2020).

US households on average have seen their wealth rise since the pandemic, but wealth gains during the pandemic were particularly strong at the top of the wealth distribution, resulting in higher wealth concentration (Blanchet, Saez and Zucman, 2022). While real wealth per household rose 25% on average between the end of 2019 and the end of 2021, the average real wealth of households rose 32% for the top 0.1% of households, resulting in a 1.2 percentage point increase in the share of wealth of the top 0.1%, to

19.9% of total wealth. The rise in wealth concentration during the pandemic was comparable if not larger than the rise that occurred during the Great Recession. However, since the beginning of 2022, corrections in equity and bond markets have reversed the differences in average real wealth growth between groups, as wealthier households hold a larger proportion of their wealth in financial assets.

Figure 3.11. Household wealth concentration rose during the pandemic

Average real wealth growth, by wealth group



Source: Realtime Inequality.

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Surveys conducted since the start of the COVID-19 pandemic also show that middle-income families struggled both financially and psychologically in the United States as in other OECD countries (Household Pulse Survey; Pew Research Center, 2020b; OECD, 2021f; OECD Risks That Matter 2020 Survey). According to the Household Pulse Survey, roughly 30% of middle-income households reported feeling anxious and 20% reported feeling depressed through the pandemic. Over 60% of middle-income households also reported having trouble paying bills, including medical bills, energy bills, and rent or mortgage, despite the abundant fiscal support. A survey by the Pew Research Center reported that 12% of middle-income respondents were not able to afford food or had to get food from food banks or charitable organisations (Pew Research Center, 2020b). More recently, the steep rise in energy and food prices following Russia's invasion of the Ukraine has put further strain on household finances. According to the National Energy Assistance Directors Association, more than 20 million American families (about one in six) are behind on their utility bills, and the average amount owed has increased from about US$403 in December 2019 to US$792 in August 2022.

Improving access to affordable child care for the middle class

While the pandemic has highlighted the important impacts the lack of child care (which in this report refers to care for children aged 18 months to 3 years old) can have on labour market participation, access to child care in the United States and its affordability were already low by international standards before the COVID-19 crisis, especially for low- and middle-income families. Expanding access to child care and making it more affordable can have many benefits for families and the economy as a whole.

The multigenerational benefits of improving access to child care

Improving access to child care can have strong multigenerational benefits. For children, attending high quality early childhood education contributes to better outcomes later in life. Early childhood is a critical

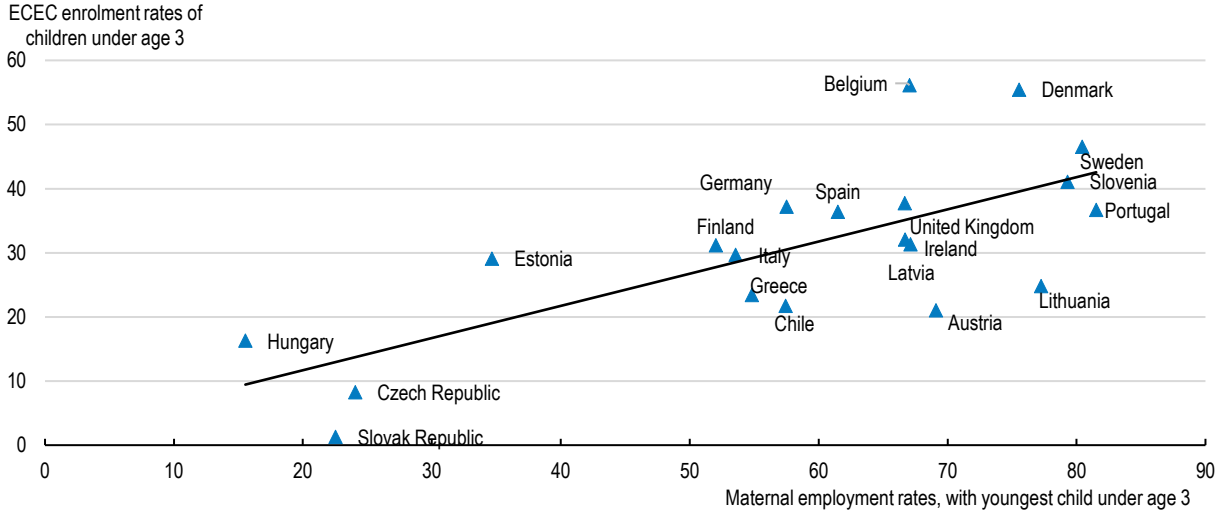
time for the development of the human brain, which reaches 90% of its adult size by the age of six (Stiles and Jernigan, 2010; Shonkoff and Phillips, 2000). Early learning can therefore have important longlasting effects on future educational attainment, employment, health, earnings and wellbeing, with larger effects for children from disadvantaged socioeconomic backgrounds(see OECD 2018 for a survey of the literature). However, ensuring that early care and education is of high quality is integral, given past evidence of low-quality early care being associated with small or even slightly negative benefits (Britto, Yoshikawa and Boller, 2011; Howes et al., 2008).

For parents, easy access to affordable child care can boost lifelong earnings. Lack of access can result in parents (most often mothers) leaving the labour force, reducing working hours, or postponing education or training (Gould and Blair 2020; OECD, 2017, 2011; UNICEF, 2019, Olivetti and Petrongolo 2017, Gurrentz 2021, Malik 2018). Improving access to child care can therefore result in higher labour force participation (see Figure 3.12) and human capital accumulation in the country as a whole and consequently higher potential growth and fiscal revenues. Making child care more affordable can also have significant positive impacts on fertility (Browne and Neumann, 2017; Blau, 2001; see Baker, Gruber, and Milligan, 2008 for an impact study of Quebec's Family Policy), an important consideration given the burgeoning pressures of an ageing population (see Macroeconomic Policy Insights chapter).

Improving affordability and enrolment in child care in the United States would contribute to higher labour force participation, especially for women. Enchautegi et al (2016) find that higher public expenditures on child care subsidies increased employment rates for eligible mothers. Several studies based on survey data also suggest a link between child care and maternal employment in the United States (Schochet, 2019; Morrissey, 2016). The lack of access to child care during the COVID-19 crisis seems to have weighed on labour force participation. Caregiving burdens contributed substantially to low labour force participation, with the increase in nonparticipation for caregiving reasons accounting for a large part of the decline in labour force participation among women and men to a lesser extent, based on self-reported data in the Current Population Survey (Montes, Smith and Leigh, 2021).

Figure 3.12. Access to child care boosts women's labour market participation

Labour market participation of women whose youngest children are under age 3 years and enrolment rates in formal childcare of children under age 3 years, 2017



Note: Data generally include children enrolled in ECEC (ISCED Level 0) and other registered ECEC services (ECEC services outside the scope of ISCED Level 0 because they are not in adherence with all ISCED criteria). Data for Denmark, Finland and Spain include only ISCED Level 0. Employment rates refer to women aged 25-54 years whose youngest children are aged 0 to 2 years.
Source: OECD Family Database, http://www.oecd.org/els/family/database.htm.

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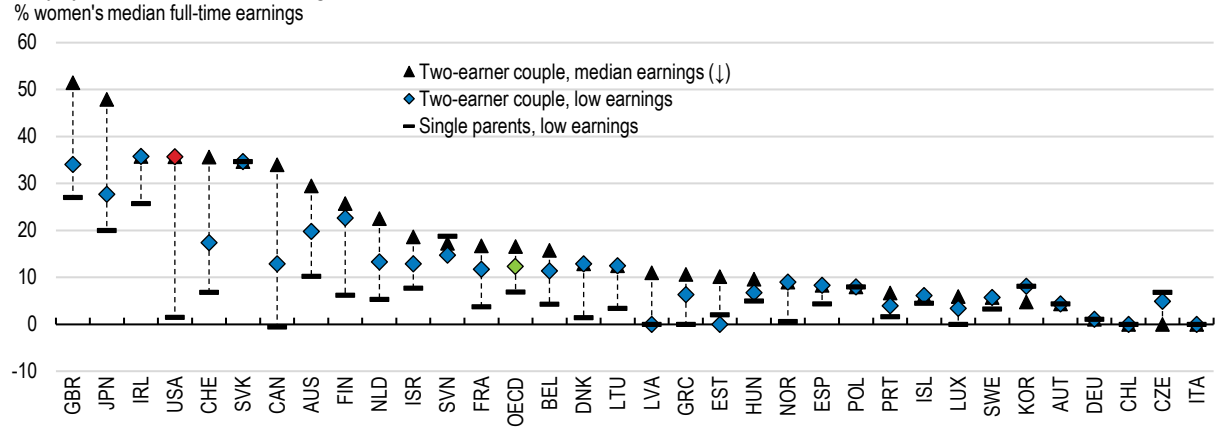
Child care in the United States: high costs and low availability

The availability of child care centers in the United States is low and child care costs are high by international comparison, which results in low enrolment. According to an analysis of child care supply at the census tract level (Center for American Progress, 2018), 51% of Americans live in a "child care desert", meaning areas with little or no licensed child care centers. While rural areas are more likely to have insufficient child care provision (59% are child care deserts), many urban neighborhoods also lack sufficient child care (56%), with child care deserts being more common in lower-income areas.

For most families, child care costs relative to earnings in the United States are among the highest in OECD countries, after accounting for child care benefits and tax deductions (OECD 2020a, see Figure 3.13). While the average net cost of child care in the OECD for a family with two median earners and two children is 17.5% of earnings, the corresponding figure is around 35% in the United States, making child care one of the main expenses for these families after mortgage or rent. In 2016, the cost of full-time child care from birth to four years old in the United States was higher than the cost of in-state college tuition and 85% of median rent (Schulte and Durana, 2016). However, among the countries with high costs, the United States (along with Canada) provides an exceptional amount of support for eligible single parents with low earnings, resulting in zero net costs of child care for these families after accounting for benefits and tax deductions. Therefore, assuming that these families receive the benefits they are eligible for (which is often not the case due to insufficient funding as explained in section 1.2.3), high child care costs are primarily a challenge for low-income two-earner families and middle income families. Child care costs as a percent of household income also vary greatly across states: according to Schulte and Durana (2016), child care costs are highest in terms of household income in West Virginia, and lowest in North Dakota.

Figure 3.13. Child care costs are high in the United States

Typical net childcare costs for two children in full-time care, 2019, in % of women's median full-time earnings, by family type and in-work earnings

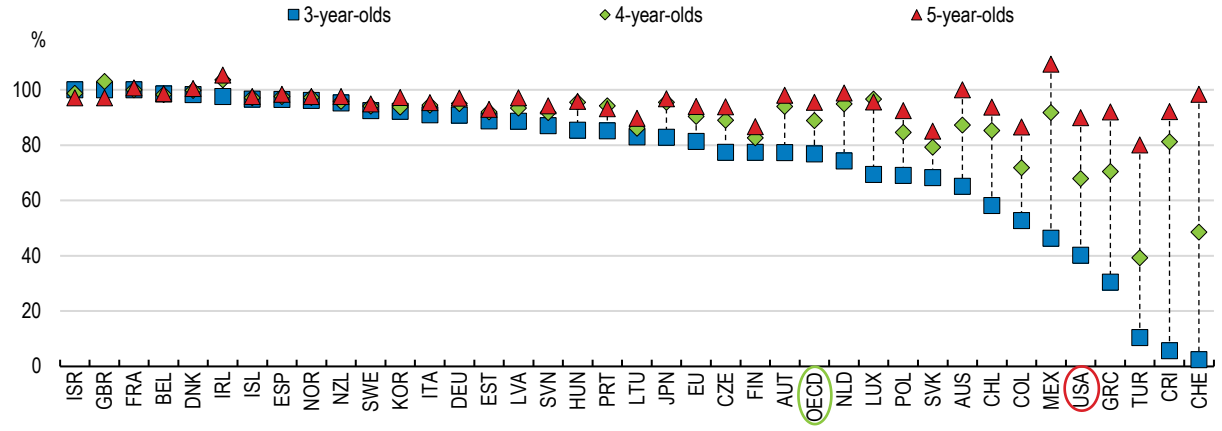


Note: Data reflect the net cost (gross fees less childcare benefits/rebates and tax deductions, plus any resulting changes in other taxes and benefits following the use of childcare) of full-time care in a typical childcare centre for a two-child family, where both parents are in full-time employment and the children are aged 2 and 3. 'Full-time' care is defined as care for at least 40 hours per week. Low earnings refer to the 20th percentile, and median earnings to the 50th percentile, of the full-time gender-specific earnings distribution. Two earners are assumed for couples, male and female. For single parents, women's earnings distribution is assumed. In countries where local authorities regulate childcare fees, childcare settings for a specific sub-national jurisdiction is assumed. For Korea, the results refer to 2018; for Chile to 2015. For Mexico, Turkey and New Zealand information on childcare fees is not available. For Japan, data reflect the situation before the expansion of free ECEC to all children aged between 3 and 5, and to infants aged 2 and under from low-income families, in October 2019.
Source: OECD (2020), from OECD Tax and Benefit Models, 2019. http://oe.cd/TaxBEN.

StatLink https://stat.link/jr7904

Figure 3.14. Enrolment in early childhood education is low in the United States

Percent of children enrolled in early childhood education and care (ISCED 2011 level 0) or primary education (ISCED 2011 level 1), 3-, 4- and 5-year-olds, 2018 or latest available year



Note: Data forGreece, New Zealand, and Poland refer to 2017. Data include children enrolled in early childhood education and care (ISCED 2011 level 0) and primary education (ISCED 2011 level 1). For Greece, data include only part of the children enrolled in Early childhood development programmes (ISCED 01). Potential mismatches between the enrolment data and the coverage of the population data (in terms of geographic coverage and/or the reference dates used) may affect enrolment rates. See OECD Education at a Glance 2019 Indicator B2 (http://www.oecd.org/education/education-at-a-glance-19991487.htm) for more details.
Source:OECD Education at a Glance 2020: OECD Indicators.

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As in other countries, staff salaries represent the largest cost to child care providers in the United States. Regulations that vary by state typically require low children-to-staff ratios, which translates into high labour costs. For example, Early Head Start programmes serving a majority of children under 3 years old must have two teachers for no more than eight children or three teachers with no more than nine. For older children, the average children-to-staff ratio in pre-school programmes in the United States, at around 10-to-1, is below the OECD average (OECD, 2020b). While these and other regulations (including health and safety standards, for example) contribute to the high costs of child care in the United States, these are not significantly more stringent than in other countries and are in most cases appropriate to ensure minimum quality. However, the United States stands out as one of the countries with the least public expenditure on child care, which results in the comparatively very high costs for American households (see section 3.2.3 below).

The lack of availability and affordability of child care in the United States has resulted in low enrolment. Enrolment rates for children between 3 and 5 years old (the ages at which children in the United States typically join preschool) is below the OECD average and has not improved since 2005 (see Figure 3.14). While there is no available internationally-comparable data for enrolment rates of children below the age of 3, enrolment rates at age 3 in the United States (40% in 2018) are significantly below those at ages 4 and 5, and well below the OECD average (77% in 2018). Separate data from the Early Childhood Program Participation Survey shows that 52% and 56% of 1 and 2 year-olds respectively attend nonparental child care programmes at least once a week in the United States, compared to 68% and 77% for 3 and 4 year-olds respectively (NCES, 2018). This data also shows that attendance rates by household income level fall slightly for families living above the poverty line before rising for higher-income households, possibly reflecting the drop-off in eligibility for state- and federally-funded programmes for middle-income families.

Low access to child care adds to the parental burden in the United States, which is the only country among 45 countries covered by OECD data without national mandated paid maternity and parental leave (although some states have state-mandated paid leave plans, including California, New Jersey, New York, Rhode Island, Washington and the District of Columbia). This is an additional strain for parents with

children too young to be eligible for child care. According to the Bureau of Labor Statistics, only 23% of US workers had access to paid family leave benefits in 2021 (up from 9% in 2008), mostly through employer-sponsored benefit plans, while 89% had access to unpaid family leave benefits. Across the OECD, mothers were entitled to a total of 51.5 weeks of paid leave on average in 2020, with average payment rates ranging from 25% to 100% of earnings, while total paid leave reserved for fathers averaged 8.7 weeks. In Canada, for example, the government mandates both the length of parental leave as well as the benefits parents receive, with parents being entitled to 15 weeks of maternity leave (for the mother), and an additional 40 weeks of parental leave shared by the parents, with a 55% benefit payment rate. Paid leave for mothers can improve their health and well-being and boost female employment, while paternity leave can help reduce the burden on mothers and improve health and development outcomes for children (OECD 2017d). Unlike fathers, mothers in the United States experience long-term earnings penalties when a child is added to their household, leading to a gender-earnings gap that persists for at least a decade (Kleven et al, 2019).

Investing in child care

Yearly public investment in child care in the United States is 0.05% of GDP, or US$700 per child, among the lowest in the OECD (see Figure 3.15). State and federal funding for child care consists of programmes targeted specifically at children from low-income families that provide child care assistance through subsidies or grant-funded care slots. Early Head Start, a programme introduced in 1994 and administered by the Department of Health and Human Services, serves low-income families with children under three. Through this programme, local public agencies, school systems and private entities receive grants from the federal government to operate centre-based, home-based and family child care services that must adhere to Head Start Program Performance Standards relating to staff qualifications, staff-child ratios, training and professional development.

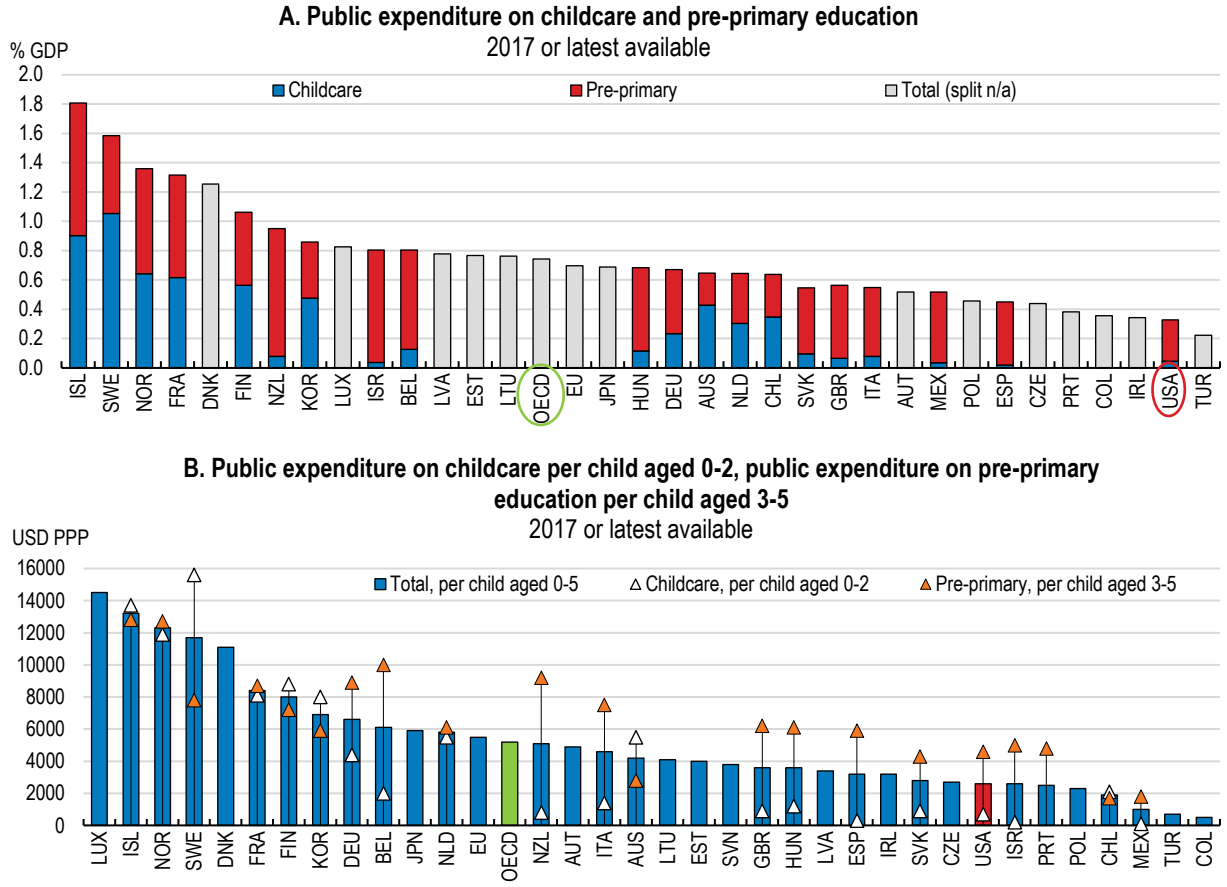
States also provide financial assistance for child care to low-income families through block grants from the Child Care and Development Fund (CCDF), created in 1996. State programmes can set stricter income levels for eligibility than the federal limit (85% of state median income), as well as different parent co-payment amounts, provider reimbursement levels, and other requirements.

Coverage of the existing policies is inadequate. Only 15% of federally-eligible children – and 23% of state-eligible children – received child care subsidies in 2017 according to the Department of Health and Services (Chien, 2021). In other words, funding for existing programmes is insufficient to cover even the eligible population, despite the fact that eligibility for these programmes is targeted towards children from poorer families. In 2021, funding for the CCDF was US$5.9 billion (0.03% of 2019 GDP) after it was increased by US$85 million in response to COVID-19, while the allocation for Head Start, which includes Early Head start, was US$10.7 billion (0.05% of GDP). For most families, the only direct source of government support for child care is the child and dependent care tax credit, which benefits higher earners most.

To reach middle class families that face significant costs of child care, public funding for child care would have to be significantly increased, possibly by raising funding for the CCDF and Early Head Start as well as the levels of income eligibility. Countries that have succeeded in providing affordable child care on a wide scale have invested substantial public resources. Sweden, for example, spends 1.1% of GDP on child care. A variable fee system depending on income that would cap family copayments at a certain proportion of income for middle-income families and that would ensure no copayments for low-income families could be used to avoid regressive effects. In states that do not participate in the expanded federal programme, funding could be directed at localities by expanding Early Head Start. A similar plan was recently proposed by the administration as part of the Build Back Better agenda. The Congressional Budget Office estimated that this plan, which expands the eligibility to subsidised child care to families earning up to 250% of the state median income and provides free preschool to all children regardless of family income, would add US$752 billion to the deficit over ten years, or slightly more than 0.3% of GDP per year. A recent study

estimated that such a plan would raise full-time employment by 10 percentage points while also reducing family expenditures on child care services (Borowsky et al, 2022).

Figure 3.15. Public expenditure on child care and pre-primary education is low in the United States



Note: In some countries local governments play a key role in financing and providing childcare services. Such spending is comprehensively recorded in Nordic countries, but in some other (often federal) countries it may not be fully captured by the OECD social expenditure data.
Source: OECD Social Expenditure Database.

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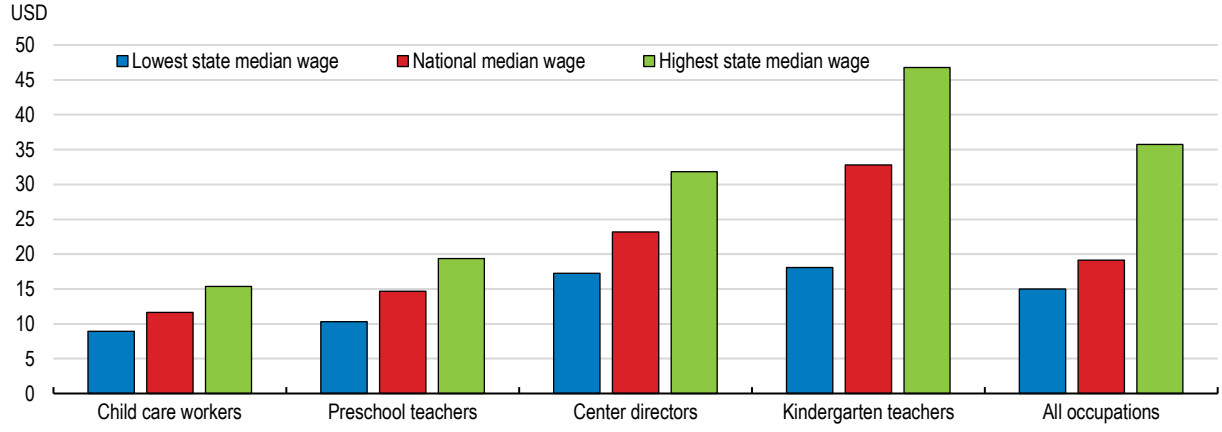
Given the importance of the quality of child care, regulations should ensure minimum quality standards and a tiered quality rating system consistent across states could be established. Child care licensing, regulations and quality rating systems and their coverage differ from state to state, with some states requiring child care providers to participate in rating systems while others do not. Establishing minimum federal standards for the provision of child care (similar to Head Start Performance Standards) would ensure that all child care providers meet minimum standards set at the federal level. In addition, the Quality Rating and Improvement System (QRIS), a rating system for child care providers, could be revised and harmonised across all states, and data collection could be improved to monitor child care quality. In Australia, the National Quality Framework, established in 2012 and replacing 9 separate regulatory frameworks, includes laws and regulations that apply in every state and territory as well as a National Quality Standard against which care providers are continuously assessed and given ratings by state and territory agencies. A national body, Australian Children's Education and Care Quality Authority, is responsible for overseeing the national framework.

The new programmes in the United States could also prioritise grants and contracts with child care centers to provide slots for children over direct subsidies to families. Grants and contracts in which providers are paid based on enrollment rather than attendance would make revenue more predictable and funding more stable, resulting in better outcomes for children and parents (Krafft et al, 2017; Forry and Hofferth, 2011). The significant increase in public investment in child care should also be accompanied by provider- and state-level systems capacity building to ensure the delivery of quality programmes.

Special attention should also be given to raising child care worker salaries. Child care workers in the United States are poorly paid compared to teachers of older children (see Figure 3.16), and in many cases their low income qualifies them for public financial assistance (Department of Health and Human Services and Department of Education, 2016). In fact, child care workers show high rates of utilisation of public income support programmes such as the Federal Earned Income Tax Credit (EITC), Medicaid, the Children's Health Insurance Program (CHIP), the Supplemental Nutrition Assistance Program (SNAP), and Temporary Assistance for Needy Families (TANF). In 2019, the 1.1 million people employed in the child care sector earned a median wage of US$11.65 per hour (Center for the Study of Child Care Employment, 2021). Of these 1.1 million people, 90% were women, of whom 40% were women of colour and were paid less on average (Austin et al, 2019). Low wages and insufficient benefits have led to high rates of yearly turnover in the industry, recently reaching 40% according to Joughin (2021) (Porter, 2012, reported 30% average yearly turnover). High turnover rates can affect the quality of child care given the importance of developing relationships between workers and children for their cognitive, social and emotional development. Very low wages can also have a detrimental impact on the quality of care given, as economic insecurity can have a psychological toll on workers that may affect their well-being and behaviour at work.

Figure 3.16. Child care workers are paid less than pre-school and kindergarten teachers

Median hourly wage by occupation and in the highest/lowest earning states, 2019



Source: Center for the Study of Child Care Employment (University of California, Berkeley) and Occupational Employment Statistics Survey (Bureau of Labor Statistics).

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The impacts of the climate transition on United States households and the middle class

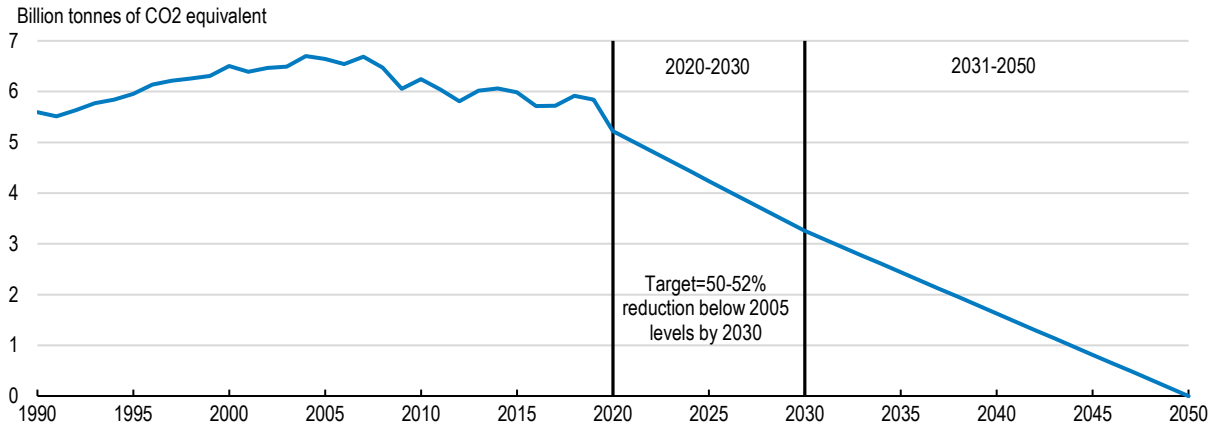
The administration has announced ambitious policy targets for reducing greenhouse gas emissions. The 2030 Nationally Determined Contribution is to reduce greenhouse gas emissions by 50-52% below 2005 levels (Figure 3.17). In addition, the United States has committed to a goal of achieving net zero greenhouse gas emissions by no later than 2050. These targets imply that the pace of carbon cuts needs

to accelerate significantly, a considerable endeavour that will have large macroeconomic and redistributive consequences. Greenhouse gas emissions per capita in the United States are among the highest in the OECD (Figure 3.18). The pace of the transition towards net zero emissions and the ambition of the policies required to achieve it will inevitably have important economic implications for different households, regions and industries. The transition entails a large reallocation of jobs and capital from high-carbon to low-carbon activities, which has already started to occur. Housing and transportation, which account for a large part of US greenhouse gas emissions, will have to rapidly decarbonize. In the absence of compensation measures, improving the energy efficiency of their housing and transportation will entail significant costs for middle class households.

The administration has noted that all viable routes to net zero emissions involve five key transformations: i) decarbonise electricity (a goal of 100% carbon pollution-free electricity by 2035 is also in place), ii) electrify end uses and switch to other clean fuels areas where electrification presents technology challenges, iii) improving energy efficiency, iv) reduce methane and other non-CO_2 emissions and v) scale up CO_2 removal (United States Department of State and the United States Executive Office of the President, 2021). To achieve these emission reduction targets, a well-balanced policy mix of regulatory measures, investment and pricing is needed, as well as structural reforms promoting growth and the reallocation of resources.

Figure 3.17. Significant cuts to emissions will be needed to reach net zero by 2050

Total greenhouse gas emissions, required trajectory to achieve net zero by 2050



Note: A projection is shown for 2021 data given the lag in data availability.
Source: OECD, Environment Statistics (Air and Climate) - GHG emissions database; OECD calculations.

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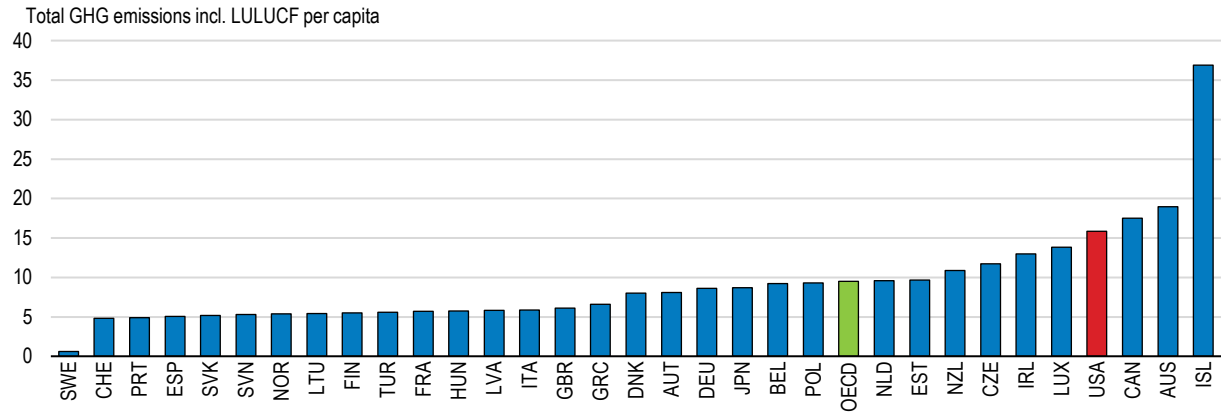
Figure 3.18. Emissions per capita are among the highest in the OECD

Total greenhouse gas emissions including LULUCF, tonnes of CO_2 equivalent per capita, 2020



Source: OECD, Environment Statistics (Air and Climate) - GHG emissions database.

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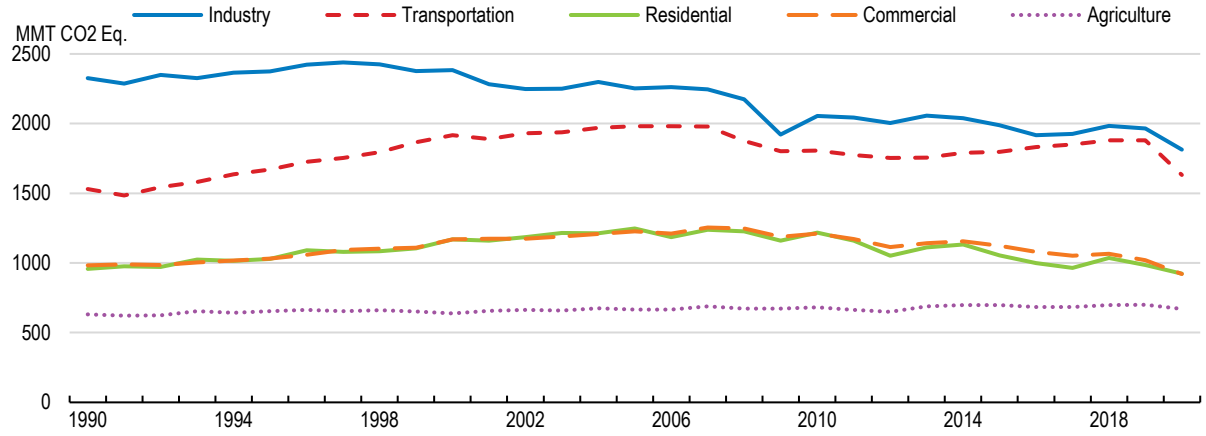
To achieve climate goals, greenhouse gas emissions will have to fall significantly in all sectors of the US economy. Accounting both direct and indirect emissions associated with electricity use, the industrial sector is the largest contributor to greenhouse gas emissions in the United States (the largest sources of emissions in this sector are the substitution of ozone depleting substances and the production of cement, iron, steel and metallurgical coke). Decarbonising this sector will require improving energy efficiency, fuel switching and a higher use of recycling. The most carbon intensive parts of the industrial sector may suffer job losses, the implications of which are discussed in Section 3.3.3. The household sector will also have to significantly reduce emissions. In 2020, residential greenhouse gas emissions accounted for 15% of total emissions (see Figure 3.19), while transportation accounted for 27%, slightly below emissions from industry and due in large part to emissions from light-duty vehicles used by most American households as well as from air transport. While decarbonising electricity production will significantly contribute to reducing emissions in the residential and commercial sectors, increasing the energy efficiency of commercial and residential buildings will be important. Finally, emissions from agriculture, which have not fallen since the 1990s, will also have to be reduced to alleviate the burden of the transition on other sectors.

Figure 3.19. Emissions from homes and transportation are a large share of total emissions

US greenhouse gas emissions with electricity-related emissions distributed to economic sectors



Note: Emissions and removals from Land Use, Land Use Change, and Forestry are excluded from figure above. Excludes U.S. Territories.
Source: EPA (2022).

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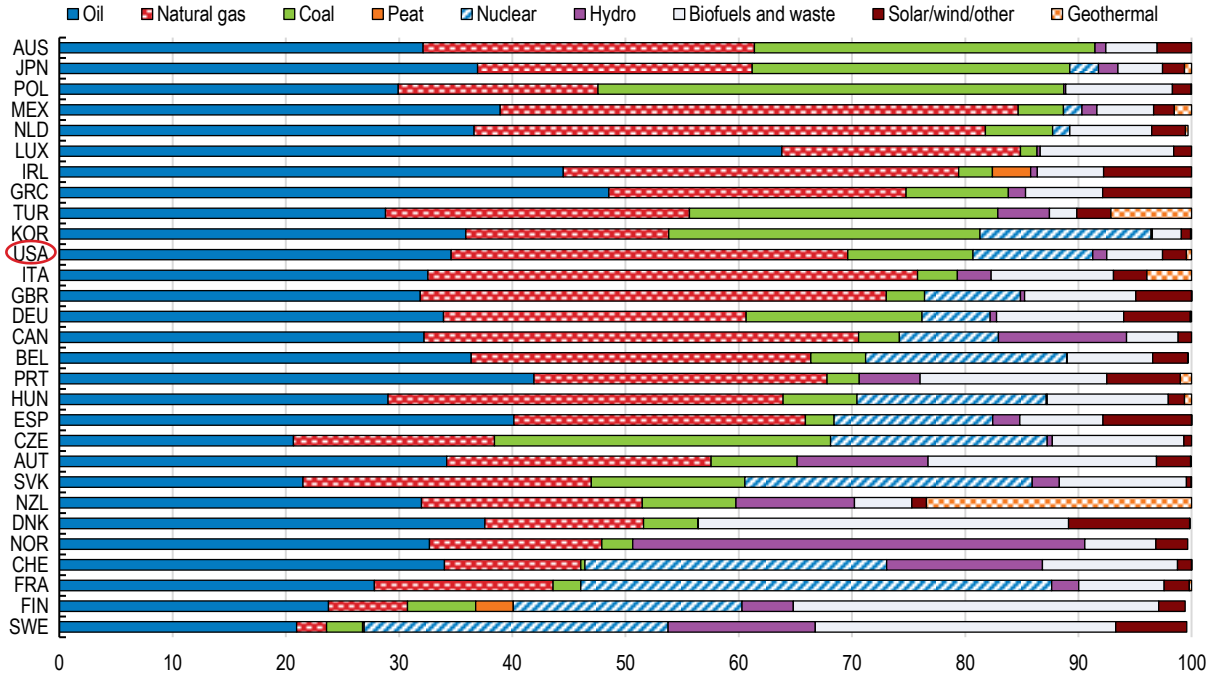
The United States has reduced its greenhouse gas emissions but further action is required

Total greenhouse gas emissions in the United States have steadily fallen since their peak in 2004 (see Figure 3.17). This decline has been driven by a shift in the energy mix from coal and oil towards natural gas (which emits around 50% less CO_2 than coal according to the US Energy Information Administration), as well as a growing but still low share of the energy supply generated from renewables such as wind and solar. The shift towards natural gas was driven by the shale revolution, which was made possible by technological breakthroughs in hydraulic fracturing and horizontal drilling and has resulted in a significant increase in production. Despite the increase in power generation from renewables in the last decade, the United States is still highly dependent on fossil fuels to cover its primary energy demand. Fossil fuels accounted for 82% of total primary energy supply in 2018, the eleventh-highest share among International Energy Agency (IEA) member countries (IEA, 2019; Figure 3.20).

The growing share of natural gas and renewables in the US energy mix has resulted in a steady reduction in emissions intensity (see Figure 3.21 Panel A). Nevertheless, emissions intensity remains high by international comparison and will have to come down considerably for the United States to achieve its targets of emissions reduction (Figure 3.21 Panel B). To achieve this, the energy mix will have to significantly shift away from fossil fuels and towards lower-emission sources of energy. Additionally, the energy efficiency of different sectors of the economy such as industry, housing and transportation will have to be greatly increased (see Figure 3.19).

Figure 3.20. Fossil fuels accounted for a large share of total primary energy supply in 2020

Breakdown of total primary energy supply in IEA member countries, 2020



Source: World Energy Balances 2020.

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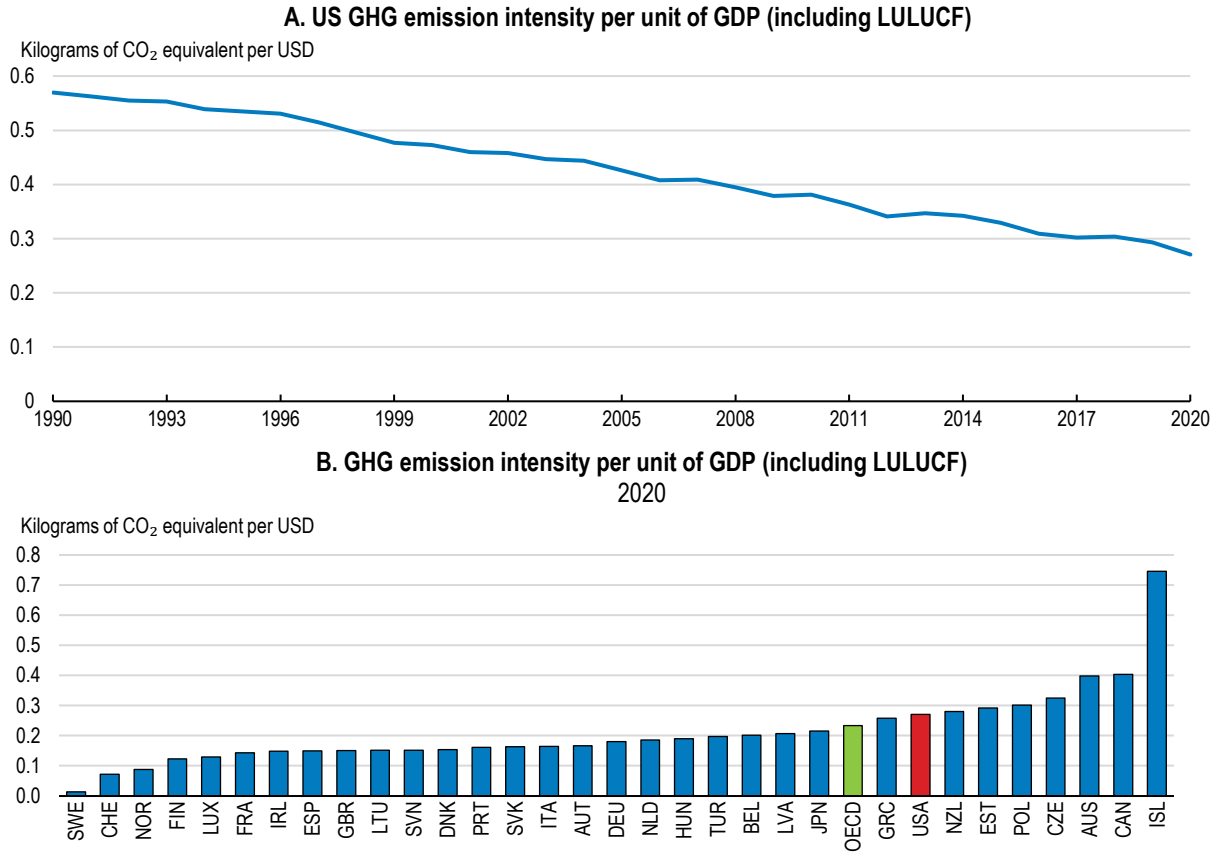
Figure 3.21. The United States has reduced its emission intensity but it remains among the highest in the OECD



Note: Emission intensities per unit of GDP reflect the economy's efficiency in decoupling emissions from output, considering countries' different levels of economic development and growth. The indicator is expressed in tonnes of CO_2-equivalent per unit of GDP in thousand US$ at 2015 prices and PPPs and as % change. Data refer to net annual greenhouse gas emissions (CO_2, CH4, N2O, HFCs, PFCs, SF6, NF3), including emissions and removals from LULUCF.
Source: OECD, "Air and climate: Greenhouse gas emissions by source", OECD Environment Statistics (database).

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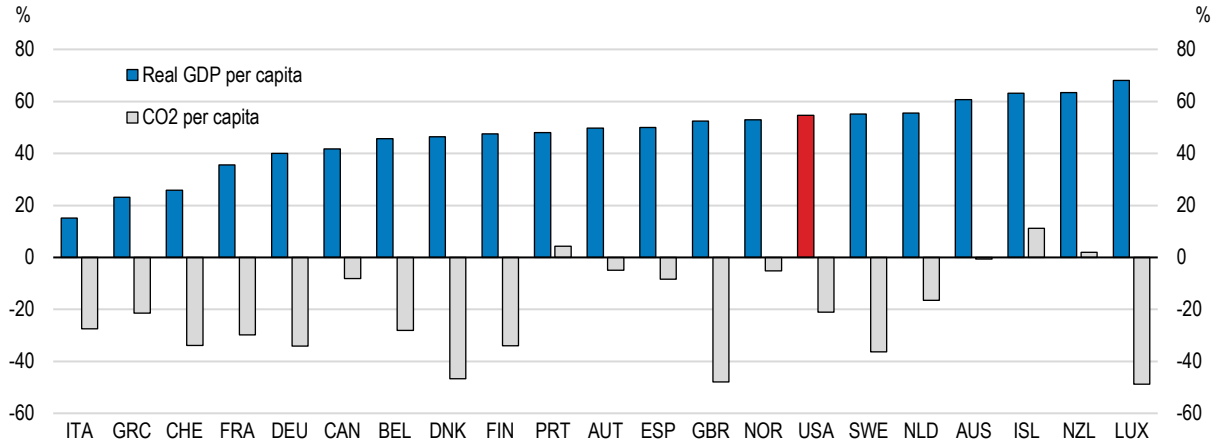
The climate transition has the opportunity to spur economic growth and improve well-being (OECD, 2017b). Mitigation policies and greater regulatory and tax certainty can act as long-term signals and encourage investment and innovation. Public investment in green and climate-resilient infrastructure and reforms that improve resource allocation will promote more sustainable growth. The considerable increase in private and public spending on clean energy technologies needed to achieve net zero emissions can stimulate output and create a large number of jobs, particularly in engineering, manufacturing and construction (IEA, 2021). Decisive climate mitigation and adaptation policies will also help prevent damages from climate change that pose an important threat to economic growth and well-being, including damages from flooding of coastal regions and extreme weather events as well as heat waves and poor air quality, which disproportionately affect more socially vulnerable populations in the United States (EPA, 2021).

As in other OECD countries, the United States has managed to achieve a decoupling of emissions from economic growth (see Figure 3.22). OECD-wide evidence indicates that implementing stringent environmental policies has had limited aggregate effect on economic performance so far despite achieving significant environmental benefits (OECD, 2021b). However, environmental policies generate winners and losers as capital and labour is reallocated from high-emission to low-emission industries and firms. They

can also have important socio-economic impacts: as labour will need to be reallocated across sectors, some workers may be left behind; households will also have to change their behaviour and potentially spend significant amounts of their wealth on new more energy-efficient vehicles, appliances and home refurbishments.

Figure 3.22. Carbon emission cuts have not prevented strong economic growth in a number of OECD countries

Total growth over the period 1990-2019



Note: 1991-2019 for Germany. CO_2 emissions exclude land use, land use change and forestry and are consumption-based: emissions caused in the production of imported goods are included while emissions embedded in exports are excluded.
Source: OECD, Economic Outlook database; Our World in Data.

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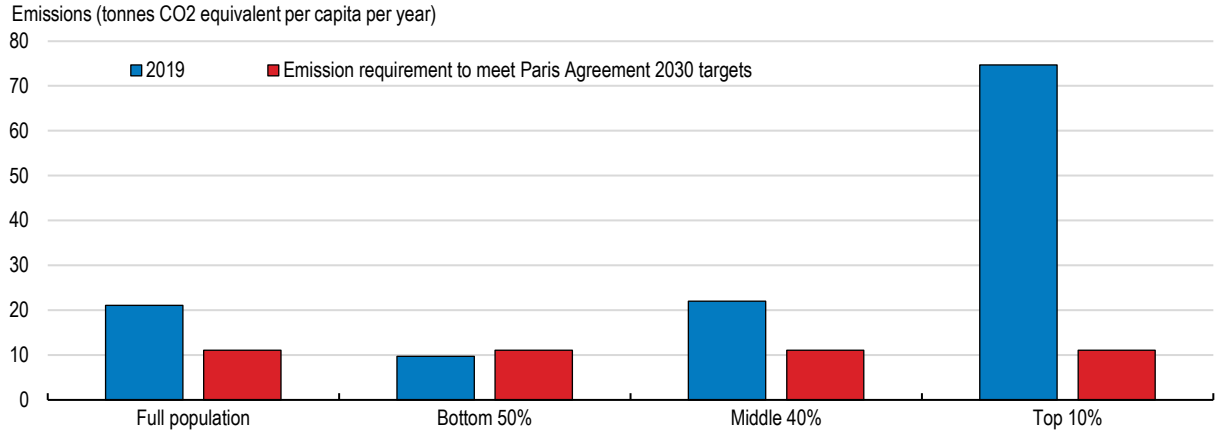
Emissions inequality in the United States and the distributional consequences of climate policy

Climate policies that do not take into account within-country emissions inequalities and the redistributive effects of these policies are unlikely to find public support and may fail as a result, as illustrated by the Yellow Vests movement in France in 2018 and recent protests over fuel tax hikes in Ecuador and Chile in 2019. Global emissions inequalities (i.e., the inequality of greenhouse gas emissions between individuals at the world level) are mainly accounted for by emissions inequality within countries (World Inequality Report, 2022). Within-country emissions inequalities now account for nearly two thirds of global emissions inequality, up from 37% in 1990 (Chancel, 2021).

In the US, poorer households contribute significantly less to total emissions than richer households. This should be reflected in the design of carbon reduction policies, ensuring that poorer households do not disproportionately carry the costs. Doing so can ensure that climate policies are seen as fair and can gain public support. Figure 3.23 shows the extent of estimated emissions inequality in 2019. The average per capita emissions of the top 10% by income were 74.7 tonnes of CO_2 equivalent per person per year, more than 3.4 times larger than the average per capita emissions of the middle 40% (22 tonnes), defined here as the population earning more than the bottom 50% but less than the top 10%, and more than 7.5 times larger than the emissions of the bottom 50% (9.7 tonnes). Using population forecasts, the pledge by the United States to reduce emissions by 50-52% by 2030 can be translated into per capita emissions: to achieve the target, average per capita emissions, which were 22.1 tonnes per year in 2019, will have to fall to 10 tonnes per capita per year. In the United States, the bottom 50% by income is already below the

2030 per capita target, while the top 10% would have to cut emissions by close to 90% to reach the per capita target, and the middle 40% by around 50%.

Figure 3.23. Emissions inequality in the United States



Note: Individual carbon footprints include emissions from all greenhouse gases stemming from domestic consumption, public and private investments as well as imports and exports of carbon embedded in goods and services traded with the rest of the world. Modeled estimates based on the systematic combination of national accounts, tax and survey data, input-output models and energy datasets. Emissions are split equally within households.
Source: World Inequality Report 2022 and Chancel (2021).

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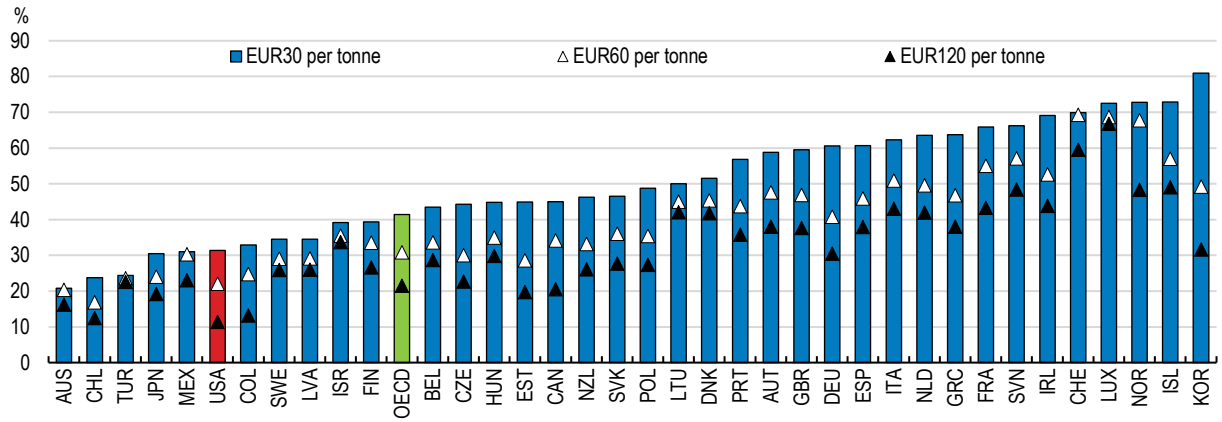
Uncompensated climate policies can be costly for lower- and middle-income households (OECD, 2022). The extent of the distributional effects of different policies depends on the consumption baskets of different groups, their sensitivity to prices, and how higher costs pass through to the rest of the economy (Reguant, 2019; Zachmann, Fredriksson and Claeys, 2018). For example, low-income households spend a higher share of their incomes on electricity, and their price elasticity is low given the inability to afford more energy-efficient appliances. As a result, an uncompensated carbon price in the electricity sector may have regressive effects and affect low-income households more severely. On the other hand, higher-income households use air travel more often than average, likely resulting in a progressive effect of carbon pricing on air transport. This is particularly relevant in the US context, given that changes to carbon pricing policies are one of the potential paths for achieving emission reduction targets at least economic cost. At present, only 11% of emissions from the United States are priced at or above EUR120 per tonne of CO_2, a central estimate of the carbon costs in 2030 (Figure 3.24), and this is entirely due to high fuel excise taxes in some states. Outside of the road sector, tax rates on energy use are effectively zero (OECD, 2019). This partly reflects the fact that the United States does not levy a carbon tax and there is no federal emissions trading system for CO_2 emissions, though there are subnational systems.

Looking forward, a range of policies aimed at further emission mitigation are likely to be needed. These could include renewable energy incentives, further government support for R&D for transformative technologies, as well as a range of investments to help reduce emissions across the economy (including in transportation, power, the building sector and industrial sectors). Some of the measures included in the recent *Infrastructure Investment and Jobs Act* and *Inflation Reduction Act* were an example of the latter. The *Inflation Reduction Act* expands clean energy tax credits for wind, solar, nuclear, clean hydrogen, clean fuels and carbon capture, including production tax credits as well as investment tax credits (see Box 2.8 in Chapter 1). In addition, making greater use of pricing mechanisms could promote behavioural change and innovation, with a first step being more uniform pricing of emissions across sectors. While not without limitations, the Pan-Canadian Approach to Carbon Pollution Pricing is an example of such an approach in a federal country (Box 3.2). Pricing should be calibrated to reflect the externalities of different

activities. The *Inflation Reduction Act* introduced a methane waste emissions charge for oil and gas facilities reporting methane emissions greater than 25,000 metric tons of CO_2 equivalent gas per year. This charge is the first federal fee on any kind of greenhouse gas emissions.

Figure 3.24. Carbon pricing is limited

Carbon pricing, percentage of emissions priced at or above the benchmark, 2018



Note: The first benchmark, EUR 30 per tonne of CO2, is an historic low-end price benchmark of carbon costs and a minimum price level to start triggering meaningful abatement efforts. The second benchmark, EUR 60 per tonne of CO2, is a forward looking 2030 low-end and mid-range 2020 benchmark. The third benchmark, EUR 120 per tonne of CO2, is a central estimate of the carbon costs in 2030.
Source: OECD Effective Carbon Rates 2021.

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Box 3.2. The Pan-Canadian Framework for Carbon Pricing

Canada's federal structure and assignment of responsibilities make it imperative for the federal, provincial and territorial governments to work closely together to translate international climate commitments into domestic action. The 2016 Pan-Canadian Framework on Clean Growth and Climate Change represents a nationwide strategy for achieving this. Carbon pricing is a foundation of the framework, with the other pillars being complementary mitigation action across sectors; adaptation and climate resilience; and clean technology, innovation and jobs.

A form of carbon pricing applies across the country using a benchmark approach. Since 2019, provinces and territories have had to implement their own carbon pricing scheme, taking the form of either a carbon tax, a cap-and-trade system, credit trading programmes for large emitters or a hybrid approach. Each carbon pricing system must meet the benchmark set by the federal government. In 2021, the government released an update to the benchmark, with the minimum national carbon pollution price to rise from CAD 50 per tonne in 2022 to CAD 170 per tonne in 2030 (Government of Canada, 2021).

For any jurisdiction that lacks a system aligned with the benchmark, a federal carbon pricing backstop system applies in the form of a fuel charge, an output-based pricing system for large emitters, or both. The direct revenue remains in, or is returned to, the jurisdiction in which it originates. One of the drawbacks of the original framework prior to the recent update to the benchmark is that provincial and territorial carbon pricing systems differed widely in terms of emission coverage, effective carbon price and cost burden on industry.

Source: OECD (2021c); Government of Canada (2021).

Since climate mitigation policies that seek to reduce personal emissions can prove individually costly (e.g. carbon taxes, or regulations that require purchasing a new, more energy-efficient vehicle or appliances, or retrofitting housing), revenue-recycling schemes using revenue raised from carbon pricing policies have emerged as a possible solution to increase the public acceptability of these policies and to avoid imposing excessive costs on less wealthy households. Switzerland offers a good example of an effective carbon tax that gained public support through a combination of lump-sum rebates, and transparent revenue use and flexiblity, although an increase in this tax was recently rejected (see Box 3.3 below). A new OECD survey conducted in the United States as well as in Denmark, France, Germany and the United Kingdom investigates the public acceptability of different climate adaptation policies and revenue-recycling schemes. As in the other surveyed countries, a significant majority of surveyed Americans (76%) agree that climate change is an important problem, but respondents disagreed on the policies to address it, with only 36% supporting a tax on flying or on fossil fuels (see Box 3.4). A majority of respondents also underestimate the necessary policy stringency to reduce emissions and are unwilling to forego certain comforts. However, careful explanation of the mechanisms of climate change or of specific policies have a positive impact on the acceptability of mitigation policies. Efforts should be made to narrow knowledge and information gaps, engage with stakeholders and interest groups transparently in the design of climate policy packages, and address perceptions of distributional fairness through public outreach campaigns.

Box 3.3. Building acceptability for carbon pricing in Switzerland

In 2008, Switzerland introduced high carbon pricing on heating fuels to reach its annual carbon targets. The price was set at CHF 96/tCO_2 in 2018 (around 104 US$/t$CO_2$) and has risen to CHF 120/tCO_2 in 2022 (around 130 US$/t$CO_2$). In 2018, 75% of CO_2 emissions from energy used were priced by the Swiss carbon tax, its emissions trading system, or the fuel excise, and 69% of them at a rate exceeding EUR 60/tCO_2 (OECD, 2019).

The federal government adopted a number of measures to address distributional and competitiveness concerns (OECD, 2021e). Eligible firms can be exempted if they commit to undertake specific abatement measures or targets. About two-thirds of the tax revenue was redistributed through a lump-sum rebate of social security contributions of around EUR 80 per person and reimbursement of firms proportional to their wage bill. The remaining third of tax revenue is earmarked for retrofitting works and the development of sustainable heating fuels.

The level of the carbon tax is set every year depending on the country's climate performance and its success in meeting interim annual objectives, adding another incentive for abatement. In June 2021, a federal vote rejected increasing the maximum tax rate up to CHF 210/tCO_2 (EUR 194/tCO_2) and broadening the tax base.

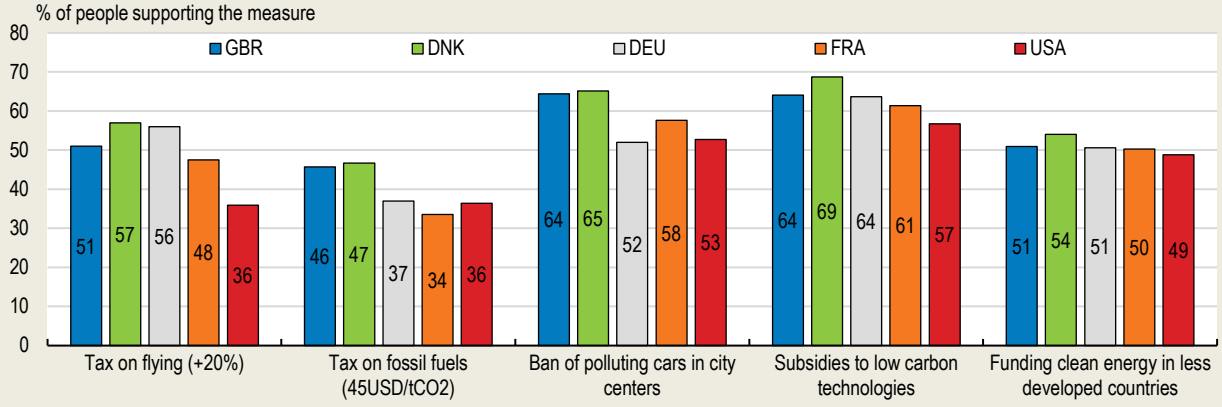
Source: OECD (2021)

Box 3.4. OECD survey on the public acceptability of climate policies

The OECD led a survey in 2021 on the acceptability of climate policies in the United States, Denmark, France, Germany and the United Kingdom. The survey sample includes 2,218 respondents in the United States, representative along gender, age, income, region and rural/urban dimensions.

The survey results suggest that Americans are generally less favourable towards climate mitigation policies than respondents from the four other surveyed countries, although this depends on the specific policies that are proposed (Figure 3.25). For example, there seems to be little opposition to a carbon tax that would raise gasoline prices by 40 cents per gallon if the revenue is used to fund infrastructure investment, to subsidise low-carbon technologies, or to reduce the deficit (Figure 3.26). However, respondents from rural areas are consistently more opposed than urban respondents to climate mitigation policies including a carbon tax with cash transfers, a ban on combustion-engine cars and a green infrastructure programme.

Figure 3.25. Americans are generally less supportive of climate policies



Source: Boone, L., Dechezleprêtre, A., Fabre, A., Kruse, T., Planterose, B., Sanchez-Chico, A., and Stantcheva, S. (forthcoming), Understanding public acceptability of climate change mitigation policies across OECD and non-OECD countries, OECD publishing, Paris.

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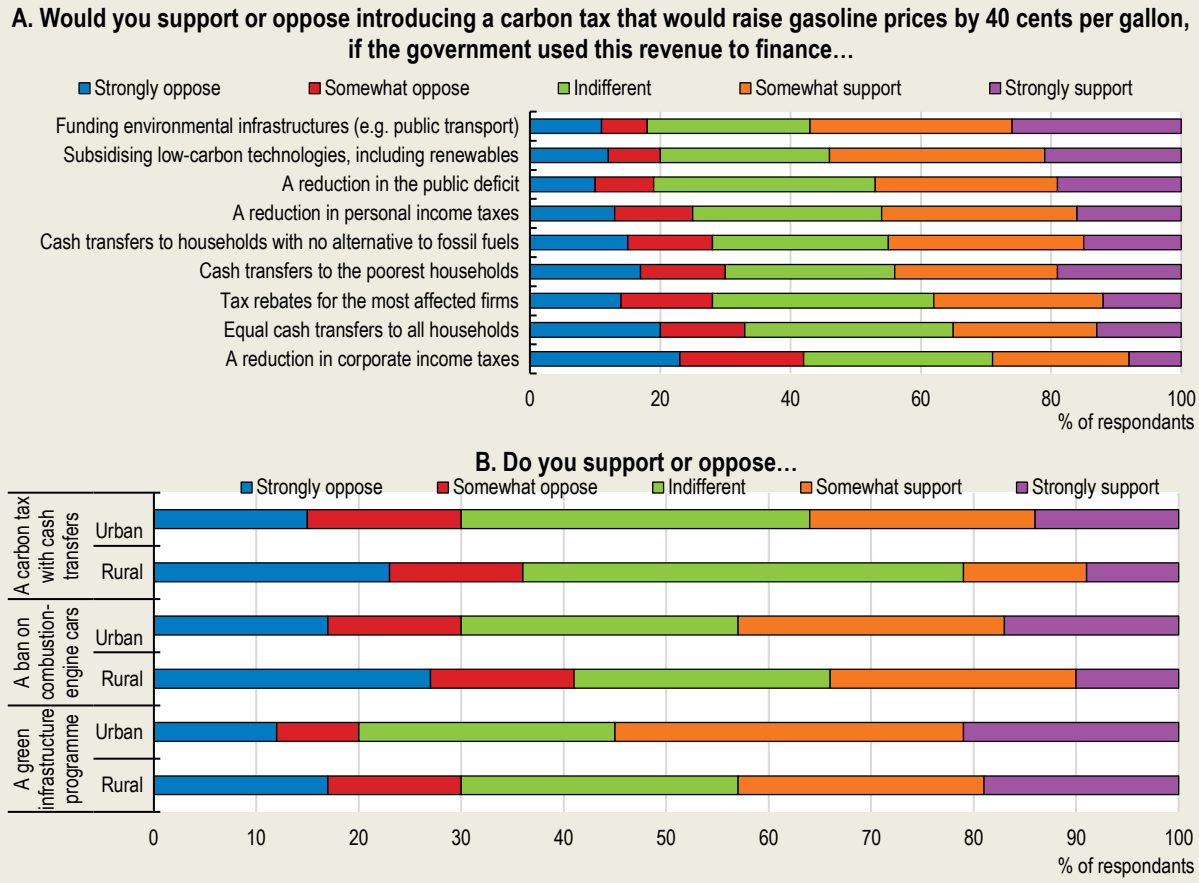
Figure 3.26. Support for climate policies

United States, 2021



Source: Boone, L., Dechezleprêtre, A., Fabre, A., Kruse, T., Planterose, B., Sanchez-Chico, A., and Stantcheva, S. (forthcoming), Understanding public acceptability of climate change mitigation policies across OECD and non-OECD countries, OECD publishing, Paris.

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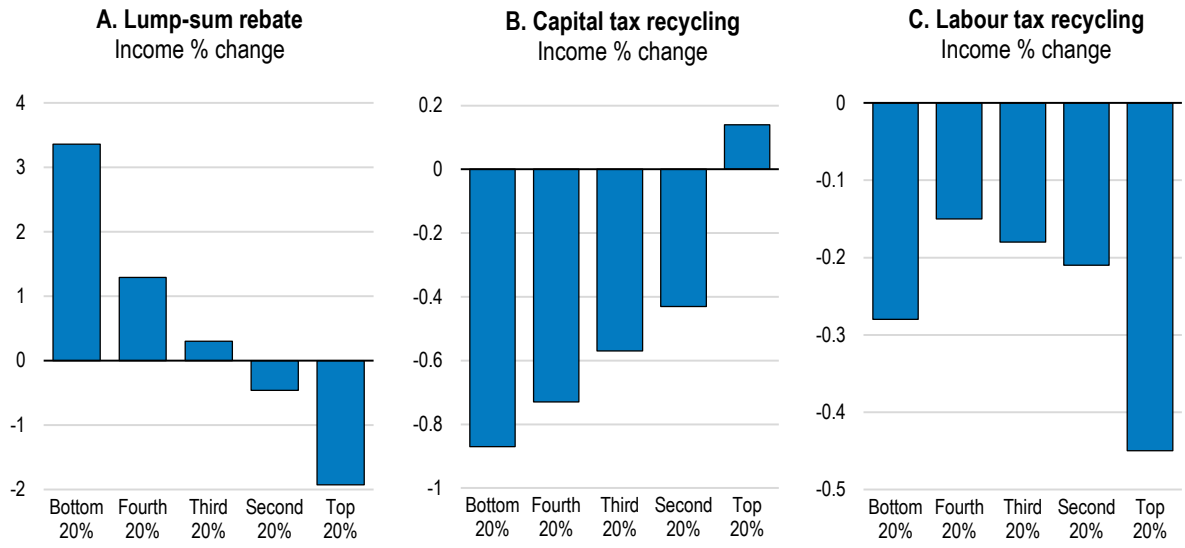
Revenue raised from carbon pricing policies could be recycled by increasing investment in green infrastructure and clean technologies, a measure that a majority of US households surveyed by the OECD would support (see Figure 3.26 Panel A). Part of the revenues could also be recycled via tax cuts or lump sum transfers for the most vulnerable households, to help with the transition and raise the social acceptability of these measures. Different revenue-recycling measures accompanying climate policies such as emissions pricing can have different distributional effects. Lump-sum (or fixed) transfers are less redistributive than targeted transfers, but the latter can also be harder and costlier to administer. The distributional effects of revenue-recycling through tax cuts can also be different depending on the taxes that are reduced. Recycling revenue through capital tax cuts is highly regressive and inefficient (Goulder at al, 2019), while reducing labour taxes can be progressive given the larger share of labour income for lower- and middle-income households compared to high-income households (see Figure 3.27 for a recent analysis based on US survey data). While some revenue-recycling measures may be more efficient than others in terms of emissions reduction, recent studies suggest that the tradeoff between equity and

efficiency may not be large, with the choice of revenue-recycling schemes having less of an effect on efficiency than on their distributional impacts (García-Muros, Morris and Paltsev, 2022).

In the following sections, the distributional impacts of climate policies are discussed in the context of the labour reallocation arising from the transition from fossil fuel to renewable energy production and lowering emissions in the household sector (as regards housing and transport energy efficiency), with a focus on the US middle class.

Figure 3.27. Different distributional effects of carbon taxes depending on revenue-recycling measures

% change in income across income quintiles, United States, 2015



Note: The y-axis represents the percentage change in income, omitting the environmental benefit of the carbon tax from reduced greenhouse gas and air pollution.
Source: Williams, Burtraw and Morgenstern (2015).

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Curbing labour reallocation costs from the climate transition

Job losses or income losses in carbon intensive parts of the economy is another channel through which climate policies can have regressive effects (i.e. “source-side” income effects; OECD, 2022). These consequences are expected to be shouldered by labour more than capital through wage reductions and job losses (OECD, 2012), especially by lower-skilled and lower-wage workers (Chateau, Bibas and Lanzi, 2018; Marin and Vona, 2019).

Certain jobs and sectors will be particularly impacted by the climate transition (Chateau et al, 2018; CBO, 2010). The shift in resources from high-emission to low-emission industries may involve significant economic and welfare costs given that the skills required for brown jobs are not completely transferrable to those required for green jobs (ILO, 2011). Some green jobs require higher levels of education, work experience and on-the-job training, and use higher levels of cognitive and interpersonal skills (Consoli et al, 2016; Vona et al, 2018). High-emission jobs also tend to be geographically concentrated, and the climate transition will therefore have outsized impacts on particular regions heavily dependent on these jobs and industries for income, revenue and investment, reducing their capacity to finance structural adjustment programmes to reduce the negative welfare effects of the transition (Morris, Kaufman and

Doshi, 2019; Elgouacem et al., 2020). It is also unclear to what extent green jobs can be created in the most affected regions. For example, renewable power generation facilities have to be placed near the natural resource they exploit, unlike fossil fuel power plants (OECD, 2017b). Recent research using online job postings data encouragingly suggests that new solar and wind energy jobs tend to be located in counties with high shares of employment in fossil fuel extraction, which should lessen the amount of geographical reallocation needed during the climate transition (Curtis and Marinescu, 2022). The same study also indicates these jobs are created in higher-paying occupations, with higher pay premiums for jobs with low educational requirements.

Under the IEA's Sustainable Development Scenario, which assumes that the US pledge of net zero emissions by 2050 is achieved in full, oil and natural gas consumption is set to decline by almost half by 2040, US coal consumption is set to fall by 90% during the same period due to its high emission intensity and substitutability (Raimi, 2021; IEA, 2021). Coal consumption and employment in the coal industry has already fallen significantly due to increased automation and the emergence of low-cost alternatives (Coglianese et al, 2020), with national coal-related employment declining from 170,000 in 1985 to 50,000 in 2020 (BLS, 2020), with significant economic impacts in the regions where these jobs were most concentrated (See Box 3.5 on the decline of coal-related employment in the Appalachian region). These jobs can be considered as middle class jobs given that they offer higher pay than regional averages (Raimi, 2021). Coal-related employment is so important in certain US counties that the share of total employment can reach more than 15% and the share of total wages sometimes reaches more than 30%, as is the case in Wyoming County in West Virginia, for example.

To facilitate the reallocation of workers in highly carbon intensive sectors, barriers to labour mobility should be reduced. Rationalising obsolete occupational licensing systems throughout the economy can help improve labour mobility. Regional and sectoral mobility could also be promoted through a subsidy covering the cost of occupational licensing for workers that lose their jobs in brown industries and wish to work in green industries. Furthermore, the federal government should provide fiscal incentives for states and localities to relax land use restrictions and promote multi-use zoning in order to ensure flexibility of housing supply in those regions with an increasing share of employment opportunities. By supporting housing supply, this will also promote affordable housing options.

Place-based policies are also essential, given evidence that labour mobility in places that experience economic shocks has tended to be low (Autor, Dorn and Hanson, 2021; CEA, 2022). These place-based policies will require the Federal Government to form partnerships with local communities to identify their needs and to take local conditions into account. Current resources from the Federal Government for these place-based policies are low and should be raised to avoid over-stretching state and local governments, where the majority of spending for these policies currently occurs (Bartik, 2020). The *Inflation Reduction Act* makes progress on this issue by including bonus tax credits for clean energy production and investments in communities with historic or current dependence on fossil fuels. Public expenditure on active labour market policies is low in the United States and should be increased, with a focus on job placement and cost-effective retraining policies. One example of such policies was recently legislated as part of the *Inflation Reduction Act,* which includes US$200 million in grants for training contractors involved in installation of home energy efficiency and electrification improvements. Local R&D, economic development and improvements in social conditions through higher quality healthcare and transport policies can help sustain economic growth and living standards in the most affected regions. Ensuring that unemployment insurance systems in those regions are efficient and provide adequate protection will be essential. Local governments should be empowered to design and develop local training programmes given the large variation in industrial structure and employment opportunities across regions. A number of OECD countries have established "just transition" authorities involving a variety of stakeholders from different levels of government, academia and the private sector to help plan for the climate transition. In Germany, a "Coal Commission" (the Commission on Growth, Structural Change and Employment) was

established to propose policies for a just transition for coal regions and employees. This Commission was composed of representatives from the energy sector, trade unions, industries, citizen initiatives and NGOs.

Box 3.5. The decline of coal mining in the Appalachian region and lessons from the Ruhr region in Germany

The Appalachian coal region is a mountainous region covering Alabama, Eastern Kentucky, Maryland, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia. Appalachia was the United States' primary coal-producing region from the 1800s through the 1970s. Due to reductions in the cost of natural gas and a regulatory environment that increased the cost of coal-generated electricity, coal production fell by more than 65 percent in the region between 2005 and 2020. Losses in coal production were highly concentrated in the Central Appalachian Coal Basin in southern West Virginia and eastern Kentucky (Bowen et al, 2020). During the same time, employment in the coal industry fell by 54 percent, with losses also concentrated in Central Appalachia, with heavier losses in counties more reliant on the coal industry. In Mingo County, West Virginia, for example, coal mining employment fell from 1,400 people in 2011 to 500 in 2016 (Morris, Kaufman and Doshi, 2019). There is also evidence of labour market spillovers from mining to the broader economy (Houser et al, 2017). Given their heavy reliance on the coal industry, these counties have experienced large declines in county government revenue. In Boone County, West Virginia, for example, the number of mines declined from 31 in 2012 to 11 in 2017, and coal production fell 70 percent during this period. As a result, county property tax revenue declined by 50 percent, and total revenue declined by 28 percent. The fall in revenue in this county has resulted in school closures and other spending cuts on solid waste programmes, for example.

While there have been a number of local policy responses to the rapid decline of the coal industry in this region (Stroud et al, 2013), they have not been particularly successful. The large size of the Appalachian region and the fact that it covers a wide number of states and localities required a unified regional transition strategy that was lacking. There was no overall strategy for the transition and almost no pre-emptive planning (Sheldon, Junankar and Pontello, 2018). Additionally, support for innovation, education and training was insufficient, hindering re-skilling and the development of new employment opportunities in the region.

In contrast, the widely-regarded success of the transition from coal in the Ruhr region in Germany was driven by high engagement from federal and state governments, long-term top-down planning, collaboration between different levels of government and industries, investment in infrastructure, innovation, higher education and training, and substantial compensation for those leaving the labour market (Botta, 2018; Sheldon, Junankar and Pontello, 2018). In particular, older workers in the coal industry received early retirement payments as a form of transitional assistance for a maximum of five years until they were eligible for pension benefits. There was a strong emphasis on preventing lay-offs and therefore considerable investment in re-training younger workers (OECD, 2017c). Those who were able to relocate were hired mainly by small and medium sized companies in the electrical and metallurgical industry, in the services sector or by municipal fire brigades.

Given the differentiated impacts that the climate transition will have across regions and industries and its redistributive effects, a long term climate transition strategy developed at the federal level and involving state and local stakeholders that takes emissions inequalities and the redistributive and regional effects of climate mitigation policies into account will be crucial. While the Long-Term Strategy of the United States report is an appropriate first step, a more detailed plan will be necessary. The National Climate Task Force established by the Biden administration, which currently includes representatives from federal agencies and offices, could be expanded to include representatives from state and local governments, labour unions, advocacy groups, business and scientists. State-level climate transition plans could be coordinated at the federal level and feed into the national climate strategy, similar to the National energy and climate plans (NECPs) in the European Union.

In the long run, the national education system should be structurally adapted to prepare for the increased demand for green skills. This can be achieved by collaborating with the private sector to anticipate the green skills that will be crucial in a decarbonised economy and reviewing school curricula, and by surveying industry employment needs regularly as is done in the context of the Energy & Employment Report conducted by the National Association of State Energy Officials. Efforts should also be made to improve the collection of granular data on the occupational exposure to green technologies and production methods in order to identify the skills that are most needed to perform green tasks (see for example Vona et al, 2018). These could inform the curricula in universities, but also in vocational and on-the-job training courses.

The costs to US households of reducing emissions from housing and transportation

Reductions in US household emissions from housing and transportation will be key to achieving the overall emission reduction targets. After distributing emissions related to electricity into end-use categories (i.e., after allocating emissions from electric power to the economic sectors in which the electricity is used), the residential and transportation sectors currently account for 15% and 27% of greenhouse gas emissions in the United States, respectively (EPA, 2022). Of greenhouse gas emissions from transportation, 57% is related to light-duty vehicles of the sort used by US households.

Reducing housing emissions

Greenhouse gas emissions from homes are composed of direct and indirect emissions. Direct emissions arise from fossil fuel combustion for heating and cooking (mainly from natural gas and petroleum products), leaks from refrigerants and waste management, while indirect emissions are due to the consumption of electricity and the fossil fuels used to generate it. While total emissions from homes have been decreasing since the mid-2000s (see Figure 3.19), most of this reduction has been due to falling indirect emissions as electricity production has shifted towards cleaner sources and more energy-efficient appliances have been adopted by households.

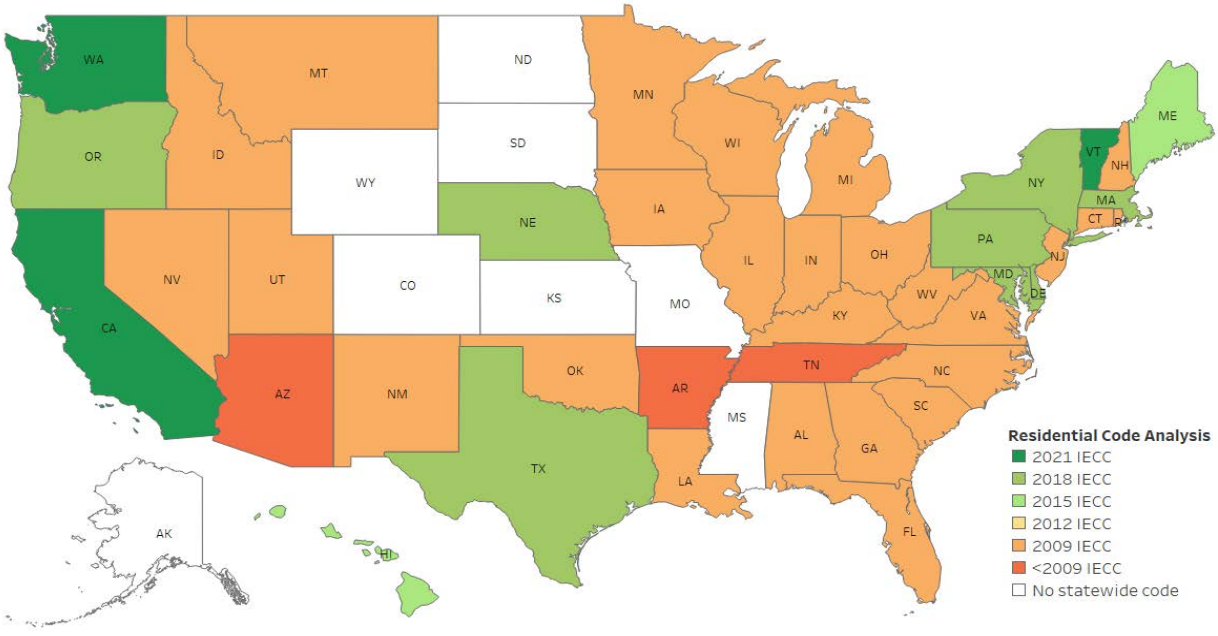
Indirect emissions related to the consumption of electricity generated from fossil fuels accounted for more than 60% of residential emissions in 2020 (EPA, 2022). Deep cuts in emissions from the residential sector can therefore only be achieved by combining production-side and consumption-side strategies. While increasing the energy efficiency of homes on the consumption side will be important to achieve climate goals, significant emissions reductions can also be achieved on the production side by further greening the power grid (Goldstein, Gounaridis and Newell, 2020). The US Energy Information Agency estimates that carbon fees could significantly reduce CO_2 emissions from the electric power sector (EIA, 2021), and recent studies suggest that carbon pricing has had a significant effect on power sector decarbonisation in the United Kingdom (Leroutier, 2022)

Middle income households predominantly own and live in single family homes (Census, 2021). They are also more likely to live in older and leakier houses that predate modern residential building energy codes (Berkeley Lab, 2011). Such codes, which establish minimum energy efficiency requirements for new construction and renovations, were first enacted in the late 1970s and contain energy and water efficiency requirements for newly constructed buildings and alterations to existing buildings. These codes, however, are adopted and updated at the state level, resulting in a large variation in stringency across states (see Figure 3.28). Only a handful of states have adopted building energy codes that are up to date by international standards (California, Washington, and Vermont), while 8 states do not have a state-wide code (Alaska, Colorado, Kansas, Mississippi, Missouri, North Dakota, South Dakota and Wyoming). While it would be desirable for lagging states to update or establish more stringent residential building energy codes, it is unclear how much can be achieved at the federal level apart from incentivising these changes through conditional funding. There is also conflicting evidence on the size of the effect of these building

energy codes on actual emissions, with some studies pointing to significantly larger effects than others (PNNL, 2021; Levinson, 2016). In addition, some studies have found that these building codes may have regressive effects (Bruegge, Deryugina and Myers, 2019). The *Inflation Reduction Act* includes US$1 billion in grants to state and local governments to adopt the latest building energy codes and to implement more stringent zero-energy codes for buildings with net zero energy consumption over the course of the year.

Figure 3.28. Residential building energy code adoption varies greatly across states

Status of State Residential Energy Code Adoption, 2022



Note: Updated as of January 2022. IECC: International Energy Conservation Code. While some states adopt IECC codes directly, these international codes are amended in some states.
Source: Department of Energy, Office of Energy Efficiency & Renewable Energy.

Further reducing emissions from housing will require building more energy-efficient "green" housing and retrofitting existing homes to improve insulation and to make heating, cooling, ventilation, lighting and refrigeration systems more energy efficient. Additionally, appliances and electronics will also have to be replaced by more energy-efficient appliances. Studies show that the potential from building energy efficiency retrofits to reduce electricity use can be large, especially for the older building stock, and can result in significant job-creation (Deutsche Bank Climate Change Advisors and Rockefeller Foundation, 2012). The electrification of end-uses and switching to cleaner fuels when electrification is not possible can also be an important factor to reduce total emissions.

While improving the energy efficiency of homes will ultimately reduce energy costs for households and protect them from volatile and rising energy prices, home retro-fitting and the purchase of new and more efficient appliances can be costly upfront, especially for low- and middle-income households (DOE, 2012). Low- and middle-income households may also not have access to credit in order to invest in these home improvements. While lower-income households qualify for the Weatherization Assistance Program and the Low Income Home Energy Assistance Program, which offer energy efficiency measures at no cost to eligible households, middle-income households are not eligible for these programmes. However, the high correlation between household income and residential emissions suggests that the US households

responsible for higher greenhouse gas emissions will be more financially capable to bear the costs of deep home retro-fitting (Goldstein, Gounaridis and Newell, 2020).

For households less financially capable of bearing the costs of deep home retro-fitting, financial support from governments, possibly partly financed by carbon pricing or carbon levies on certain activities, could be expanded. This could be achieved through an expansion of existing programmes such as the Weatherization Assistance Program or the Low Income Home Energy Assistance Program to cover middle-income households. A sliding scale of household contributions depending on income could be introduced to avoid any regressive effects and reduce the cost of these programmes. These subsidies could be administered through a refundable tax credit or direct cash transfers. In France, for example, a cash transfer (MaPrimeRénov') has recently replaced a previously-existing tax credit for home retro-fitting. France has also outlawed the rental of extremely energy-inefficient housing starting in 2025, and plans to outlaw the rental of housing rated F or G according to its energy efficiency rating system starting in 2028. Although the relative stock of rentals is smaller in the United States, a similar policy could provide a strong incentive for energy efficient retrofits. Preferential lending mechanisms in the United States, such as Fannie Mae's Green Financing Loans for multi-family buildings or the Federal Housing Administration's Energy Efficient Mortgage Insurance, can also provide additional financing for investments in energy efficiency improvements. These programmes should be expanded to increase the total amount of financing of home improvements. As part of the *Inflation Reduction Act*, low- and middle-income households now benefit from up to US$14,000 in direct consumer rebates to purchase heat pumps, other energy efficient home appliances, and for upgrading home electric systems to support electrification. The legislation also extends and increases the existing tax credit for energy efficiency enhancing home improvements.

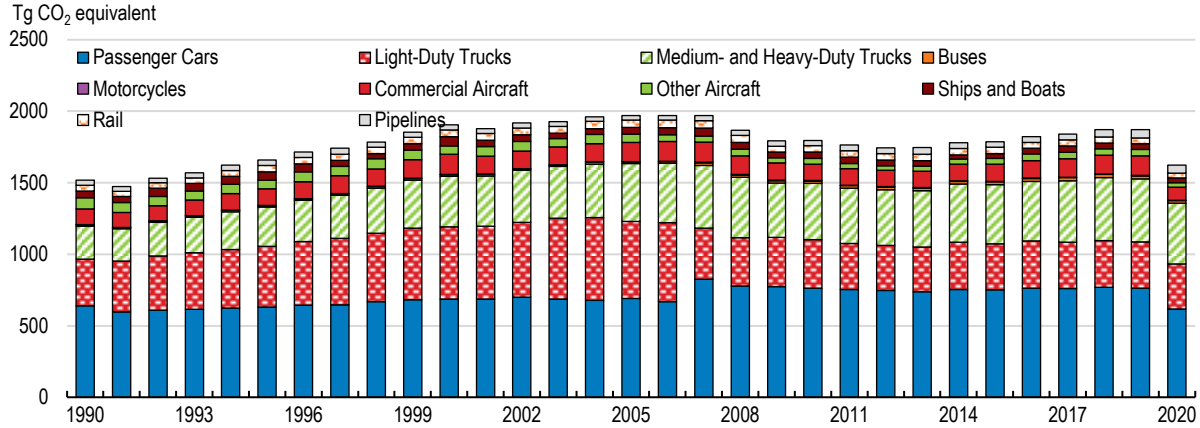
Given the long average lifespan of new homes, design and construction decisions such as heating systems, building material, and housing size and type are crucial for the decarbonisation of the housing stock. Therefore, updated building energy codes accompanied by the relaxation of regulatory deterrents to new housing, at both local and federal levels, can ensure that the housing stock becomes progressively more energy-efficient. Land-use policies should also be reviewed given that they also play an important role in shaping urban form, which has direct as well as indirect environmental implications.

Reducing transportation emissions

Transportation was the second largest contributor to total greenhouse gas emissions in the United States in 2020, accounting for 27% of total greenhouse gas emissions, only slightly below the industrial sector (EPA, 2022). Within this sector, light duty vehicles, which include passenger cars and light duty trucks, were by far the largest category, with 57% of greenhouse gas emissions from transportation. Aviation accounted for 8% of transport emissions.

The stock of electric vehicles in the United States reached 1.7 million in 2020 (IEA, 2021b), and EVs represented 2% of total car sales. However, alignment with emissions targets will essentially require all new light-duty vehicles to be zero-emissions (i.e. electric and fuel cell) in the 2030s (IEA, 2021b). The federal target is for EVs to make up 50 percent of light-duty vehicle sales by 2030 (Executive Order on Strengthening American Leadership in Clean Cars and Trucks). Meanwhile, a number of states, including California, Massachusetts and the state of Washington, have announced more ambitious targets. In California, regulators recently approved a rule banning the sale of gas-powered cars by 2035, with intermediate sales share targets for zero emission vehicles of 35 percent in 2026 and 68 percent in 2030).

Figure 3.29. United States Transportation greenhouse gas emissions, by source



Source: EPA (2022).

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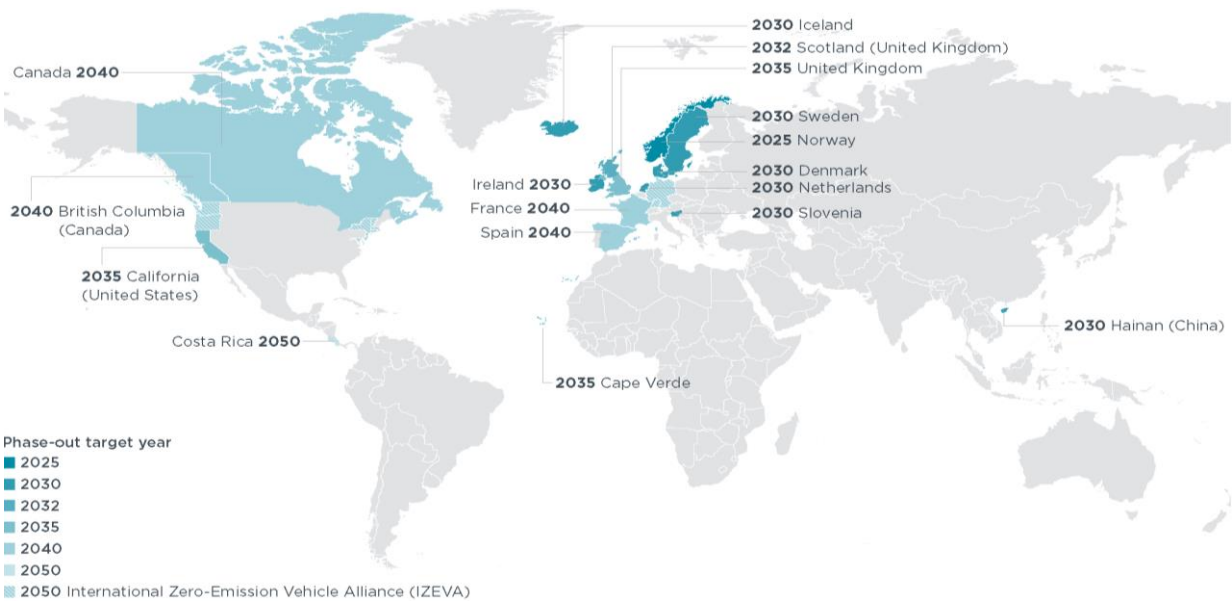
Regulatory frameworks and subsidies have enabled strong growth in EV sales in some countries in recent years. Many countries have tightened fuel economy standards and strengthened purchase incentives for EVs, and more than 20 countries have announced targets to phase out internal combustion vehicles over the next 10-30 years (see Figure 3.30). Additionally, as of April 2021, 70 subnational and city governments had announced 100% zero-emission vehicle targets or the phaseout of internal combustion engine (ICE) vehicles before 2050.

Figure 3.30. Many countries now have official targets to completely phase out sales of new internal combustion cars by a certain date

Governments with official targets to 100% phase out sales or registrations of new internal combustion engine cars by a certain date



Source: International Council on Clean Transportation.

Policies to incentivise purchases of electric vehicles include differentiated taxation of vehicle registration, fiscal incentives for vehicle purchases, as well as complementary measures that enhance the value proposition of driving electric cars, such as preferential parking rates, road toll rebates and low-emission zones. The *Inflation Reduction Act* has introduced changes to the existing non-refundable federal tax credit of up to US$ 7500 for the purchase of an electric car in the United States. Due to a manufacturer's phase-out cap, vehicles were no longer eligible once the producing company had sold more than 200,000 EVs, resulting in only 30% of EVs sold in the United States benefitting from federal tax credits in 2021. The manufacturer's phase-out cap has now been eliminated by the *Inflation Reduction Act*. The Act also modified the conditions to access the tax credits: it has introduced household income limits and added car eligibility restrictions based on the price of the car, location of battery component assembly and production and the geographic origin of the critical minerals contained in the battery. Finally, the *Inflation Reduction Act* introduced new tax credits for second-hand and commercial clean vehicles, which are targeted towards low- and middle-income families.

There also exist a number of tax credits and purchase incentives in many US states. In California, families making less than 300% of the poverty rate are eligible for larger rebates, while the Cash for Clunkers program offers an additional $1,500 to low-income families retiring an old high-emissions vehicle. Increasing the taxation of gasoline and diesel will also reduce demand for internal combustion engine vehicles, while revenues could be used to compensate low- and middle-income households that are likely to be disproportionally affected, as well as to fund public transport infrastructure and reduce public transit fares. Given the relative inelasticity of demand for gasoline and diesel, another possible way to incentivise the production and demand for clean transportation technologies is through a "feebate" programme, which imposes fees on inefficient technologies and provides a rebate on efficient vehicles.

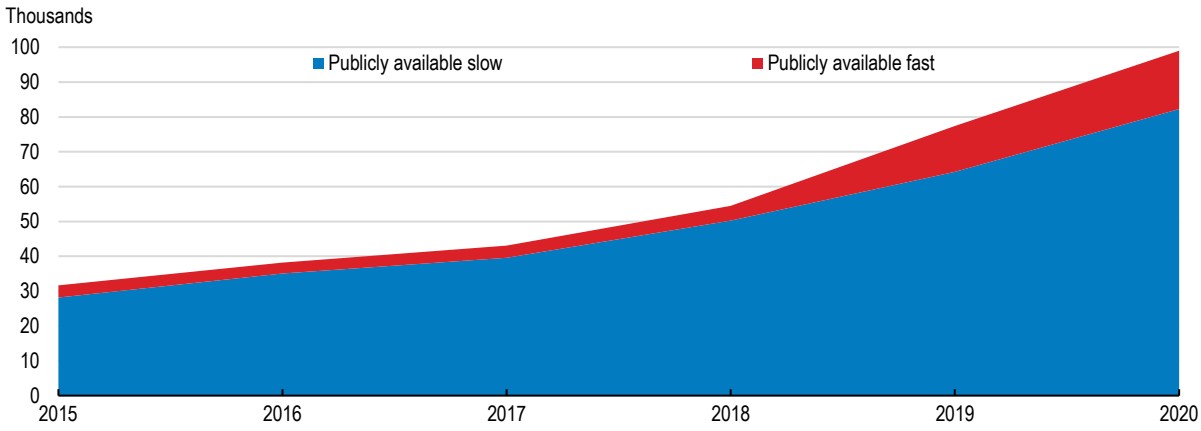
Greenhouse gas vehicle emissions standards in the United States are not as stringent as in other OECD countries and should be tightened to encourage the production of electric vehicles. The latest revision of fleet-wide standards by the Environmental Protection Agency envisages a tightening from 181 grams of CO_2 per mile in 2022 to 132 g/mile in 2026 for cars. In the EU, the fleet-wide targets for cars set in the latest regulation are 153 g/mile for the period 2020 to 2024, with a further 15% reduction from 2025 and 37.5% reduction from 2030 on. To incentivise innovation and given that the share of gasoline-powered vehicle sales will remain high over the short term, the tightening of emissions standards in the United States should be accelerated, and the rules should cover a longer time-horizon than 2022 to 2026, as directed in the recent executive order on "Strengthening American Leadership in Clean Cars and Trucks". Manufacturers have also accumulated a large amount of compliance credits over the past decade under the Averaging, Banking and Trading programme, allowing them to currently underperform the prevailing standards (EPA, 2021b). This stock of tradeable credits should be taken into account when setting the new levels of emissions standards to avoid significant underperformance in the future.

Funding should also be increased for charging infrastructure and grid services along critical transport routes and urban areas to encourage EV adoption. In 2020, China led the world in the amount of publicly available EV chargers with around 800,000 chargers installed. In Europe, the stock of EV chargers reached 290,000, while in the United States the stock was still below 100,000 in 2020, with only 17,000 having a charging power over 22 kW (see Figure 3.31). Fast chargers are particularly important to enable long-distance journeys and to encourage households without access to private charging to switch to EVs. In 2021, the Biden administration released an EV Charging Action Plan to support the deployment of EV chargers around the United States. The Department of Energy and the Department of Transportation have established a Joint Office of Energy and Transportation with the aim of deploying up to 500,000 EV chargers. The Infrastructure Investment and Jobs Act passed in November 2021 also includes US$5 billion over five years to be spent on building charging stations. In addition, the *Inflation Reduction Act* included measures to incentivise the development of alternative fuelling stations by extending the Alternative Fuel Refueling Property tax credit, which provides tax credits of up to US$1,000 for households to install charging stations, and up to US$100,000 for businesses. Particular attention should be given to ensure

access to EV chargers for households that do not own a house with easy charging solutions. Possible solutions include promoting right-of-way charging and updating building and zoning codes to require EV-ready new construction.

Figure 3.31. The number of publicly available chargers has risen quickly but remains low

EV chargers, United States, 2015-2020



Note: Total stock of EV chargers. Fast chargers have a charging power above 22 kW. Slow chargers have a charging power below 22 kW.
Source: IEA Global EV Outlook 2021.

StatLink https://stat.link/atcjlf

While widespread EV adoption will be important to reduce greenhouse gas emissions, improving public transportation networks and increasing the fleet of clean buses will also be crucial, especially for low- and middle-income households that cannot afford an electric vehicle or that do not own a house where they can install a charger. The Infrastructure Investment and Jobs Act raised funding for public transit to US$90 billion over the next five years to address a large repair backlog and replace deficient transit vehicles with zero emissions vehicles. A recent executive order also directs the federal government to purchase 100% zero-emission vehicles by 2035 for its fleet of cars and trucks. Investing in public transportation can encourage its adoption and reduce the use of greenhouse gas-emitting cars. However, public transport is generally a realistic alternative to cars only in compact urban areas with a high density of infrastructure services and shorter trip distances (OECD, 2022). Therefore, land use management and regulations can be an important tool to reduce transportation emissions by encouraging urbanisation, and these policies should be considered in an integrated manner.

Building a well-functioning public transportation system requires adequate regulatory power for authorities overseeing the sector, including for the setting of quality standards and the planning of network routes and services (OECD, 2021i). Additionally, while free public transportation or generalised subsidies are sometimes implemented to incentivise a shift from cars to public transportation, these policies are costly and also cause an undesired shift away from walking or cycling (ITF, 2017; Proost, 2018). Improvements in the quality of public transportation have been shown to cause larger modal shifts from cars to public transportation than generalised subsidies (UITP, 2014). These investments can be combined with targeted subsidies or differentiated fares to ensure affordability for lower-income users. Finally, while distance-based fares are seen as unfair given that they can penalise lower-income users living in the outskirts of urban areas and having to travel further, flat fares incentivise urban sprawl (ITF, 2018). This is a further reason to employ targeted subsidies in order to address equity concerns while preserving desired incentives.

MAIN FINDINGS	KEY RECOMMENDATIONS
Improving access to child care	
Enrolment in childcare in the United States is low compared to other advanced economies, especially for low and middle class households. Net childcare costs are among the highest in the OECD, and often exceed other essential costs of living such as housing and transportation, even for middle-income families. Total public investment in childcare is among the lowest in the OECD. Underfunding results in low participation in existing programmes relative to eligibility.	**Significantly increase public funding for childcare and expand the levels of income eligibility for public programmes.** Establish system that would cap family copayments at a certain proportion of income for middle-income families and that would ensure no copayments for low-income families. Prioritise grants and contracts with child care providers over direct subsidies to families.
Childcare quality across different centres is difficult to assess for families searching for care. . The high turnover rate of childcare staff, partly due to low pay, impacts quality given the importance of developing relationships between children and care-givers.	**Establish minimum federal standards for child care and implement a tiered quality rating system that is consistent across states and that accounts for differences across types of providers.** Improve data collection to monitor childcare quality. Significantly raise wages for childcare workers by indexing them to local wage levels and reduce turnover.
Supporting the middle class through the climate transition	
Total greenhouse gas emissions have steadily fallen since 2004, driven by a shift in the energy mix. Nevertheless, emissions intensity remains one of the highest in the OECD and needs to decline significantly to achieve emission reduction targets. Carbon pricing is lower than in other OECD countries. Outside of the road sector, tax rates on energy use are effectively zero.	**Make use of a broad range of climate mitigation policies to meet emission reduction targets, including regulation, public investment and carbon pricing.** Recycle revenue raised from any carbon pricing policies by raising investment in green infrastructure and clean technology, and by compensating vulnerable households through targeted subsidies.
Largely as the result of high social, geographic, and economic inequality in the United States, emissions inequality is high and climate policies can have differentiated effects across regions, industries and households. Careful explanation of the mechanisms of climate change or of specific policies seem to have a positive impact on the acceptability of mitigation policies.	**Develop a national climate strategy that explicitly takes into account emissions inequalities and the redistributive and regional effects of climate policies.** Coordinate state-level climate transition plans that feed into the national climate strategy. Expand the National Climate Task Force to include representatives from state and local governments, labour unions, advocacy groups, business and scientists. Narrow knowledge and information gaps, engage with stakeholders and interest groups transparently in the design of climate policy packages, and address perceptions of distributional fairness through public outreach campaigns.
Jobs in fossil fuel and energy intensive industries are geographically concentrated and are often held by middle class households. The climate transition entails a large reallocation of jobs and capital from high-carbon to low-carbon activities. The skills required in high carbon intensity jobs may be partly transferrable to jobs in low carbon intensity industries. However, the green transition may increase the future demand for new skills, including in science, technology, engineering and maths (STEM).	**Raise public expenditure on active labour market policies, with a focus on job placement and cost-effective retraining policies.** Ensure that existing safety nets such as unemployment insurance are adequate in the states that will be most impacted by climate policies by expanding eligibility where needed. Provide fiscal incentives for states and localities to relax land use restrictions and promote multi-use zoning in order to increase housing supply in desirable locations. Promote regional and sectoral mobility through a subsidy covering the cost of occupational licensing for workers that lose their jobs in brown industries and wish to work in green industries. Empower local governments to design and develop local training programmes. Structurally adapt the education system to the increased demand for green skills. Continue surveying energy industry employment needs (as in the US Energy & Employment Report) and coordinating with the private sector.
The residential sector accounts for 15% of total greenhouse gas emission in the United States. Reductions in household emissions will be key to achieving overall emission targets. Indirect residential emissions related to the consumption of electricity generated from fossil fuels accounted for more than 60% of residential emissions in 2020 and will be costly for households to reduce significantly. Residential building energy codes vary significantly across states, and some states do not have state-wide codes.	**Expand existing weatherisation and retro-fitting programmes to cover middle-income households.** **Provide fiscal incentives for states to update their building energy codes.** Consider outlawing the rental of extremely energy-inefficient housing.
Transportation was the largest contributor to total greenhouse gas emissions in the United States in 2020, accounting for 27% of total greenhouse gas emissions. Alignment with emissions targets will essentially require all new light-duty vehicles to be zero-emissions in the 2030s.	**Accelerate the tightening of fuel efficiency and tailpipe CO_2 standards.** Provide tax credits and purchase incentives for electric vehicles targeted at low- and middle-income households. Increase funding for charging infrastructure and grid services along critical transport routes and urban areas. Improve the quality and availability of public transportation while ensuring any subsidies to encourage uptake are well targeted.

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OECD Economic Surveys

UNITED STATES

The United States economy rebounded strongly from the depths of the pandemic recession, aided by a large and enduring government policy response. However, Russia's war against Ukraine and strong inflationary pressures have dampened the economic outlook. The administration is reinforcing public welfare through packages that invest in infrastructure and the climate transition, but an ageing population means fiscal pressures are on the horizon. In response, further efforts should focus on both broadening the tax base and improving public spending efficiency, particularly in the areas of health and infrastructure. A persistent long-term challenge has been the hollowing out of the middle class, which has experienced stagnating incomes and rising costs of living. Two pressing policy challenges for this group relate to improving childcare and the climate transition. Expanding public investment in childcare can improve its affordability for the middle class and benefit female labour force participation. In addition, the impact on the middle class of policies to reach net zero carbon emissions by 2050 should be taken into account. An important aspect will be ensuring that active labour market policies and place-based policies are in place to tackle labour market disruptions as jobs reallocate from high-carbon to low-carbon activities.

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