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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.

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BASIC STATISTICS OF UNITED STATES, 2015 or latest year available

(Numbers in parentheses refer to the OECD average)*

LAND, PEOPLE AND ELECTORAL CYCLE

Population (million)	318.9		Population density per km²	34.8	(36.8)
Under 15 (%)	19.2	(18.3)	Life expectancy (years)	78.8	(80.5)
Over 65 (%)	12.6	(13.6)	Men	76.4	(77.8)
Foreign-born (%)	13.1		Women	81.2	(83.1)
Latest 5-year average growth (%)	0.8	(0.5)	Latest general election		Nov. 2012

ECONOMY

Gross domestic product (GDP)			Value added shares (%)		
In current prices (billion USD)	17 947		Primary sector	1.3	(2.5)
Latest 5-year average real growth (%)	2.0	(1.7)	Industry including construction	20.7	(26.4)
Per capita (000 USD PPP)	54.4	(39.2)	Services	78.0	(71.1)

GENERAL GOVERNMENT

Per cent of GDP

Expenditure	37.8	(42.3)	Gross financial debt	113.6	(118.7)
Revenue	33.5	(38.5)	Net financial debt	88.5	(76.0)

EXTERNAL ACCOUNTS

Exchange rate EUR per USD	0.90		Main exports (% of total merchandise exports)		
PPP exchange rate (USA = 1)	1.00		Machinery and transport equipment		34.1
In per cent of GDP			Chemicals and related products, n.e.s.		13.1
Exports of goods and services	12.6	(28.8)	Commodities and transactions, n.e.s.		11.0
Imports of goods and services	15.5	(28.6)	Main imports (% of total merchandise imports)		
Current account balance	-2.70	(0.1)	Machinery and transport equipment		39.7
Net international investment position	-40.5		Miscellaneous manufactured articles		15.0
			Mineral fuels, lubricants and related materials		14.8

LABOUR MARKET, SKILLS AND INNOVATION

Employment rate for 15-64 year-olds (%)	68.7	(66.2)	Unemployment rate, Labour Force Survey (age 15 and over) (%)	5.3	(6.8)
Men	74.2	(74.1)	Youth (age 15-24, %)	13.4	(15.0)
Women	63.4	(58.5)	Long-term unemployed (1 year and over, %)	1.4	(2.5)
Participation rate for 15-64 year-olds (%)	72.7	(71.2)	Tertiary educational attainment 25-64 year-olds (%)	44.2	(33.6)
Average hours worked per year	1 789	(1770)	Gross domestic expenditure on R&D (% of GDP)	2.7	(2.4)

ENVIRONMENT

Total primary energy supply per capita (toe)	6.9	(4.1)	CO_2 emissions from fuel combustion per capita (tonnes)	16.2	(9.5)
Renewables (%)	6.5	(9.2)	Water abstractions per capita (m^3)	1582	(819)
Fine particulate matter concentration ($PM_{2.5}$, $\mu g/m^3$)	10.7	(14.0)	Municipal waste per capita (kilogrammes)	725	(516)

SOCIETY

Income inequality (Gini coefficient)	0.401	(0.308)	Education outcomes (PISA score, 2012)		
Relative poverty rate (%)	17.6	(11.2)	Reading	498	(496)
Ratio of incomes of the top 10% vs. Bottom 10%	18.8	(9.6)	Mathematics	481	(494)
Public and private spending (% of GDP)			Science	497	(501)
Health care, current expenditure	16.4	(8.9)	Share of women in parliament (%)	19.4	(28.6)
Pensions	6.8	(8.7)	Net official development assistance (% of GNI)	0.2	(0.4)
Education (primary, secondary, post sec. non tertiary)	3.6	(3.7)			

Better life index: *www.oecdbetterlifeindex.org*

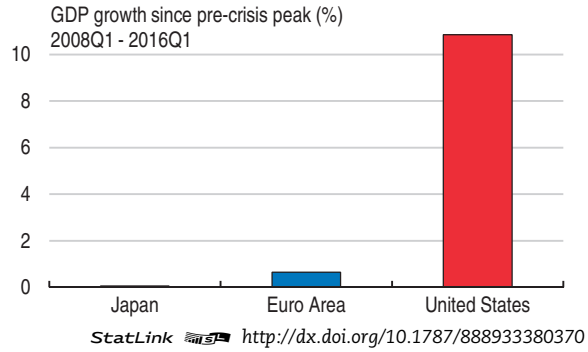
* Where the OECD aggregate is not provided in the source database, a simple OECD average of latest available data is calculated where data exist for at least 29 member countries.

Source: Calculations based on data extracted from the databases of the following organisations: OECD, International Energy Agency, World Bank, International Monetary Fund and Inter-Parliamentary Union.

Executive summary

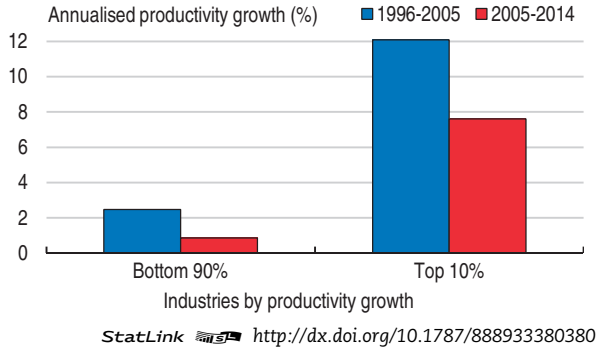
- *The US economy has rebounded from the crisis*
- *Productivity has slowed in most industries*
- *Income inequality continues to increase*

The US economy has rebounded from the crisis



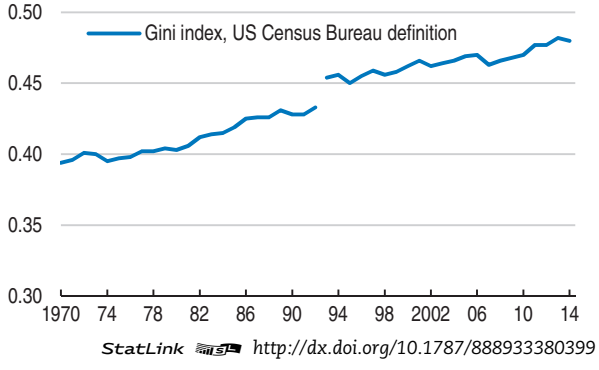
Seven years after the financial crisis, the US economy has rebounded : output has surpassed its pre-crisis peak by 10%, robust private-sector employment gains have sharply reduced unemployment, fiscal sustainability has been largely restored and corporate profits are high. The short-term outlook is for further growth near potential (albeit crisis-reduced at about 2%), where well-designed investments in infrastructure, skills and green growth would contribute to a more robust and sustainable expansion.

Productivity has slowed in most industries



Productivity growth has been sluggish recently in most sectors of activity, even in "frontier firms" of industries such as ICT and pharmaceuticals. Should it persist, slow productivity growth will create challenges, notably for addressing income inequality, welfare promises, raising standards of living and investment incentives. Restoring the traditional dynamism of the American business sector may be one way to boost productivity growth. This requires competitive market forces, skilled and mobile workers and policies to promote innovation.

Income inequality continues to increase



While growth has rebounded, it remains unequally distributed across socioeconomic groups. Income inequality continues to increase, women typically receive lower salaries than men, and some groups are disadvantaged in the labour market with little prospect to return to work, notably those with criminal records. Children of poor families often lack the opportunity to do better than their parents because they do not have access to high-quality schools and tend to drop out of college. For those lacking skills demanded by employers, vocational training and continuing education have had mixed results.

POLICY CHALLENGES	KEY RECOMMENDATIONS
Rebalancing the policy mix	
Weak global growth and fiscal consolidation are weighing down on prospects.	Boost public investment spending with long-term benefits: infrastructure, skills, innovation, health and environmental protection.
Monetary policy is overburdened	Raise policy interest rates at a pace that gradually tightens financial conditions so as not to jeopardise the recovery and to promote a return of inflation to the Fed's target.
Systemic financial risks remain	Continue to implement Dodd Frank and Basel III requirements.
Incomplete financial exchange may enable tax evasion	Implement the OECD Common Reporting Standard on automatic exchange of financial account information
Strengthening productivity growth	
The poor state of infrastructure is holding back productivity and contributing to pollution and congestion.	Boost investment in, and maintenance of infrastructure; in particular, promote mass transit. Use federal programmes to encourage co-ordination across State and local jurisdictions.
Business dynamism and entrepreneurship have weakened, harming productivity	Make R&D tax credits refundable for new firms.
	Ensure personal bankruptcy procedures do not undermine incentives for entrepreneurship.
	Continue to speed up patenting decisions in line with targets without compromising patent quality.
Incumbents have acquired more market power	Adapt antitrust policy to new trends in digitalisation, financial innovation and globalisation. Strengthen compliance with merger remedies.
	Continue to strengthen pro-competitive policies, including in telecoms.
	Use federal funding to remove unnecessary occupational licensing requirements and make others more easily portable across States.
Making growth more inclusive and sustainable	
Children from poor families lack the opportunity to do better than their parents.	Use federal funding for targeted programmes to reduce disparities in student opportunities and encourage states to be ambitious in lifting educational attainment
Women's opportunities will improve further, but the pace could be faster	Require paid parental leave and improve access to quality childcare to help reduce wage gaps and improve career prospects.
Reduce social and racial inequalities	Expand the Earned Income Tax Credit and raise the minimum wage. Make tax expenditures less regressive. Continue to roll out the Affordable Care Act.
	Reduce pre-screening for employment on criminal records
With population ageing, helping displaced workers is gaining importance	Develop reskilling programmes with established effectiveness in helping people back to work.
COP21 and SDG goals to reduce carbon emissions risk being missed	Work towards putting a price on carbon, such as by implementing the proposed $10 per barrel tax on oil and the Clean Power Plan.

Assessment and recommendations

- *After the recovery, growth is likely to remain moderate*
- *Achieving stronger long-term growth*
- *Making growth more inclusive and sustainable*
- *Meeting environmental challenges*

Seven years after the financial crisis, the United States is making a comeback. The US economic recovery, while modest by historical standards, has been one of the strongest in the OECD, thanks to robust monetary policy support and an early fiscal expansion. Many private-sector jobs have been created, pushing unemployment down to its pre-crisis level, thereby providing consumers with higher income and improving their confidence. Further economic growth at a pace near 2% a year is likely in the short term, while a new recession is a low-probability prospect in the current environment. But a number of long-term challenges remain unresolved. In particular, the slowdown of productivity growth already apparent since the mid-2000s has continued in recent years. Faster productivity growth – supported by well-designed investments in innovation, infrastructure, skills and inclusiveness – would help to address future challenges such as rising income inequality, population ageing and fiscal sustainability. Against this background, this report focuses on:

- How to support a sustainable expansion by using fiscal and structural policies, so as to lighten the burden on monetary policy and to facilitate a normalisation of interest rates;
- How to boost productivity growth by bolstering competitive forces on market incumbents, combined with well-designed investments in innovation, skills, infrastructure and environmental protection.
- How to make growth more inclusive by enabling the acquisition of appropriate skills, eliminating obstacles to employment and enabling individuals to fulfil their potential.

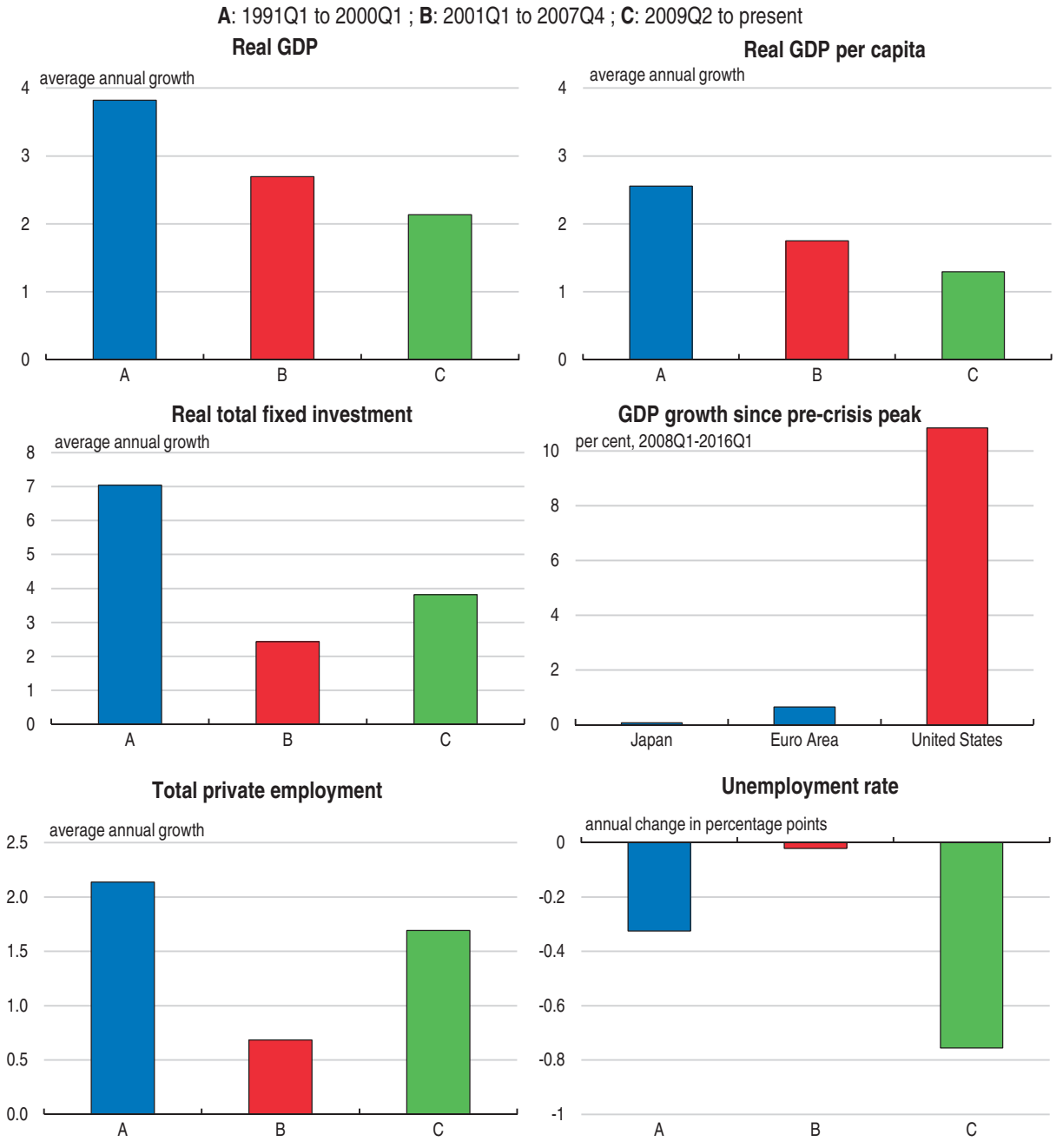
After the recovery, growth is likely to remain moderate

Output has recovered, albeit more slowly than in previous expansions (Figure 1). The slow speed of the recovery reflects the severity and depth of the financial crisis, fiscal consolidation, the exit of baby boomers from the labour market, weaknesses in key OECD economies, and, more recently, world trade stagnation induced by the slowdown of China and lower demand from oil-exporting countries.

While activity is, on average, well above pre-crisis peaks, the revival does not prevail everywhere. The recovery has been particularly robust in some locations, but activity remains low in other areas. Some industries have performed strongly (software, telecommunications, pharmaceutical products), whilst growth in many other areas and industries remains mired in the doldrums. The diversity in economic outcomes is reflected in income inequality, which continues to increase.

The recovery has been sustained mainly by mutually-reinforcing gains in employment, income and household spending. Declines in energy prices – which began when oil and natural gas became available from unconventional sources – have boosted household purchasing power, providing an additional lift to consumption. However, the impetus from these influences is unlikely to be sustained without a meaningful pickup in real wage growth. Meanwhile, business fixed investment has expanded steadily in comparison to the rest of the OECD, reflecting the strong recovery of business output,

Figure 1. **Output recovery has been weaker than after previous recessions, while the decline in the unemployment rate has been faster**



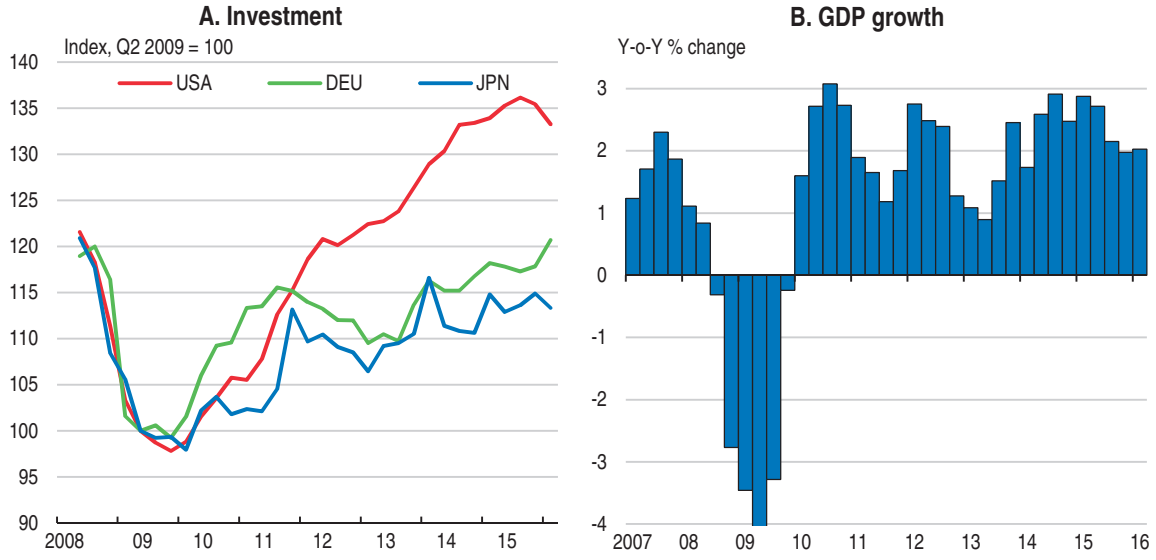
Source: OECD Economic Outlook 99 database.

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although booming conditions in the domestic energy sector that prevailed through late 2014 have come to a sudden halt.

Weak global demand and a stronger dollar have created powerful headwinds for firms exposed to international competition. The effective exchange rate has appreciated sharply since mid-2014 in real effective terms, thus exerting a drag on exports (Figure 3). Steps to expand international trade treaties could support greater US and global demand over time.

Figure 2. **Business fixed investment has recovered as output growth continues steadily**



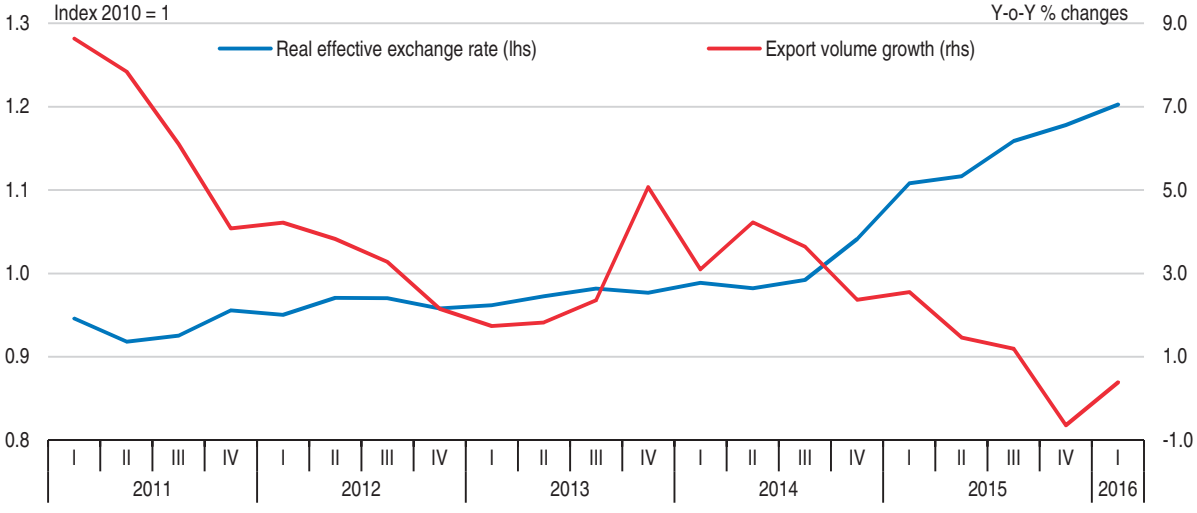
Source: OECD Economic Outlook database.

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The recently concluded Trans Pacific Partnership is expected to lift US real incomes by around ½ per cent of GDP by 2030 when it is fully implemented (Petri and Plummer, 2016), and negotiations for a Transatlantic Trade and Investment Partnership with the European Union and a number of other negotiations are ongoing.

Economic growth is projected to continue at an annual pace of about 2% in 2016 and 2017 (Table 1; Figure 2, Panel B). Fiscal policy is assumed to have a neutral impact after several years of budget consolidation. Monetary conditions are assumed to remain highly accommodative, even though the Federal Reserve is no longer expanding its balance sheet and has begun to gradually raise interest rates from very low levels. A new recession is an

Figure 3. **The exchange rate has appreciated sharply and export growth has slowed**



Source: OECD Economic Outlook 99 database.

StatLink http://dx.doi.org/10.1787/888933380423

Table 1. **Macroeconomic indicators and projections**

Annual percentage change, volume (2009 prices)

	2012 Current prices (USD billion)	2013	2014	2015	2016	2017
Gross domestic product (GDP)	**16 155**	**1.5**	**2.4**	**2.4**	**1.8**	**2.2**
Private consumption	11 051	1.7	2.7	3.1	2.7	2.1
Government consumption	2 544	-2.5	-0.5	0.4	0.5	0.8
Gross fixed capital formation	3 064	2.4	4.1	3.7	2.4	4.5
Housing	442	9.5	1.8	8.9	10.1	7.5
Business	2 008	3.0	6.2	2.8	-0.1	4.1
Government	614	-4.8	-1.1	2.3	4.1	2.9
Final domestic demand	16 659	1.2	2.5	2.8	2.3	2.4
Stockbuilding[1]	62	0.1	0.1	0.2	-0.3	0.0
Total domestic demand	16 721	1.2	2.5	3.0	2.0	2.4
Exports of goods and services	2 198	2.8	3.4	1.1	0.4	3.5
Imports of goods and services	2 764	1.1	3.8	4.9	1.9	4.3
Net exports[1]	- 566	0.2	-0.2	-0.7	-0.2	-0.2
Other indicators (growth rates, unless specified)						
Potential GDP		1.7	1.7	1.7	1.6	1.5
Output gap[2]		-3.5	-2.8	-2.0	-1.8	-1.2
Employment		1.0	1.6	1.7	2.1	1.5
Unemployment rate		7.4	6.2	5.3	5.0	4.7
GDP deflator		1.6	1.6	1.0	1.4	2.1
Consumer price index		1.5	1.6	0.1	1.1	2.0
Core consumer prices		1.5	1.5	1.3	1.7	1.8
Household saving ratio, net[3]		4.8	4.8	5.1	5.2	4.5
Trade balance[4]		-4.2	-4.3	-4.2		
Current account balance[4]		-2.3	-2.2	-2.7	-2.5	-2.5
General government fiscal balance[4]		-5.5	-5.1	-4.4	-4.3	-3.7
Underlying government primary fiscal balance[2]		-1.6	-1.1	-0.8	-0.6	-0.3
General government gross debt [4]		111.4	111.7	113.6	114.2	114.2
General government net debt[4]		87.7	87.4	88.5	90.0	90.0
Three-month money market rate, average		0.3	0.3	0.5	0.9	1.4
Ten-year government bond yield, average		2.4	2.5	2.1	2.2	3.0
Memorandum items						
Federal budget surplus/deficit[4]		-4.1	-2.8	-2.5		
Federal debt held by the public[4]		72.6	74.4	73.7		

1. Contribution to changes in real GDP.
2. As a percentage of potential GDP.
3. As a percentage of household disposable income.
4. As a percentage of GDP.

Source: OECD (2016), OECD Economic Outlook 99 database and The White House: Office of Management and Budget.

unlikely prospect in the near term on the basis of existing information (Box 1). Nonetheless, low-probability but extreme events (Box 2) should not be overlooked by policymakers. With monetary policy levers persistently set at highly accommodative settings to achieve mediocre growth, the scope for policy to respond aggressively to adverse shocks is limited.

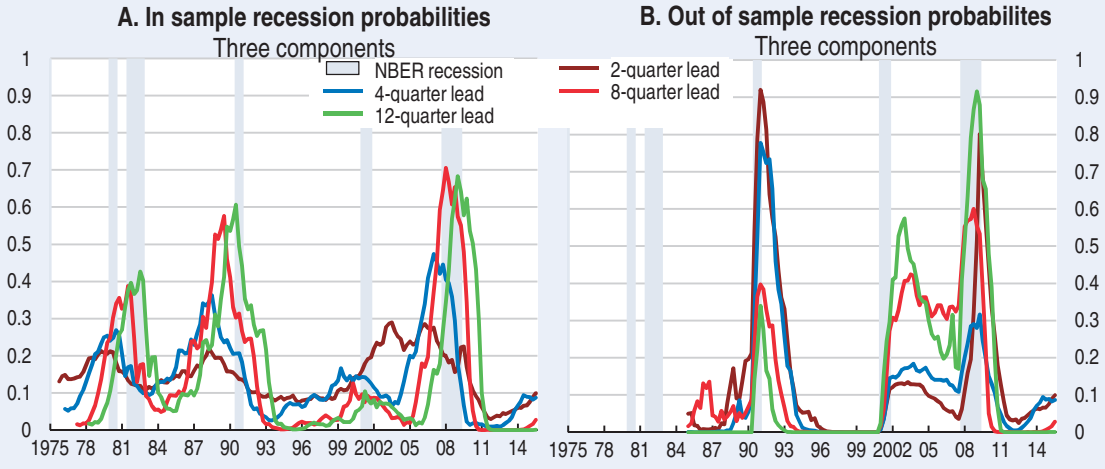
Private-sector job creation has been the most welcome aspect of the recovery (Figure 5). The unemployment rate has come down substantially and long-term unemployment has decreased further than in other countries. Labour-market participation

Box 1. **Recession risks appear limited**

Cross-country empirical studies on economic resilience using historical data from the OECD have highlighted a constellation of variables that have each been associated with past cyclical downturns (Hermansen and Röhn 2015; Röhn et al., 2015). Broadly speaking, these models associate the probability of recession to individual indicators of potential imbalances in domestic asset and credit markets, as well as in global markets and international trade. However, when the indicators identified by these studies are used to examine the US economy on its own, the predictive content of each variable in isolation is quite poor, with numerous false positives and false negatives. To downplay the noise from each indicator separately and focus on their collective signaling content, we used principal component analysis to extract three factors that appear to have some predictive power for the last three of the last five NBER-defined US recessions (Figure 4) within sample.

Figure 6(left panel) shows estimates of the recession probability at horizons of 2, 4, 8, and 12 quarters using models estimated with quarterly data for these three components over the entire time span from 1975 to 2015. These models show elevated recession probabilities around the time of most downturns but are still subject to errors – such as failing to predict the 2001 downturn. Estimates from recent quarters suggest that the vulnerability to recession has risen of late but is well below previous episodes. Nonetheless, models estimated using historical data are at risk of over fitting. Figure 4 (right panel) shows the same model applied out of sample in real time. The predictive performance deteriorates somewhat relative to the in-sample estimates, often indicating a high probability of a downturn with a delay after the event or even after the recovery had begun. Not surprisingly, the real-time models also point to very little likelihood that a recession is imminent.

Figure 4. **Recession probabilities: real time and in-sample comparisons**



Source: OECD calculations based on Hermansen and Röhn (2015).

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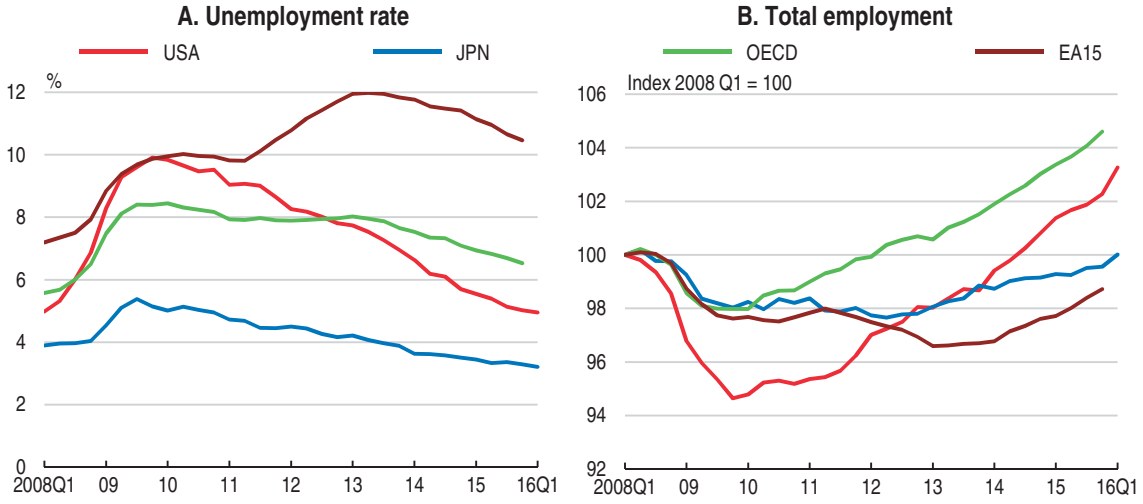
has also begun to recover recently, although it remains on a declining trend due to the retirement of baby-boomers.

Notwithstanding low unemployment, inflation is expected to remain stubbornly low, partly due to transitory downward pressure from the recent appreciation in the dollar and falling energy prices, but also due to the flattening of the Phillips curve (Figure 6, Box 3). Measures of core inflation are higher, but still below the Federal Reserve's inflation 2% target for PCE price inflation. Indicators signal little to no risk of an emerging inflationary

Box 2. **Low-probability vulnerabilities**

Vulnerability	Possible outcome
An intensification of geo-political tensions and threats of terrorist activity	Heightened insecurity could undermine consumer confidence. Addressing potential threats would likely require substantial public spending and may disrupt economic activity, notably through tighter border controls.
A retreat from internationalism	A broad retreat from internationalism may give rise to increased protectionist behavior, leading trade to shrink and jeopardising economic growth.
Financial market meltdown	Exposure of systemically-important financial institutions to major shocks emanating from domestic financial markets or abroad could ultimately require the authorities to intervene to ensure financial market stability and could result in another recession.
Intensified weather variability and storm activity	Coastal areas are already heavily exposed to sometimes devastating storm damage. Extreme natural disasters may have long-term negative effects on local economies (*e.g.*, Katrina) and require large responses in disaster relief, putting a strain on State and federal fiscal positions.
Political gridlock	A return to past difficulties in forging consensus on the budget and economic policy more broadly may result in gridlock. Risks of default on federal debt or underfunding of essential activities could result in sharp shocks to the economy and financial sector.

Figure 5. **Strong job gains and much lower unemployment rates**



Source: OECD Economic Outlook database 99.

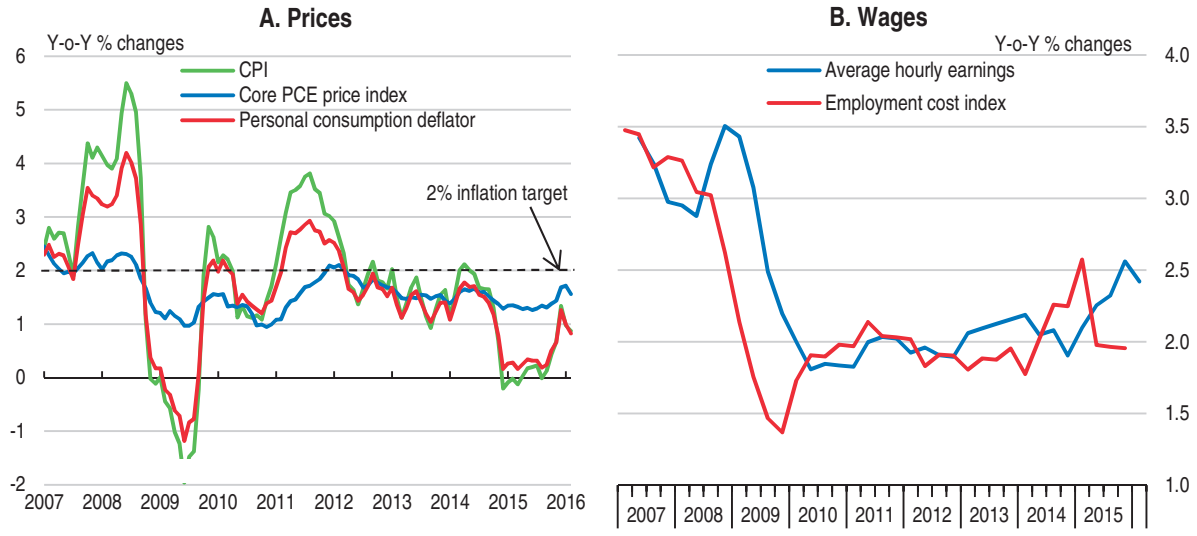
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spiral, with measures of inflation expectations showing hints of tailing downward. Nominal wage growth remains slow, although there are signs of modest upward pressure.

An exit from unconventional monetary policy has started

The expectation of Federal Reserve's FOMC members is that inflation will rise slowly toward the target. The central bank has stopped adding to its balance sheet through bond purchases and started the process of normalising interest rates. Further increases in interest rates would be warranted in line with inflation becoming more consistent with the Fed's inflation target, though at a pace so as not to jeopardise the recovery. As the target is symmetric, inflation could run temporarily higher than 2%.

Figure 6. **Price and wage inflation have remained stubbornly subdued**



Source: OECD, Economic Outlook database; US Department of Commerce, Bureau of Economic Analysis and the US Bureau of Labor Statistics.

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Box 3. **Real-time uncertainty in assessing inflationary pressures**

The magnitude of the gap between output and potential GDP (the output gap) can be difficult to assess in real time for many countries – including the United States. These difficulties are evident in Figure 7, which compares estimates of the output gap across OECD *Economic Outlooks* from 2004 to 2016. Indeed, OECD *Economic Outlooks* initially suggested that the magnitude of the US output gap was fairly modest in the years leading up to the Great Recession in 2008/2009. The existence of an inflationary gap prior to the crisis only became substantial years later, in retrospect. This experience underscores the substantial uncertainties involved in assessing the current output gap.

Figure 7. **Real-time estimates of the US output gap can be misleading**

Different vintages of output gap estimates



Source: OECD, Economic Outlook database.

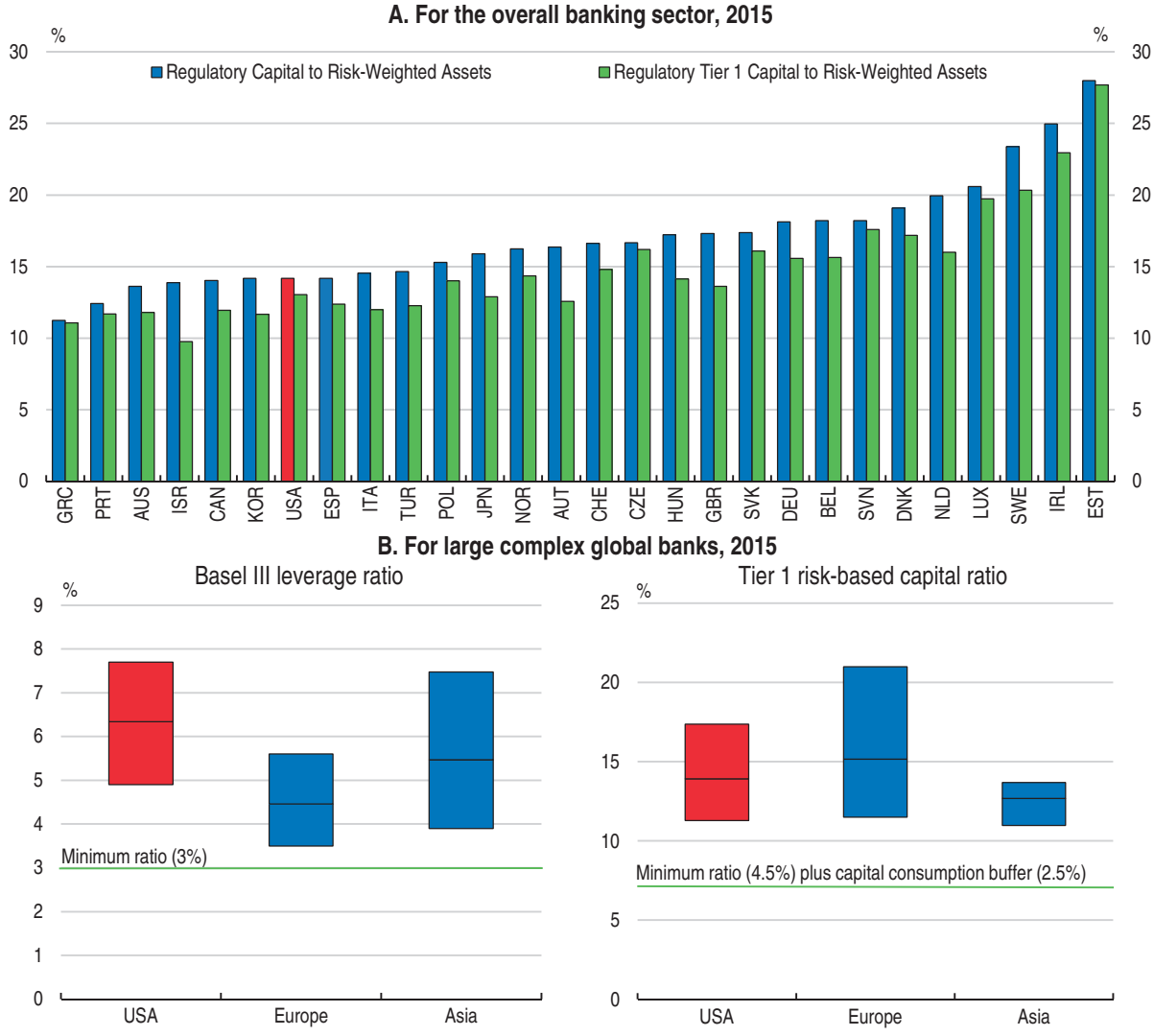
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The exit from unconventional monetary policy could be facilitated by fiscal policy taking a greater role in supporting domestic demand through well-targeted public investment. Structural policies designed to boost productivity growth and the size of the labour force would also facilitate the normalisation of monetary policy by raising potential output growth and the neutral interest rate. These policies would create space of monetary policy reacting to adverse shocks, and they would reduce the risk of hitting the lower bound.

Preserving financial stability requires introducing macro-prudential tools

Large global US banks have mostly recovered from the crisis. While US banks overall are less well capitalised than those of many other OECD countries, when measuring capital and adequacy using risk-based capital metrics (Tier 1 risk-based capital ratios) (Figure 8,

Figure 8. **Capital ratios exceed thresholds but risks remain**



Note: The boxes in panel B give the range of leverage and capital ratios in the different regions. The line in the box gives the average leverage or capital ratio for large global banks in each area. Regulatory capital ratios are only one aspect of financial soundness.
Source: IMF Financial Soundness Indicator database; SNL Financial, FDIC Global Capital Index (Hoenig Report).

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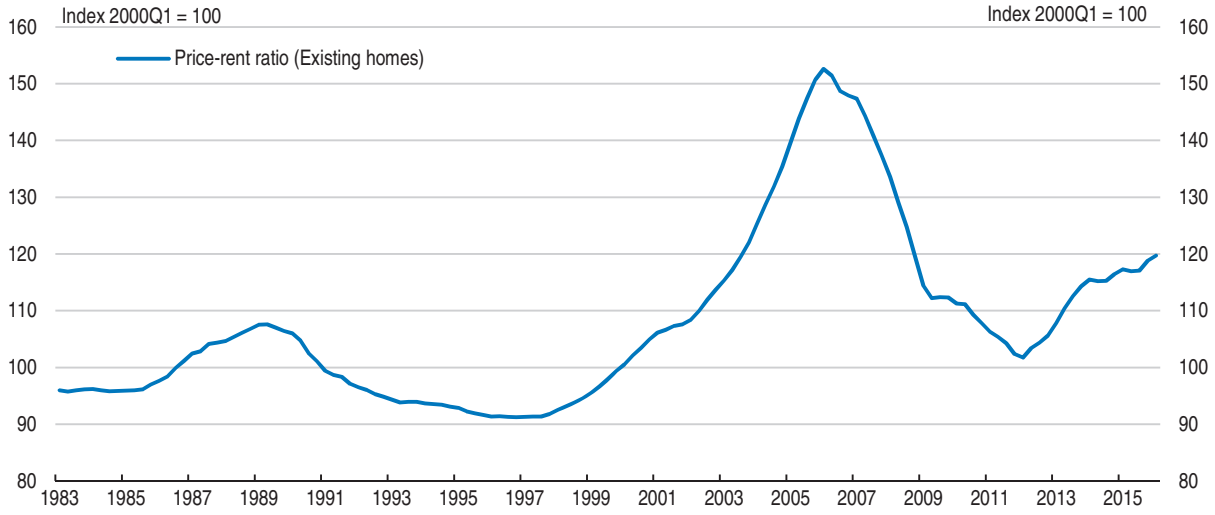
Panel A), the large global US banks are about as well capitalised as similarly large and complex banks from other OECD countries and are more highly capitalised than peers when measuring capital adequacy using a globally consistent leverage ratio measure, which controls for differences in risk-weighted assets (see comparison of Basel III leverage ratios)(Figure 8, Panel B). In addition, while the concentration of financial activity in a handful of large, global banks has increased compared to the pre-crisis years, the overall share of assets held by the six largest banks has been declining since 2010. Moreover, since 2010, the largest and most complex banks have shed assets, reduced reliance on less stable sources of funds, and significantly strengthened their capital and liquidity buffers, which has reduced risk at these banks. The authorities have been working to mitigate risks, particularly for the large, complex banks (Table 2). These steps include rules to improve funding resilience, restrict financial interconnectedness and improve the ability of regulators to resolve these firms. Work is ongoing on introducing counter-cyclical capital buffers. In addition, robust and dynamic stress testing increases the vigilance of the authorities with respect to financial stability. Finally, the Financial Stability Oversight Council was introduced with a mandate to assess and respond to systemic financial stability threats. Nonetheless, the fragmented nature of the financial regulatory system remains unaddressed which may complicate taking necessary macro-prudential policy measures (Kohn, 2014). Another possible weakness are limits on the Federal Reserve to act as a lender of last resort outside the banking sector. Against this background, it is warranted to reduce fragmentation amongst regulators and ensure substantial capital buffers, particularly in banks that are too big to fail, while macro-prudential policy remains underdeveloped.

The housing market is showing signs of recovery. Residential house prices have increased and are exceeding pre-crisis levels in nominal terms in a handful of areas. However, price-to-rent ratios remain below the pre-crisis peak (Figure 9). In addition, loan write-offs and household spending restraint have helped put household balance sheets in a stronger position overall than prior to the crisis (Figure 10). Mortgage debt growth

Table 2. **Past OECD recommendations on monetary and financial policy**

Recommendation	Actions taken since the 2014 Survey
Gradually reduce and ultimately remove monetary accommodation as the economy approaches full employment and inflation returns to the Fed's 2% target.	The process of raising policy rates began in December 2015, though policy remains appropriately accommodative.
Continue to roll out macro-prudential policy tools, including those associated with the Dodd-Frank Act and those addressing vulnerabilities in wholesale funding, repo market and money-market mutual funds.	Capital requirements for systemically important banks are substantially higher than before the crisis, stress tests have been implemented to reveal vulnerabilities, and regulations require systematically important institutions to form "living wills" to avoid a disorderly unwinding in the case of failure. New rules on securitisation and money market funds as well as enhanced transparency apply to the shadow banking sector.
Reform the housing finance system to ensure access to mortgage credit by creditworthy homebuyers while providing better guarantees of financial stability and avoiding again exposing taxpayers to costly bailouts.	Several housing finance reform proposals have been made, but none progressed past the committee stage in Congress.
Leave the securitisation of mortgages to the private sector. This would entail privatising the Government Sponsored Enterprises, cutting off their access to preferential lending facilities with the federal government, subjecting them to the same regulation and supervision as other issuers of mortgage-backed securities, and dividing these entities into smaller companies that are not too big to fail.	Fannie Mae and Freddie Mac remain under government stewardship. The Senate Banking Committee passed in May 2014 a bipartisan proposal ("Johnson-Crappo GSE reform") seeking to reform the housing finance system, create greater competition and reduce taxpayer risk, while ensuring affordable fair access to all creditworthy homebuyers. The proposal has not gone beyond the committee stage.

Figure 9. **House price-to-rent ratios are broadly in line with historical trends**

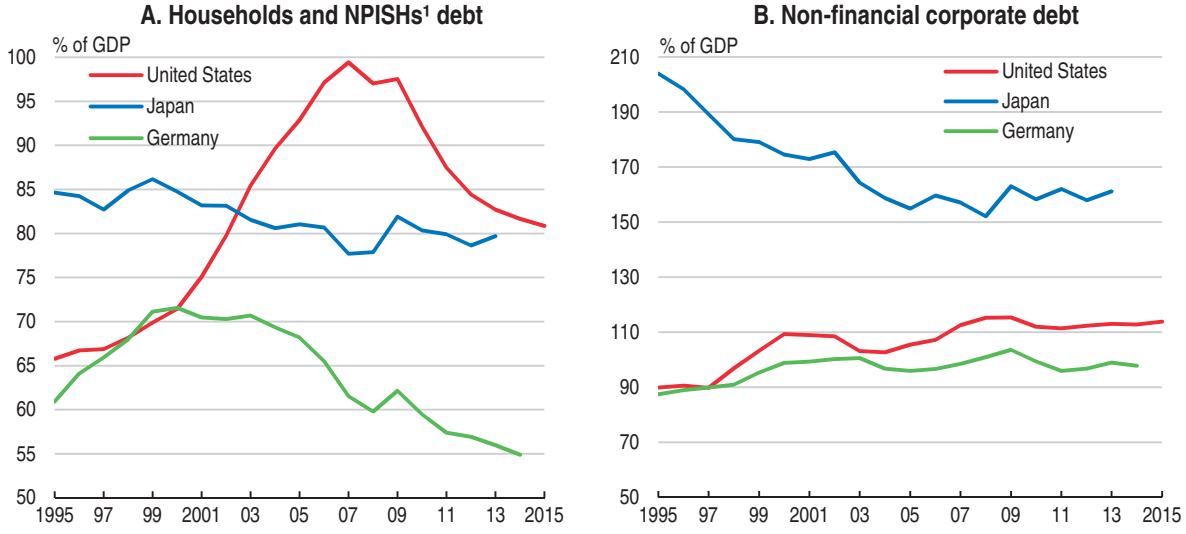


Note: Price-rent ratio is Case-Shiller US National House Price Index divided by index of owner-equivalent rent.
Source: OECD calculations using data from Case-Shiller and the Census Bureau.

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remains subdued, in part because government sponsored enterprises (GSEs) Fannie Mae and Freddie Mac have taken measures to bolster risk sharing with the mortgage originators when they purchase loans. Their regulator, the Federal Housing Finance Agency, has also imposed tighter prudential standards for the loans they can purchase. A number of reforms to the GSEs have been proposed, though none have made it into legislation (Table 2).

Figure 10. **Household balance sheets have recovered from the crisis**



1. NPISH: Non Profit Institutions serving Households.
Source: OECD National Accounts Database.

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The federal deficit has declined, making space for higher public investments

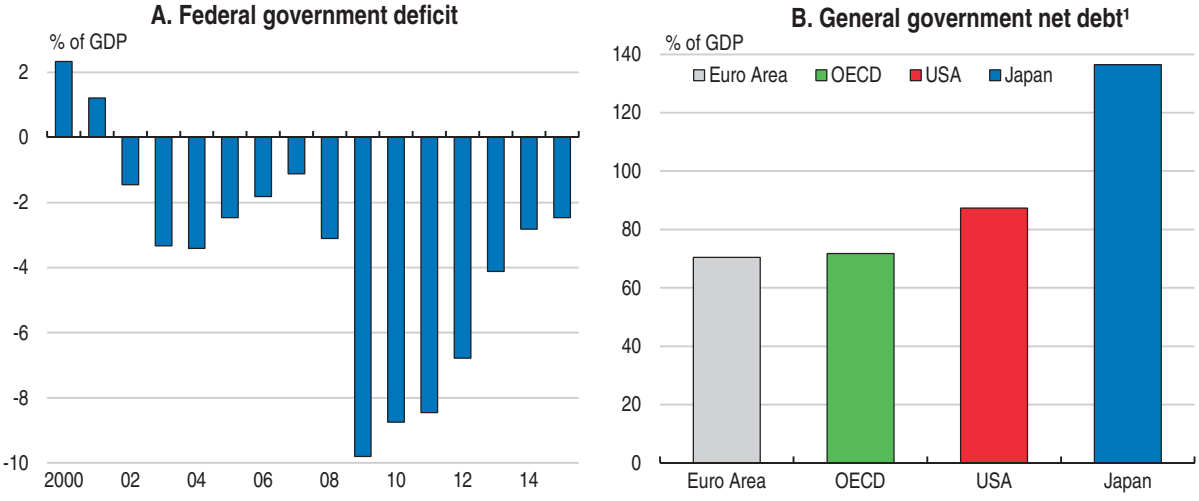
After having peaked at 10.5% of GDP in 2009, the general government budget deficit narrowed to 4.4% in 2015, reflecting both the improving economy and a period of sustained and substantial consolidation since 2011. Almost all of this consolidation occurred at the federal level, with the federal deficit falling from a peak of 9.75% of GDP to only 2.5% in fiscal year 2015 (Figure 11). Given current concerns about growth prospects and inequality, more supportive fiscal policy is appropriate. Measures to support firm creation, skill formation, innovation and infrastructure provision would likely help productivity (Auerbach and Gorodnichenko, 2013; Abiad *et al.*, 2013; Delong and Summers 2012). The President's budget proposal for fiscal year 2017 presents a package of measures intended to raise spending on infrastructure and other areas, while increasing tax revenues, including by limiting the value of regressive tax expenditures (CBO, 2016). If additional fiscal policy support were co-ordinated internationally, the multiplier effect on GDP would be substantially larger.

From 2013 to 2015, ongoing political brinkmanship resulted in a government shutdown and episodes of bond market volatility. Recently, Congress and the Administration reached an agreement that reduced short-term uncertainty. Congress suspended the federal debt ceiling until March 2017 and approved the *Bipartisan Budget Act* of 2015 that fully funded the government during 2016. Further demonstration of such bipartisanship would be beneficial, enhancing financial stability and helping progress towards long-term fiscal sustainability.

Public investment, such as temporary infrastructure spending, would increase the federal deficit in the short term, but need not have a detrimental impact on the projected trajectory of the public debt-GDP ratio if it is high quality and therefore enhances long-term productivity. Increased long-term spending commitment, such as education and

Figure 11. **The budget deficit has fallen**

In % of GDP



1. General government shows the consolidated (i.e. with intra-government amounts netted out) accounts for all levels of government (central plus State/local) based on OECD national accounts. This measure differs from the federal debt held by the public, which was 73.6% of GDP for the 2015 fiscal year.

Source: OECD, Economic Outlook database and the Congressional Budget Office.

StatLink http://dx.doi.org/10.1787/888933380505

training, would need to be funded by higher revenue, such as reducing regressive tax exemptions and introducing green taxes, as recommended in previous OECD Economic Surveys and suggested in the Administration's proposed 2017 Budget (Box 4). Even though healthcare spending has slowed down recently (Box 5), it remains a long-term concern that needs to be addressed, including with the implementation of an excise tax on high-cost health insurance plans, which has been delayed (Table 3). The CBO projects that under current law the federal budget deficit will increase from around 3% to almost 5% of GDP from 2016 to 2026, gradually pushing up the total amount of federal debt held by the public by about 10 percentage points to 86% of GDP (Figure 13). In the absence of fiscal policy changes, debt to GDP would be on an exponential path in the longer term. Building on the CBO baseline, OECD projections suggest that somewhat slower healthcare spending growth (i.e. assuming that more of the slowdown is structural) would still place the debt-to-GDP ratio on an upward path. By contrast, an acceleration of labour productivity growth from the assumed 1.4% annually to 2% annually (the historical norm) would push down the federal debt-to-GDP ratio to 75% by 2026, assuming lower health-care spending.

Box 4. **The proposed FY2017 budget**

The FY2017 Budget proposal would provide a boost to spending with accompanying revenue measures that would reduce the budget deficit and federal debt held by the public in comparison with projections based on current law. By the end of the projections in 2026, federal debt would reach 77.4% of GDP rather than 85.6% of GDP under current law (CBO, 2016). The proposal builds on the bipartisan budget agreement, adhering to the discretionary levels provided for 2017 and prevents the return to sequestration thereafter, while also putting forward paid-for mandatory investments to underpin economic growth in the future and support innovation.

On the revenue side, an estimated $2.9 trillion of deficit reduction over 10 years comes from taxes, immigration reforms, and other proposals. The Budget proposes a number of reforms that would modernise the business tax code to make it fairer and more efficient by closing tax loopholes and reforming tax expenditures, including by reducing tax benefits for high-income households. A tax on oil would also be introduced.

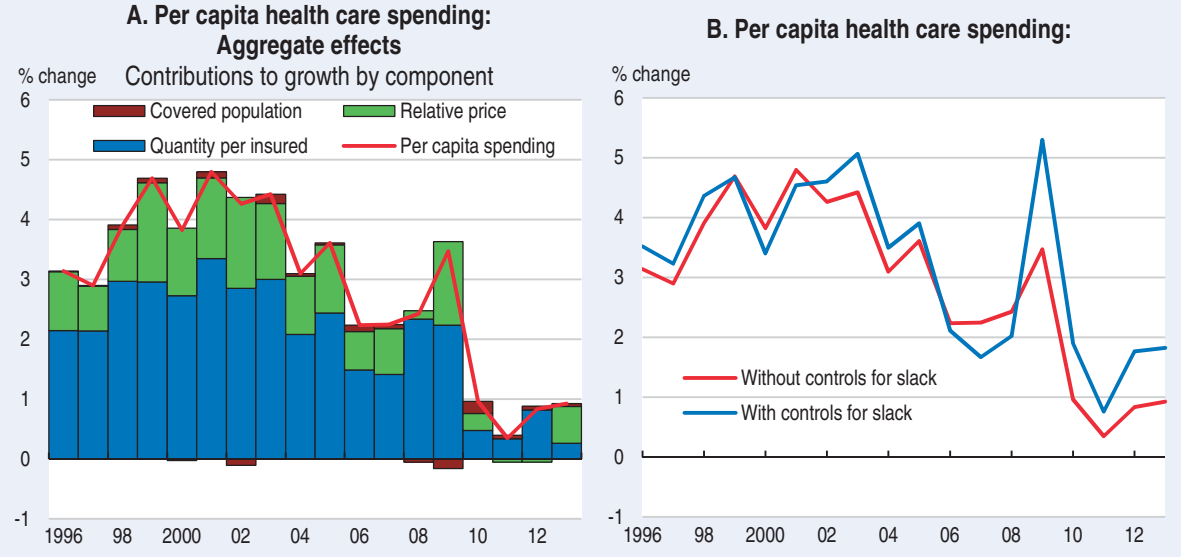
On the spending side, the proposed budget supports infrastructure and innovation. Investments in Building a 21st Century Transportation System amounting to $320 billion over 10 years are intended to support a multi-agency initiative to build a clean transportation system. Overall, the *21st Century Clean Transportation Plan* would increase American investments in clean transportation infrastructure by roughly 50 % above current levels. The budget also calls for $32 billion per year over 10 years to support innovative programs that make communities more livable and sustainable. The Budget proposes a number of initiatives to improve access to high-quality early childhood education, which has been supported in past *Economic Surveys*. Notably, the budget would provide funding to expand access to high-quality care to more than 1.1 million additional children under age four by 2026. In addition, the Budget proposes to help States implement changes required by the new bipartisan *Child Care and Development Block Grant Act* of 2014 and for competitive pilot projects to help build a supply of high-quality child care in rural areas and during non-traditional hours. The Preschool for All initiative would give all four-year olds from low- and moderate-income families access to high-quality pre-school. The budget also proposes to make college education more affordable and encourage completion. Finally, the Budget includes roughly $375 billion of health savings that grow over time and builds on the Affordable Care Act with further incentives to improve quality and control health care cost growth.

Box 5. **Potential lessons from healthcare spending in OECD countries**

Disentangling cyclical drivers in healthcare spending from the broader trend is particularly difficult for a single country. Examining common trends in spending across many countries may help separate the roles of cyclical effects and policy measures. Previous OECD studies (Lorenzoni *et al.*, 2014) show that the slowdown of healthcare spending in the United States is broadly consistent with patterns in a number of other OECD countries.

One way to assess the common trend in healthcare expenditure growth is to estimate aggregate effects from using a cross-country panel regression, whilst controlling for country-specific fixed effects. The red line in Panel A of Figure 12 shows yearly aggregate effects from such a regression, estimated using available data from the OECD's Health Spending Accounts (HSA) for 21 countries from 1996 to 2013. The dependent variable in this regression is the annual growth rate in per-capita healthcare expenditures, which is converted to purchasing power units using the price deflator for actual individual consumption (which adds in-kind government benefits to private consumption). This plot suggests that a spending deceleration gradually took hold in the early-2000s and then intensified around the time of the financial crisis. Insights about the sources of this deceleration can be gained by decomposing spending growth into annual contributions from the quantity of healthcare consumed per insured person, the price of healthcare relative to the consumption deflator, and the proportion of the population covered by insurance. Since these contributions jointly account for overall per-capita spending growth, aggregate effects from regressions that include an identical set of controls will cumulate to each year's overall aggregate effect. The decomposition shown by the bars in Panel A suggests that the gradual deceleration prior to the crisis was driven about equally by slowing in both the relative price and quantity of healthcare consumed, whereas the sharp post-crisis deceleration was mainly reflected in quantities. Decompositions from Lorenzoni *et al.* (2016) provide additional insights, showing that the spending deceleration to date is most evident in publicly-financed spending, which gradually slowed before leveling after of the crisis; by comparison, privately-financed spending growth ebbs steadily from the early 2000s onward. By function, the slowdown is most apparent in pharmaceuticals, with government-financed spending on curative and rehabilitative care category playing a secondary role.

Figure 12. **Healthcare spending has slowed**



Source: OECD Health Statistics.

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Box 5. **Potential lessons from healthcare spending in OECD countries** *(cont.)*

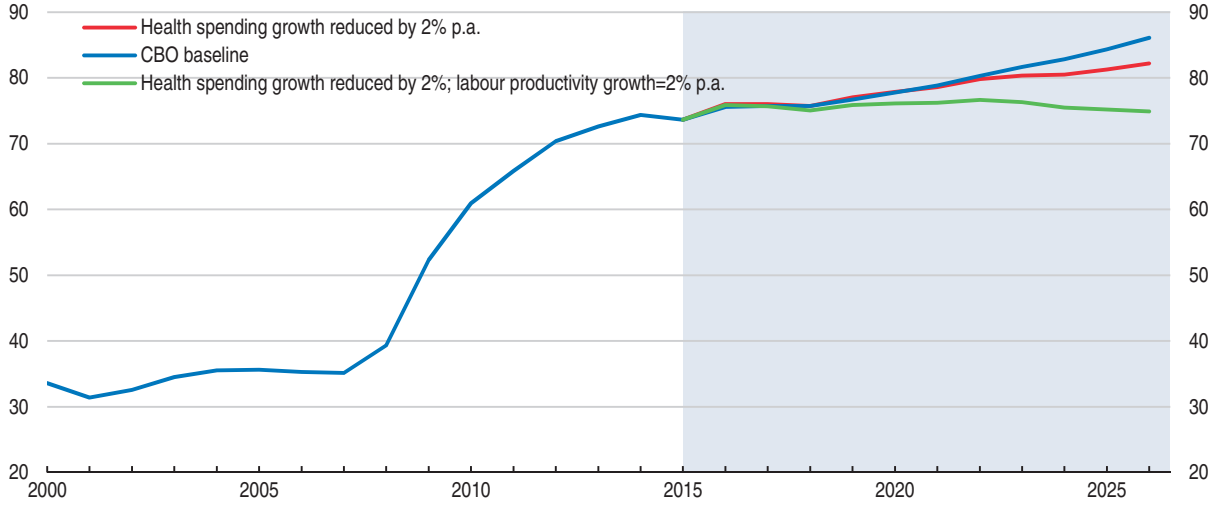
The key question for many of these OECD countries – including the United States – is how much of the steep post-crisis falloff in healthcare spending growth is cyclical. To assess how cyclicality has contributed to the cross-country downtrend, we estimated separate sets of aggregate effects for overall per-capita spending growth using the same basic specification, with and without annual measures of the each country's economic slack (measured using the unemployment gap from the OECD's Fall 2015 Economic Outlook). The aggregate effects shown in Figure 12. Panel B suggest that the widening of slack after the crisis explains only some of the slowdown in the cross-country trend of healthcare spending.

Table 3. **Past OECD recommendations on fiscal policy**

Recommendation	Actions taken since the 2014 Survey
Fiscal policy needs to remain cautious and prepared to take actions to ensure longer-term sustainability.	There have been no large changes in fiscal policy.
Act towards rapid international agreement and take measures to prevent base erosion and profit shifting (BEPS).	The United States participated in the OECD/G20 Base Erosion and Profit Shifting (BEPS) Project, endorsed by the G20 Leaders in November 2015.
Increase reliance on consumption taxation.	No action taken
Make the personal tax system more redistributive by restricting regressive income tax expenditures.	The President's proposed FY2017 Budget has measures to limit regressive tax expenditures, reform capital income taxation, and reconcile different tax bases.
Replace the health tax exclusion (i.e., the exclusion from taxable personal income and payroll tax of compensation paid in the form of health insurance cover) with subsidies that do not encourage overly-generous health plans (subject to minimum standards of coverage).	The 2010 Affordable Care Act included an excise tax that will be levied on high-cost health insurance plans starting in 2018, but now delayed to 2020. The Administration is continuing to develop and implement regulations on the tax on high-cost health insurance plans, the so called "Cadillac tax".
Speed up the phased increase in the retirement age at which full social security benefits are paid from 65 to 67. Link the retirement age to active life expectancy thereafter. Reduce the replacement rate for higher earners and raise the Social Security tax cap.	No action taken. Recent research has revealed that life expectancy for low-income pensioners has remained static, undermining the case for an automatic link between average life expectancy and the retirement age.

Figure 13. **Public debt scenarios**

Federal debt held by the public, % of GDP, Fiscal Years



Note: The CBO baseline scenario is based on current legislation and assumes GDP average annual growth of 1.9% during the period 2015-26 (labour productivity growth of 1.4% and labour force growth of 0.5%), with interest rates paid on public debt increasing to about 3.7%. In the first scenario, public health spending growth is reduced by 2% annually (from 6.5% to 4.5%) while other assumptions are not changed, though lower outstanding debt reduces interest payments. The second scenario adds the assumption that labour productivity annual growth is increased from 1.4% to 2%, thus increasing GDP growth; the fiscal revenue-GDP ratio is the same as in the CBO baseline and primary non-health spending is the same in dollar terms as in the CBO baseline.

Source: OECD calculations based on CBO.

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Achieving stronger long-term growth

Well-designed investments and structural policies would help to boost productivity and therefore long-term growth of living standards (present section). This would not be enough, however, to make growth more inclusive, which requires adequate social policies (next section).

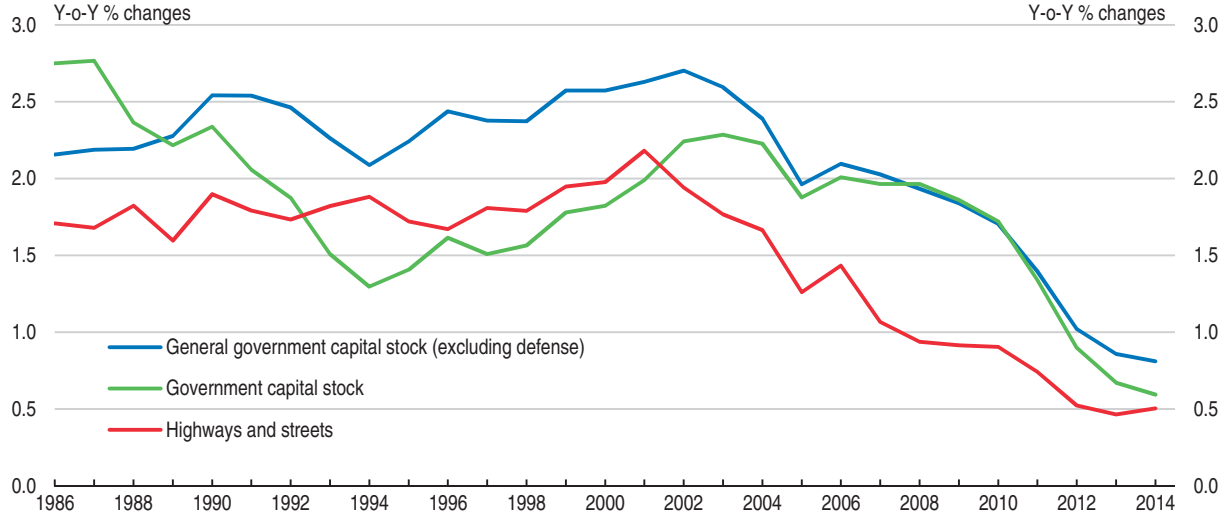
Investing in infrastructure

Public infrastructure has not kept pace with the economy (Figure 14). The marked slowdown in the growth of public investment has contributed to the deterioration in quality of existing infrastructure (Figure 15), as well as growing problems of congestion. Improving infrastructure provision would not only improve productivity and reduce congestion, but could also help to contain urban sprawl and environmental degradation. Low current interest rates make such investments even more desirable (Elmendorf and Sheiner, 2016).

Shortfalls in public infrastructure are notable in road transportation. The CEA (2014) reports estimates that traffic congestion imposes annual costs of $120 billion on households and around $30 billion on businesses. The main federal funding source for road transport, the Highway Trust Fund has required repeated injections from general revenue as the nominal (per-gallon) gasoline tax that was intended to fund road transport infrastructure has not been adjusted since 1993. In December 2015, the *Fixing America's Surface Transportation Act* secured funding from general revenue until 2020. Better use of taxation, distance-based charges and congestion charges could help to address the funding needs in and tighten the links between road use (captured by fuel consumption) and congestion, accidents and pavement damage.

The CBO (2015) estimates that raising fuel taxes by roughly 10 cents per gallon to around 30 cents per gallon would cover spending commitments. Taxes on road use could also address externalities more effectively, for example by targeting heavy trucks, which account for just 4% of road users but represent almost one-quarter of the costs, mainly

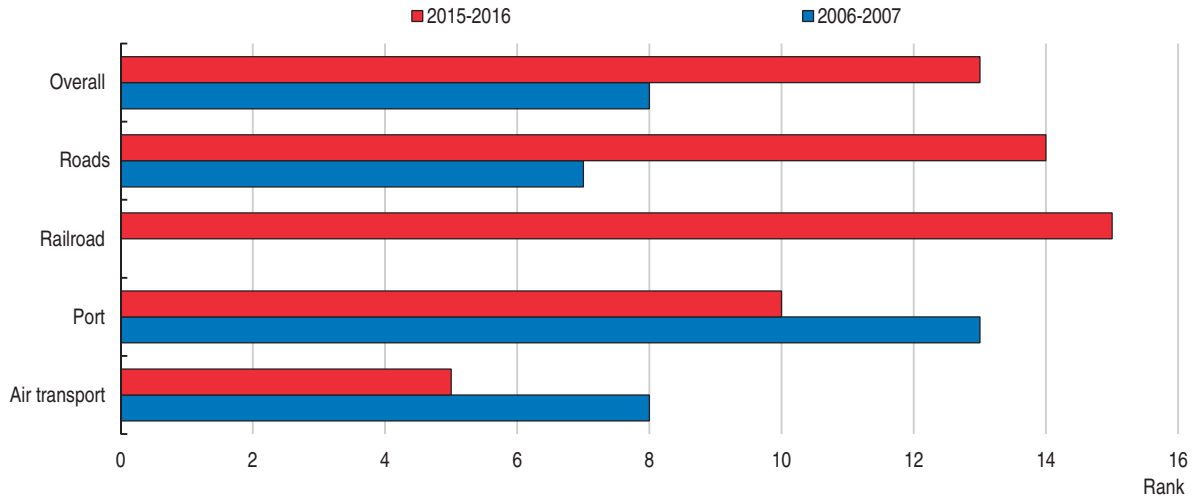
Figure 14. **The growth of the government capital stock has slowed markedly**



Source: Bureau of Economic Analysis.

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Figure 15. **Infrastructure quality appears to have deteriorated overall**



Note: The ranking is the country rank based on questions on the quality of different types of infrastructure. Railroad quality was not ranked in 2006-7.
Source: World Economic Forum Global Competitiveness Report, 2015.

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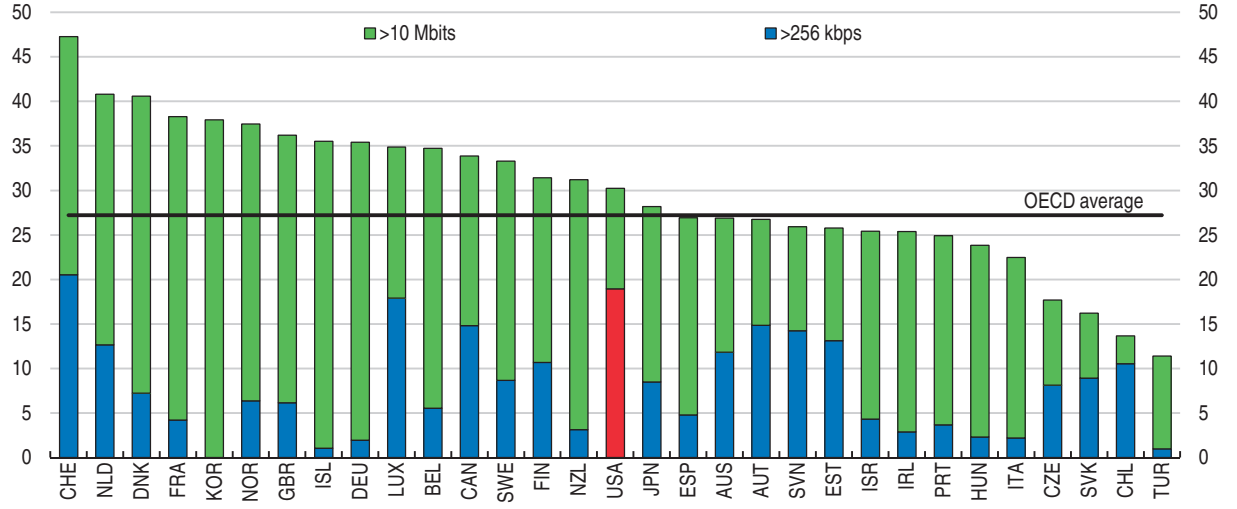
through damage to the road pavement (Austin, 2015). In this spirit, the Administration has proposed a $10 per barrel oil fee to fund infrastructure. As it becomes more expensive to build around congestion, implementing user tolls in the most heavily congested areas would help reduce congestion while providing funding to support needed expansion and improvement of the transport network.

State and local governments make most decisions regarding infrastructure provision. New analysis shows co-ordination problems arise when projects require several governments to act together (Glocker and Ahrend, 2016). Under-provision can emerge when co-ordination is needed for infrastructure and service provision (such as mass transit), making cars indispensable in many cities. As a result, single passenger commutes by car, commute times and greenhouse gas emissions are often higher when compared with other cities. Furthermore, such problems can weigh on city-level productivity (Ahrend *et al.*, 2015). The federal government has some ability to facilitate co-ordination. The *Fixing America's Surface Transportation (FAST) Act* signed in December 2015 established the Nationally Significant Freight and Highway Projects competitive grant program aimed to support economically beneficial projects that will facilitate improved freight movement and set up an Innovative Finance Bureau designed to promote public-private partnership procurements of large-scale infrastructure projects through expanded technical assistance. Boosting the complementary approach developed in Partnership for Sustainable Communities would ensure multidimensional needs of residents and businesses are taken into account for infrastructure development.

Investing in infrastructure would not only boost productivity growth, but it would also enhance socioeconomic opportunities. For example, access to fixed broadband telecommunications, as measured by subscriptions, is about average for the OECD, but generally at slower speeds and higher cost (Figure 16). Access to high-speed broadband varies markedly across the United States, undermining individual and firm opportunities in poorly served areas. Recent initiatives by the Administration including ConnectALL,

Figure 16. **Fixed (wired) broadband penetration is around average and relatively slow**

Subscriptions per 100 inhabitants, June 2014



Source: OECD Digital Economy Outlook 2015.

StatLink http://dx.doi.org/10.1787/888933380559

ConnectHome, and ConnectED will help address the digital divide. The FCC has been promoting competition in the wireless market, and prices are now falling and quality is improving in markets where there is competition. In the fixed market, the FCC has addressed some barriers to competition and in 2015 pre-empted state-level prohibitions on municipalities creating their own networks to help boost competition. As potential for greater competition is emerging in the fixed-line broadband sector with new entrants beginning to create or augment existing networks, competition authorities should act to strengthen competition as they have for wireless broadband.

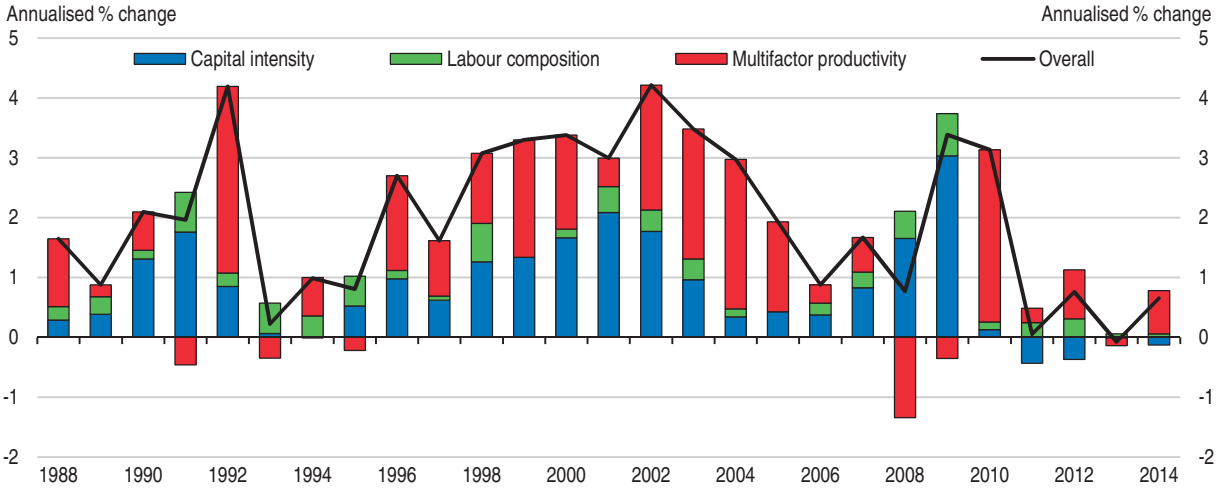
Unleashing productivity

Measured productivity growth has been unusually sluggish post crisis. Although the sluggishness is partly linked to the business cycle, the broader pattern reflects a slower pace of capital deepening and TFP growth, as well as, to a lesser extent, weaker labour quality growth (Figure 17). This happened despite the abundant flow of new information technology and rising automation, which hints that measurement difficulties may be playing some, albeit small, role.

Business capital expenditure, which is needed to increase productivity, has been low even as corporate profitability is at multi-decade highs (Figure 18). Instead of investing, companies have opted to return earnings to shareholders through dividends and share buybacks, which account for a larger share of profits in comparison to the past (Gruber and Kamin, 2015). Average nonfarm business productivity growth decelerated about ¾ percentage point from 2009 to 2014 relative to the preceding five-year period, and weaker average contributions from capital deepening – down about 1½ percentage points from the earlier period – are more than sufficient to explain this overall slowdown.

The aggregate health of the corporate sector obscures divergences between firms at the frontier of each industry, which are generally doing well, and non-frontier firms that are lagging behind. OECD firm-level analysis (which uses data that underrepresent US businesses) suggests a growing productivity divide between firms at the global level, which

Figure 17. **Labour productivity growth has been weak recently**



Note: Productivity is measured as nonfarm business output per hour.
Source: Bureau of Labor Statistics (BLS).

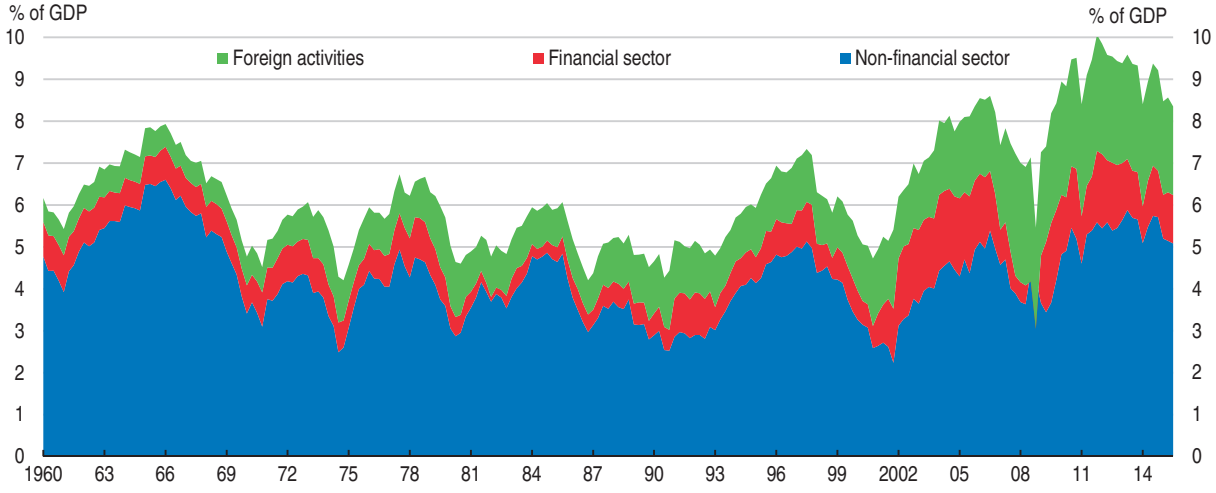
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may in part be due to slower rates of knowledge diffusion across firms (Andrews *et al.*, 2015). Studies using US specific data shed light on the productivity slowdown, revealing evidence of a substantial and persistent productivity divide across firms within detailed industry groupings, and of young firms not scaling up operations in response to profitability gains as vigorously as in the past (Decker *et al.*, 2015). Furthermore, the rate of firm entry and exit, which has been a source of productivity gains on aggregate, has declined.

The changing composition of the economy may also be contributing to slower productivity growth in a number of ways:

- The composition of activity is shifting toward industries where increasing returns to scale are more important, thereby contributing to the marked differences in firm-level productivity. For example, the ability of larger (global) firms to better tailor (digital)

Figure 18. **Aggregate corporate profits are hovering near post-war highs**



Source: Bureau of Economic Analysis (BEA).

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technology to their needs – as opposed to relying on more standardised solutions - can provide firm-specific cost advantages, contributing to winner-takes-all outcomes and potentially blunting competitive pressure, especially if there are large barriers to entry.

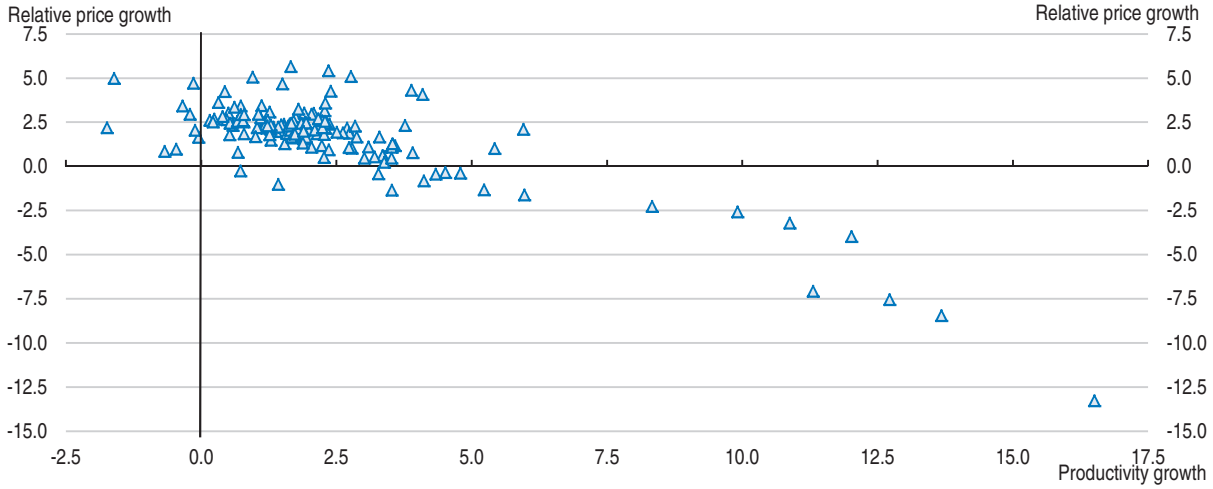
- Population ageing tends to shift activity toward lower-productivity industries that offer services required by seniors, such as long-term care, which can depress aggregate productivity growth.
- Demographics can also hold back aggregate productivity growth by shifting the age composition of the workforce away from younger workers, who historically account for a greater share of new entrepreneurship.
- Shifts in productivity and relative prices redirect resources away from industries that experience higher productivity growth (Baumol's disease). The fact that relative prices tend to fall in industries with faster productivity gains (Figure 19) is consistent with such compositional shifts.

Removing obstacles for small and new firms

Reinvigorating firm creation could play an important role in countering productivity trends. New firm creation has been an important driver for productivity growth and also employment growth. A more dynamic business sector will also reduce mis-match in the labour market, and could offer opportunities for workers to improve their remuneration through job moves. Finally, by boosting competitive pressures, new firms can spur innovation and put downward pressure on prices, ultimately lifting well-being.

Bankruptcy procedures can support new firm creation by capping potential losses for the entrepreneur, although at a potential cost of a higher risk premium levied by creditors. Reform of the personal bankruptcy code in 2005 strengthened creditors' positions by introducing means testing during bankruptcy proceedings. Entrepreneurs with "high incomes" were no longer able to use Chapter 7 to surrender assets and gain a "fresh start" but were obliged to use Chapter 11 and propose a repayment plan, making debt discharge more difficult. A further restriction put limits on how quickly an entrepreneur could re-enter bankruptcy proceedings. The immediate effect of the reforms was to cut dramatically the number of bankruptcies filed,

Figure 19. **Relative prices have fallen with productivity growth**



Source: OECD calculations using annual industry-level estimates from the BLS.

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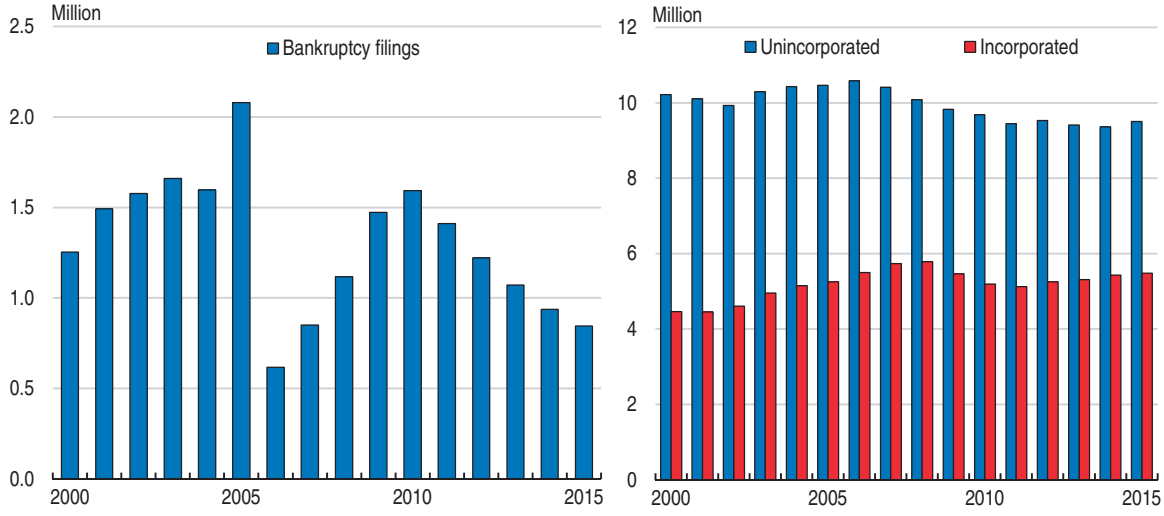
though struggling firms may have anticipated the change, boosting pre-reform numbers (Figure 20). Disincentives to file for bankruptcy other things being equal will slow how quickly resources are reallocated. A second effect of the reform has been to encourage incorporation (Paik, 2013). Since the reform, un-incorporated self-employment has declined by over 900 000 whereas incorporated self-employment has risen by 300 000. For unincorporated firms, States offering larger exemptions under Chapter 7 appear to have sustained more firm creation (Rohlin and Ross, 2016). These results suggest enabling "fresh starts" and making debt discharge less onerous might in some cases support firm creation. In contrast, other research suggests that stronger creditor protection may increase firm creation by making credit more readily available (Cerqueiro *et al,* 2016; Gropp *et al.*, 1997).

Patenting permits small firms to invest and benefit from subsequent commercialisation by larger firms, particularly in competitive markets with dominant incumbents. Patents also potentially provide collateral for financially-constrained firms. Empirical evidence suggests that new firms obtaining a patent subsequently experience stronger earnings and employment growth than those that did not. However, firms are sensitive to delays in the patenting process, which can hinder subsequently growth (Farre-Mensa *et al.*, 2015). Delays in dealing with patent applications rose substantially during most of the 2000s, with the time taken from submission to action increasing by around 12 months to three years over the decade. After the introduction of the *America Invents Act* in 2012, the US Patent and Trademark Office made progress in addressing the application backlog and reducing the time for examiners to review applications and then subsequently either grant or deny a patent (targets for further reductions are already established). Furthermore, the patent fee was reduced for small firms.

Legal uncertainties about patenting can create a second barrier to small firms. Aggressive patent infringement lawsuits launched by "patent trolls" or patent assertion entities tend to target small firms disproportionately (Chien, 2015). Delays in patenting in some cases can aggravate the patent troll problem. While patent assertion entities can play an important role in monetising innovation, the authorities should target abuses to ensure that innovation by new firms is not unfairly undermined. The Supreme Court acted in 2014

Figure 20. **Bankruptcy reform reduced filings and increased incorporation**

Filings and impact on incorporation



Source: United States Courts, BLS CPS.

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to give the court discretion to shift the attorney fees to the loser of patent litigation as one deterrent. The Federal Trade Commission is currently investigating the activities of patent assertion entities.

Enhancing government support of innovation

Government support for innovation tends to favour incumbent firms. Support for business R&D is amongst the more generous in the OECD, amounting to 0.25% of GDP in 2013. Most of the support comprises direct support, such as grants and procurement contracts, and can favour incumbents with established reputations. Tax incentives have remained relatively constant as a share of GDP over the past decade and in late 2015 were made permanent (Table 4). The R&D tax subsidy is relatively small in comparison to other OECD countries, where there has been a trend to making incentives more generous and simpler to use (OECD, 2015c). The US tax subsidy provides more support for incumbents relative to new entrants who may not benefit from non-refundable tax credits. Redesigning the R&D tax credit to make them refundable to new firms could support new enterprises more effectively, but would need to be balanced with increased costs of administration.

A number of proposals to support R&D further has included calls to establish a so-called patent box (often called an innovation box in the US context), which lowers the tax rate on income from patents and intellectual property. Proponents of such regimes may justify them on international competitiveness concerns or because firms may not be able to appropriate all the benefits from their inventions due to various spillovers. However, patent boxes typically provide the greatest tax benefit to the most profitable activities, and there is little evidence to suggest that this approach better addresses the externalities associated with R&D than other government support. In addition, patent boxes add substantial complexity to the tax system, often providing windfall gains to holders of existing intellectual property, and have less effect on cash flow for small firms. A further concern is that countries offering patent boxes, without significant R&D activity in the country, have attracted intellectual property activity through base erosion and profit shifting. With respect to the base erosion and profit shifting concern, the recent agreement on harmful tax practices, including certain intellectual property regimes, as part of the OECD/G20 Base Erosion and Profit Shifting Project will reduce opportunities to shift profits without having significant R&D expenditures in the country.

Table 4. **Past OECD recommendations on innovation**

Recommendation	Actions taken since the 2014 Survey
The federal R&D budget should be protected from the expenditure cuts. Make the R&D tax credit permanent	The R&D tax credit was made permanent in 2015.
Patent reform (America Invents Act) needs to be taken further by ensuring that courts grant injunction relief and damages awards for patent infringement that reflect realistic business practices and the relative contribution of patented components of complex products.	The Supreme court has allowed costs to be shifted in cases of a lost appeal.
Tertiary education attainment in STEM fields needs to be increased. An important step in doing so is improving access to quality secondary education so that students are better prepared for STEM tertiary studies.	Every Student Succeeds Act was introduced in 2015. The 2017 budget proposal includes $4 billion in mandatory funding over three years for States to increase access to K-12 STEM coursework, and $80 million for a new, competitive programme to promote the redesign of secondary schools with a focus on STEM-themed schools that expand opportunities for all students, particularly girls and other under-represented groups in STEM fields.
Establish a national innovation office to increase coherence and continuity in implementation of the national innovation strategy.	No action taken. Other OECD countries have established productivity commissions.

The tax system can tilt the playing field against new and small firms (OECD, 2015b). For example, compliance costs for small and medium sized enterprises can be significant. Taking opportunities to simplify the tax code would mitigate these effects (Box 6).

Box 6. **Corporate tax reforms**

Previous *Surveys* have advocated reforms to the US corporate tax system, which combines high statutory marginal tax rates, a narrow base and numerous provisions that invite deadweight losses from tax-avoidance activities. In December 2015, Congress made some small changes as part of the 2015 omnibus budget legislation. The associated appropriations act permanently extended tax credits for R&D, expensing for small businesses, and a number of tax credits targeted at low-income households. A tax on the most expensive medical insurance plans from the 2010 *Affordable Care Act* ("Cadillac tax") was deferred, delaying the incentive this tax is meant to provide for businesses to look for better value-for-money insurance coverage for their workers by two years.

The recent wave of multinational corporations using inversions and interest deductions on intra-group borrowing to reduce their US tax liabilities is driven by the high statutory corporate tax rate, the world-wide taxation with deferral and foreign tax credits, and relatively weak international tax anti-avoidance rules. A number of international tax reform proposals call for lower corporate tax rates and tougher anti-avoidance rules. The President's 2017 budget proposal would tighten the limitation on corporate interest deductions, impose a minimum tax on foreign source income, restrict hybrid tax structure arrangements designed to create stateless income, and tighten controlled foreign corporation rules. The Treasury in April 2016 introduced new regulations that limit earning stripping and tighten certain restrictions on inversions.

Moving ahead on tax reform, including international tax reform, will require legislation, but the US administration has been actively engaged in other important changes are occurring in international taxation. The United States has committed to the outcomes of the OECD/G20 Base Erosion and Profit Shifting (BEPS) Project, endorsed by the G20 Leaders in November 2015, which include significant measures to improve the international framework for taxation of cross-border activities and reducing BEPS. The United States is already moving forward with the implementation of the BEPS recommendations on country-by-country reporting for the largest multinationals, which will provide important information to tax administrations for risk assessment purposes, and anticipation of this reporting by multinationals has already begun to discourage aggressive tax planning. It has also incorporated the minimum standard on treaty abuse and a mandatory binding arbitration provision into its new Model Tax Convention.

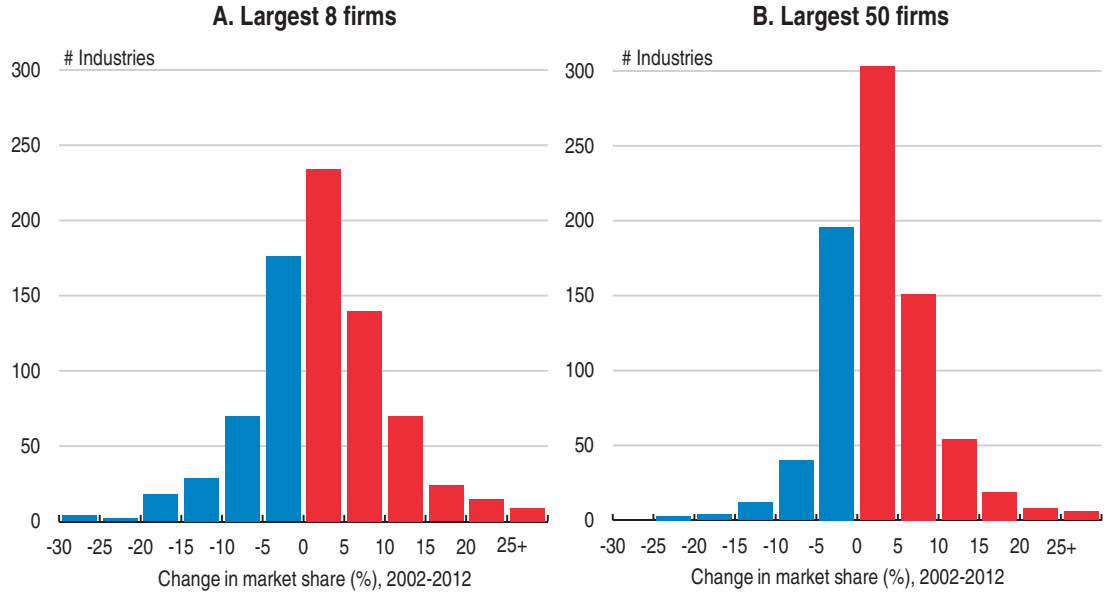
Beyond BEPS implementation, the United States has recently taken steps through regulatory action to improve the transparency of single member limited liability companies to address weaknesses in the availability of ownership information identified by the Global Forum on Transparency and Exchange of Information for Tax Purposes. The United States will be subject to a new round of peer reviews which will also assess the new standard of beneficial ownership adopted by the Global Forum. This may require further action. The enactment of FATCA in 2010 and its full implementation in 2014 provided the basis for the Common Reporting Standard, which is modelled on FATCA. The US now has automatic exchange intergovernmental agreements in place with over 100 jurisdictions, has almost 200,000 foreign financial institutions registered to supply information under FATCA and has already exchanged information in this context, including providing information to those jurisdictions about their residents' US accounts. The information supplied by the US through these agreements is not identical to the information required to be supplied under the Common Reporting Standard and Congress has yet to enact the required proposed legislation that would put the US on parity with the Common Reporting Standard with respect to the specific types of information exchanged. The United States should also commit to implement the OECD Common Reporting Standard on automatic exchange of financial account information by 2017 or 2018 as have 101 other members of the Global Forum. It is recognised that legislative action may be required to implement the latter recommendation

Curbing market power and boosting competition

Greater market power could account for a number of the features of the current expansion, including slow growth of capital expenditure, less business dynamism and slower productivity growth. While some indicators suggest greater concentration (Figure 21), this evidence is crude and may reflect factors besides market power. For functional markets, as assessed by the competition authorities, there has been relatively little change in anti-competitive behaviour and the competition agencies are active in pursuing competitive outcomes in specific markets. However, in sectors such as fixed-line telecommunications, internet access and pharmaceuticals the permitted market structure and patent protection blunt competitive pressures. For example, the Federal Trade Commission has estimated that pay-for-delay deals (whereby a patent holder makes payments to a potential competitor for not entering the market) which are still permissible in patenting disputes between pharmaceutical companies raise drug costs by $3.5 billion annually (FTC, 2010). The FCC in 2015 pre-empted state-level prohibitions on municipalities creating their own networks to help boost competition.

The United States is generally an open economy with comparatively few barriers to foreign merchandise trade, but some service sectors are less open to competitive pressures from foreign firms (Figure 22, Panel B). These include domestic air and maritime transport and courier services. In addition, annual quotas on the number of contractual and independent services suppliers blunt competitive pressures. Further progress in reducing barriers to trade in services could open the economy to greater competitive pressures. The recently concluded Trans Pacific Partnership goes some way in this direction. The ongoing Trade in Services Agreement negotiations also promote fair and open access across many service sectors. The Transatlantic Trade and Investment Partnership currently being negotiated with the European Union could have similar benefits, including concessions to roll back "Buy American" provisions for public procurement.

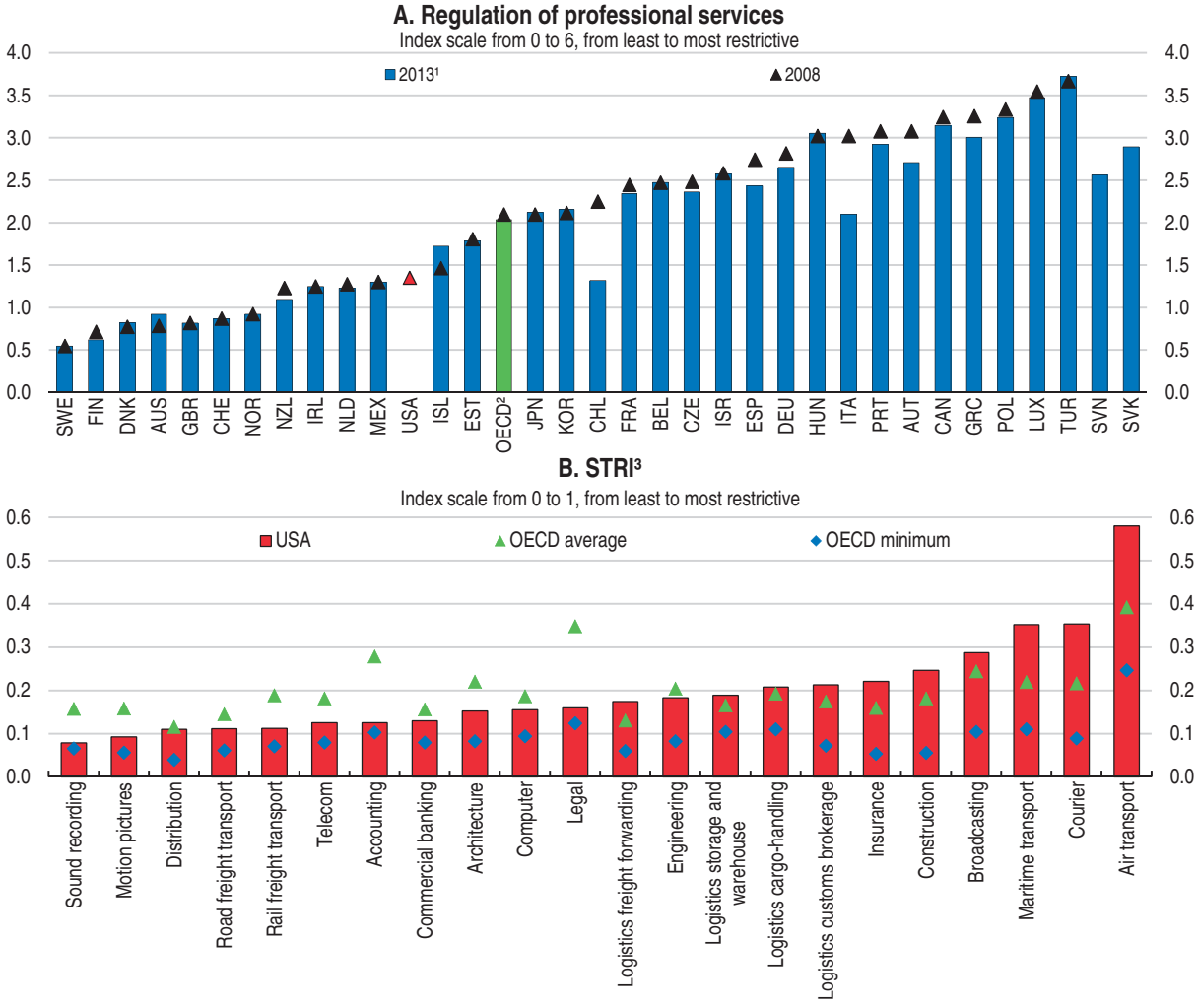
Figure 21. **Markets have become more concentrated, on balance**



Note: Data are for the 719 six-digit NAICS industries that are consistently defined from 2002 to 2012.
Source: OECD calculations using data from the quinquennial Economic Census.

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Figure 22. **Licencing of occupations and regulation in services restrict business dynamism**



1. Data not available in 2013 for the United States.
2. Average of all OECD countries for 2013, excluding the United States.
3. The index includes regulatory transparency, barriers to competition, other discriminatory measures, restrictions on movement of people and restrictions on foreign entry. The STRI methodology takes into account different market and trade cost structures across sectors to ensure that they reflect the relative restrictiveness of each sector. Nevertheless, the indices may not be perfectly comparable across sectors. The indicators are for 2015 or the most recent year available.

Source: OECD Product Market Regulation Database and OECD Services Trade Restrictiveness Index (STRI) .

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The strictness of regulation of professional services was close to the OECD average in 2008 (Figure 22, Panel A) and occupational licensing has grown considerably over the past decades (Kleiner and Krueger, 2013). In 2015, around one quarter of the population had a certificate or licence, with the prevalence rising for full-time workers. Some of the growth of licensing is related to shifts in the composition of economic activity towards sectors such as health. Indeed, the incidence of licensing is particularly pronounced for health care practitioners with over 70% coverage as well as public administration (mainly local) where 40% of workers hold licences. However, the rising prevalence of licensing requirements at the State level also suggests efforts to restrict entry. Indeed, wage premia tend to increase over time following the introduction of an occupational license (Han and Kleiner, 2016). On

average, median weekly earnings are one third higher for workers holding a licence. In a number of cases, licensing is a standard requirement across the States, including for occupations such as pest control, bus and truck drivers, and barbers. In other cases, licensing is fairly widespread but not universal, such as for construction occupations in around 30 States. Finally, State-level licensing can be fairly idiosyncratic, including occupations such as interior design and floristry. The growth of occupational licensing also appears to have an effect on migration patterns, with people in occupations that are typically licensed less likely to move across State lines (CEA, 2015). This dynamic has likely contributed to the decline in inter-state migration (Molloy *et al.* 2014).

While difficult to measure, indirect indicators and anecdotal evidence suggest that the importance of zoning is rising over time (Furman, 2015). Zoning can exacerbate house price appreciation that often accompanies local productivity growth by artificially restricting housing supply. As house prices rise, a sorting on the basis of income tends to occur as fewer lower-income people can afford housing in these high-productivity areas, ultimately leading to residential segregation (Ganong and Shoag, 2015). Such effects contribute to mismatch, act as a drag on productivity, and hamper the ability of labour mobility to moderate income differences across the country.

Making growth more inclusive and sustainable

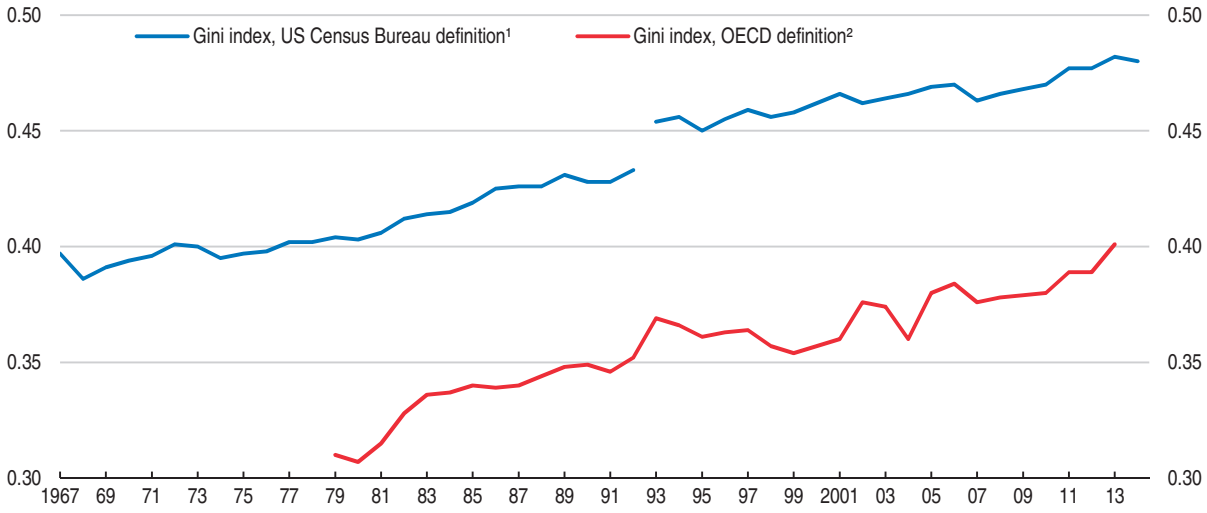
Raising the growth rate overall will only benefit well-being in the long run if it is also inclusive and sustainable. Well-being is high on average in the United States (Box 7), but there is considerable heterogeneity with some groups of the population faring considerably better than others.

Inequality in income, wages and opportunity appear to have been growing over time. Growth rates in nominal labour compensation per worker have not kept pace with domestic prices and productivity, implying ongoing erosion of labour's share of income and a growing share of non-labour income (which tends to flow to high earners). Moreover, gains in labour compensation are mainly flowing to those in the upper end of the income distribution, further widening income inequality (Figure 23). Existing assessments of income inequality are imperfect, including because population surveys involve mis-measurement. For instance, Meyer and Mittag (2015) document that underreporting of assistance programmes (such as SNAP and TANF) understates the effectiveness of anti-poverty policy. Nonetheless, median real disposable household income has not improved materially over the past two decades, though the impact of non-cash benefits, such as Medicaid, paints a more positive picture. Creating opportunities to participate in the labour market more fully would be an important step towards reducing income inequalities. Achieving this requires action to ensure individuals are able to acquire skills they need and do not face discrimination or other obstacles in the labour market.

Improving opportunities for all

Schools play an important role in developing the skills that employers are demanding and that offer pathways for children from disadvantaged backgrounds to better life outcomes (Table 5). The quality of schooling, as measured by the National Educational Assessment Program scores for mathematics and literacy as well as enrolment, has been improving (Figure 25, Panel A). In particular, the poorest performing States have been successful in narrowing the gap with other States. In large part this reflects substantial improvements in reducing the number of students performing poorly, which has followed

Figure 23. **Income inequality has been trending upwards**



1. Includes cash transfers but does not exclude taxes paid from income.
2. OECD Gini definition is based on disposable income, post taxes and transfers.

Source: OECD Income Distribution Database and US Census Bureau.

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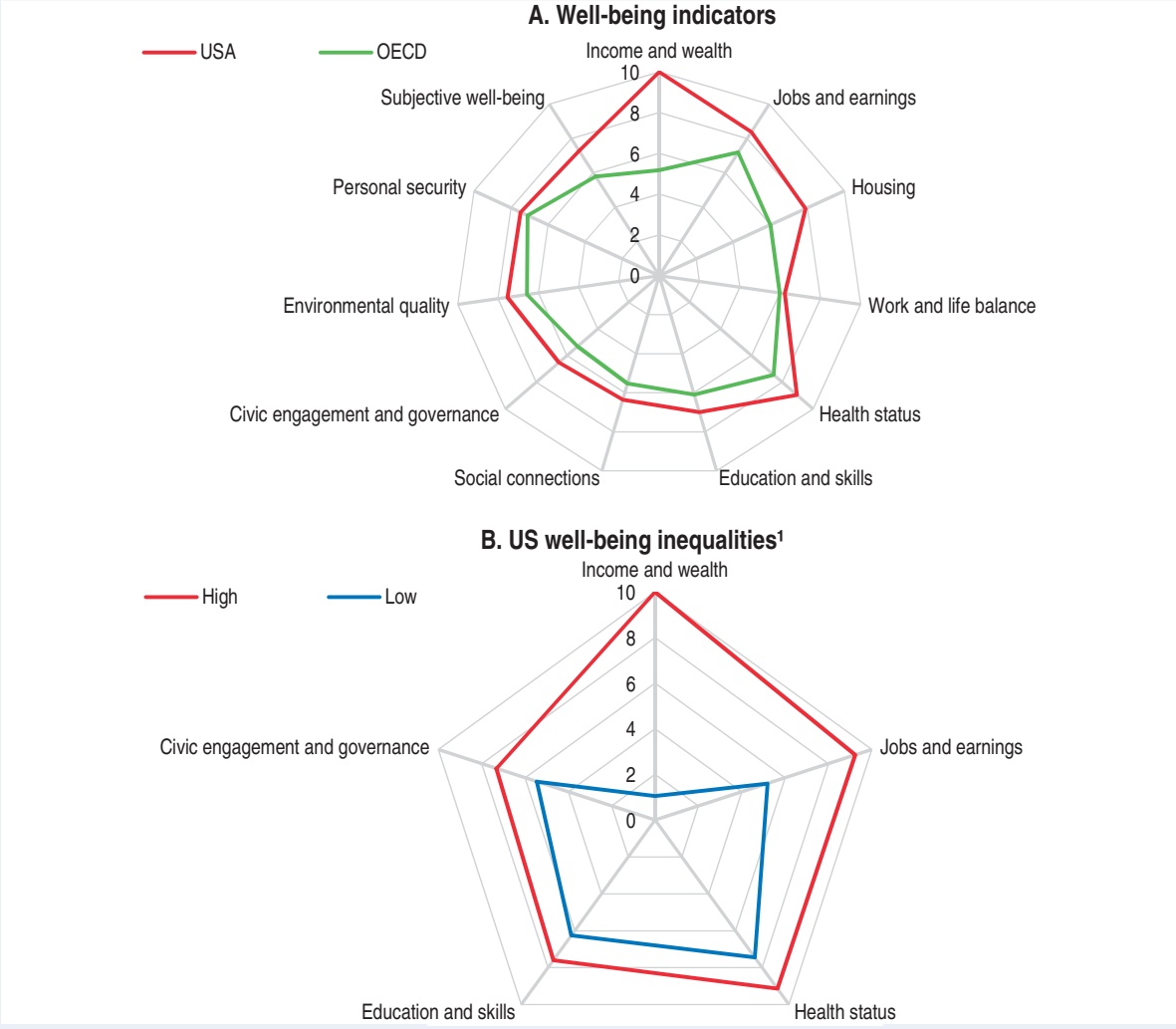
a wave of school finance reforms that reduced resource inequalities between schools and boosted performance (Lafortune *et al.*, 2016). In the early 1990s, large shares of students from ethic minority backgrounds failed to attain basic numeracy and literacy skills (up to 80% of students). Substantial improvements have led to this falling more recently, such that less than a half do not show at least basic numeracy and literacy, although there is still room for improvement given that the national average is less than one third of students (33% for mathematics and 29% of reading for 8th grade). Notwithstanding progress, student attainment is around the OECD average when measured by PISA (Figure 25, Panel B). The difficulties of education have left large segments of the US adult population with relatively weak skills by international comparison (Figure 25, Panel C). Workers with only basic skills are particularly susceptible to being unemployed, especially during cyclical downturns.

Good schools can have a marked impact on student outcomes and support inter-generational income mobility (Chetty and Hendren, 2015). In this context, the *Every Students Succeed Act* of 2015 replaces the nationwide K-12 standards in *No Child Left Behind*, and gives States control in setting their own educational objectives. By setting ambitious targets, States can help ensure that their students are well prepared for the job market and can help narrow geographic differences in attainment. An important aspect of the new law is increased State accountability for educational outcomes, including an intervention requirement for underperforming schools. However, there is as yet no evidence of the impact of the Act and States will need to resist the temptation to revert to less demanding standards. Resources differences, such as the incidence of teacher shortages, vary across schools in line with the socio-economic background of students (OECD, 2015c). To offset these differences, tackling underperformance may require the States and the federal government to level the playing field for poorly-performing schools in poorer areas. Funding across States is currently largely regressive partly due to underfunding of federal programmes (Schanzenbach *et al.*, 2016).

Box 7. **Well-being is high, but not for all**

Well-being of the average household is high in the United States in comparison to the rest of the OECD (Figure 24, Panel A). This is particularly so in terms of income and wealth, but outcomes are comparatively strong in almost all dimensions. Only indicators of work-life balance are below the OECD average. However, behind the average significant differences emerge, particularly with respect to income and wealth (Figure 24, Panel B). New indicators of child well-being are comparatively weak in the United States (OECD, 2015d). In particular, children in the United States rank relatively poorly on health indicators (infant mortality, birth weight and obesity).

Figure 24. **High, but unequal well-being**



1. The bottom panel shows well-being outcomes in various dimensions for people in the United States with different socio-economic background. In the dimensions "income and wealth", "health" and "civic engagement and governance", "high (/low)" are people with an income belonging to the top /(bottom) quintile of the income distribution; in "jobs and earnings", "high (/low)" are people with the high/(low)est educational attainment (i.e. ISCED 5/6 versus ISCED 0/1/2) or with gross earnings belonging to the top /(bottom) quintile of the distribution; and in "education and skills", high (/low)" are people with a score belonging to the top /(bottom) quintile of the PISA index of economic, social and cultural status. Outcomes are shown as normalised scores on a scale from 0 (worst condition) to 10 (best condition) computed over OECD countries, Brazil and the Russian Federation. For further details on the indicators included, please refer to *www.oecd.org/statistics/OECD-Better-Life-Index-2016-definitions.pdf*.

Source: OECD Better Life Index 2016.

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Table 5. **Past OECD recommendations on education policy**

Recommendation	Actions taken since the 2014 Survey
Improve quality secondary education to better prepare students for STEM tertiary studies.	The United States is taking policy actions to improve quality secondary education, based on a 5-year strategic plan for enhancing STEM education, including supporting state-led standards for secondary education; making investments toward the goal of preparing 100 000 more STEM-qualified teachers over the next decade; and initiating a STEM Master Teacher Corps. The 2017 budget proposal includes $4 billion in mandatory funding over three years for States to increase access to K-12 STEM coursework, and $80 million for a new, competitive program to promote the redesign of secondary schools with a focus on STEM-themed schools that expand opportunities for all students, particularly girls and other under-represented groups in STEM fields.
Greatly raise limits on Stafford loans, especially for unsubsidised direct loans, so that they cover the full cost of study. The interest rate on these loans should vary with the long-term bond rate. The default repayment plan should be income-contingent.	In August 2013 the *Bipartisan Student Loan Certainty Act* re-established interest rates for new Federal Direct Student Loans. Interest rates at origination are tied to the 10-year Treasury note, plus a margin, but are fixed for the life of the loan. For loans made between July 1, 2013 and June 30, 2014, the interest rate was 3.86% for undergraduates, 5.41% for graduate students, and 6.41% for PLUS loans. The bill also imposes a cap to ensure interest rates never exceed 8.25% for undergraduate students, 9.5% for graduate students, and 10.5% for PLUS borrowers. The Administration has expanded income driven repayment plans, allowing all who borrowed federal direct loans as students to cap their payments at 10 per cent of their monthly incomes.

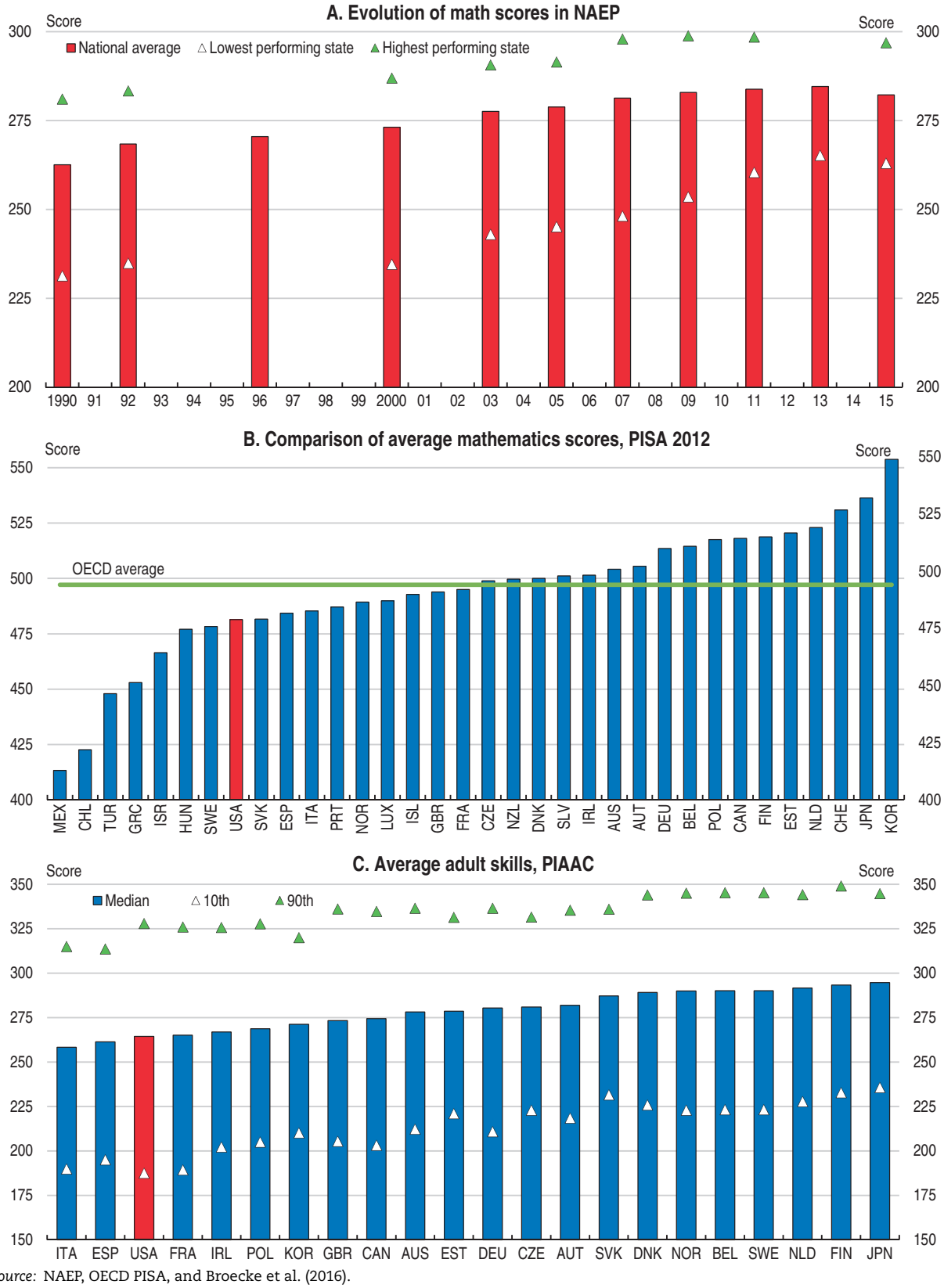
Investing in higher education significantly boosts the chances for an individual to be in employment, earn a higher wage and to move up the income scale over their lifetime. The expansion of higher education in the United States since the early 1980s has seen the prospects improve for many more people, including for people from disadvantaged backgrounds. Enrolment rates have been rising steadily, reaching about two-fifths of 18-24 year olds in 2015. Attainment rates have also been trending up, though with around one-third of 25-29 year olds now having completed bachelor degrees. The measure of attainment remains somewhat lower than enrolment. In part this is due to students dropping out, particularly in private for profit colleges where only around one-third of students successfully complete their studies.

Since the early 1980s, college fees have risen steadily, making college education increasingly expensive. Whereas the annual fees for private non-profit was equivalent to a quarter of median household disposable income in the early-1980s, these costs are now approaching 60%. Fees are smaller for public schools and 2-year colleges, but have been increasingly equally rapidly. Partly as a consequence, student debt has been rising as a proportion of household debt (Figure 26). While student debt is not problematic if it enhances earning power, it can load students with debt, which is difficult to discharge, in low-quality degree programmes. In response to emerging problems, the federal government has limited the ability of students to obtain loans for institutions that are performing poorly and have put in place several measures that enable borrowers to shift to income-contingent repayment.

Boosting jobs

Raising employment will also raise output and well-being and - by bringing in groups of the population that have faced difficulties in finding jobs - make growth more inclusive. Employment rates dropped during the crisis and now stand below other major economies

Figure 25. **Education performance has improved though skills remain weak on average**

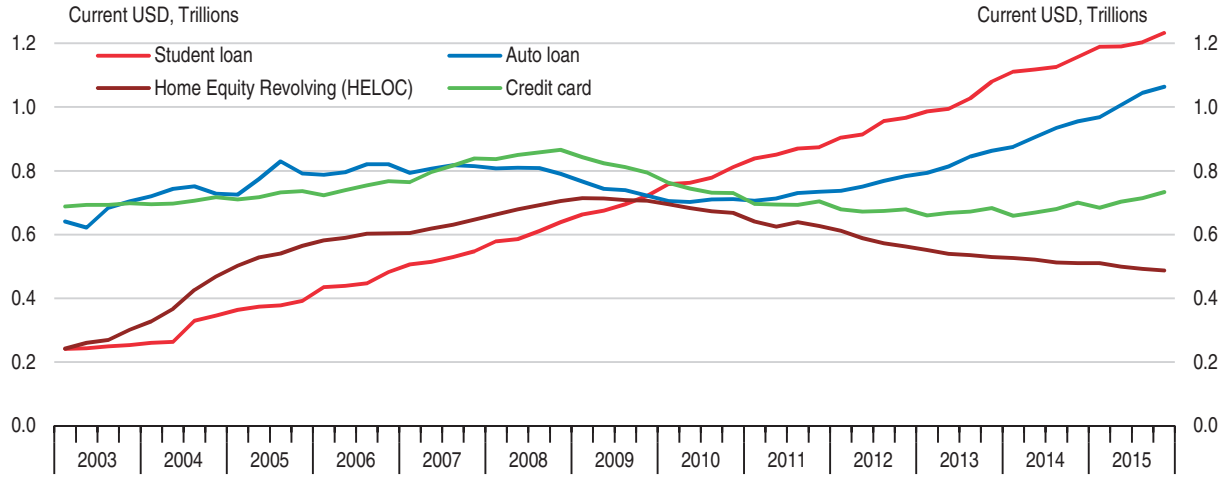


Source: NAEP, OECD PISA, and Broecke et al. (2016).

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Figure 26. **Student loans have become a much more important element of household debt**

Household debt balances



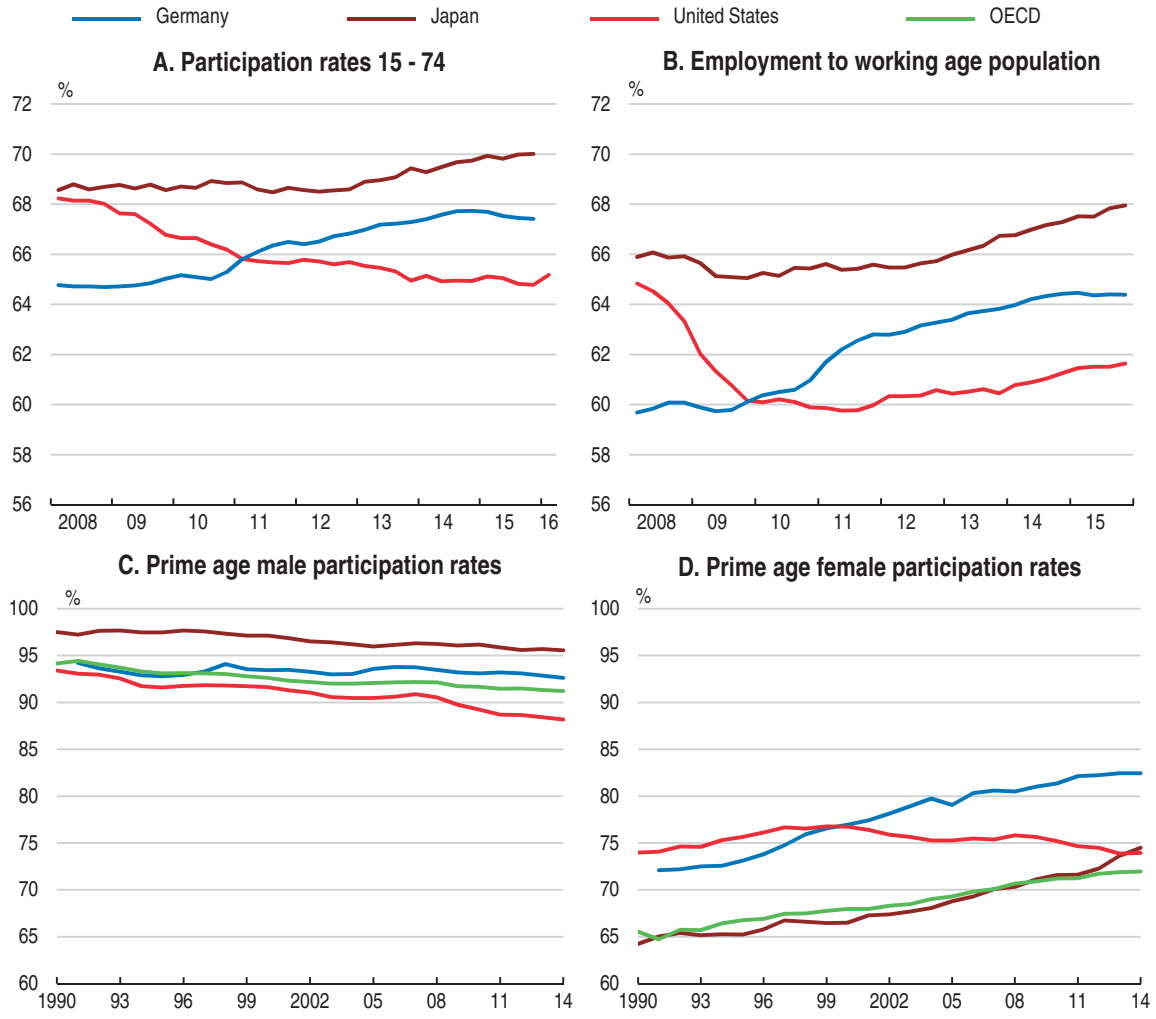
Source: Federal Reserve Bank of New York, Consumer Credit Panel/Equifax.

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(Figure 27). In part, this reflected the severity of the recession, but also demographic pressures, generally rising disability rolls, and educational enrolment that have been pushing participation rates down. The decline in participation for prime-age individuals is in marked contrast to elsewhere in the OECD, particularly for women. Certain population groups face greater difficulties in finding rewarding work and removing the barriers they currently face would help boost employment. Immigration reform presents another means to boost labour supply, though moving forward on different proposals has proven difficult politically.

Women have greatly improved their economic opportunities, working longer and earning higher incomes, with benefit to overall society, yet there is ample scope for further progress. Women's participation in the labour force and employment rates remain well below men's and have been falling back recently such that they are now below those of Germany and Japan. On the other hand, American women are far more likely to work full time (around three quarters against one half in Germany). The United States remains the only OECD country that does not offer paid parental leave on a national basis. In the States that require paid leave, the likelihood that women work increases (Adema *et al.*, 2015). Furthermore, employers can benefit from reduced replacement and training costs as women return to work for the same companies. Differences in State policies concerning paid leave, child and elderly care suggest that States with policies that support greater flexibility (paid parental leave, better quality child care and old age care) also have with higher female employment, including in managerial and professional occupations. The 2014 *Economic Survey* recommended that access to paid family leave be expanded nationally (Table 6). It also recommended improving the flexibility of working arrangements, increasing access to quality pre-school and childcare to help struggling families better balance work and family commitments. These remain policy priorities for the administration. Second earners, most of whom are women, generally face higher marginal tax rates on labour force participation decisions due to the US family-based tax system in combination with progressive tax rates.

Figure 27. **US labour-market participation has fallen**



Source: OECD Labour Force Statistics.

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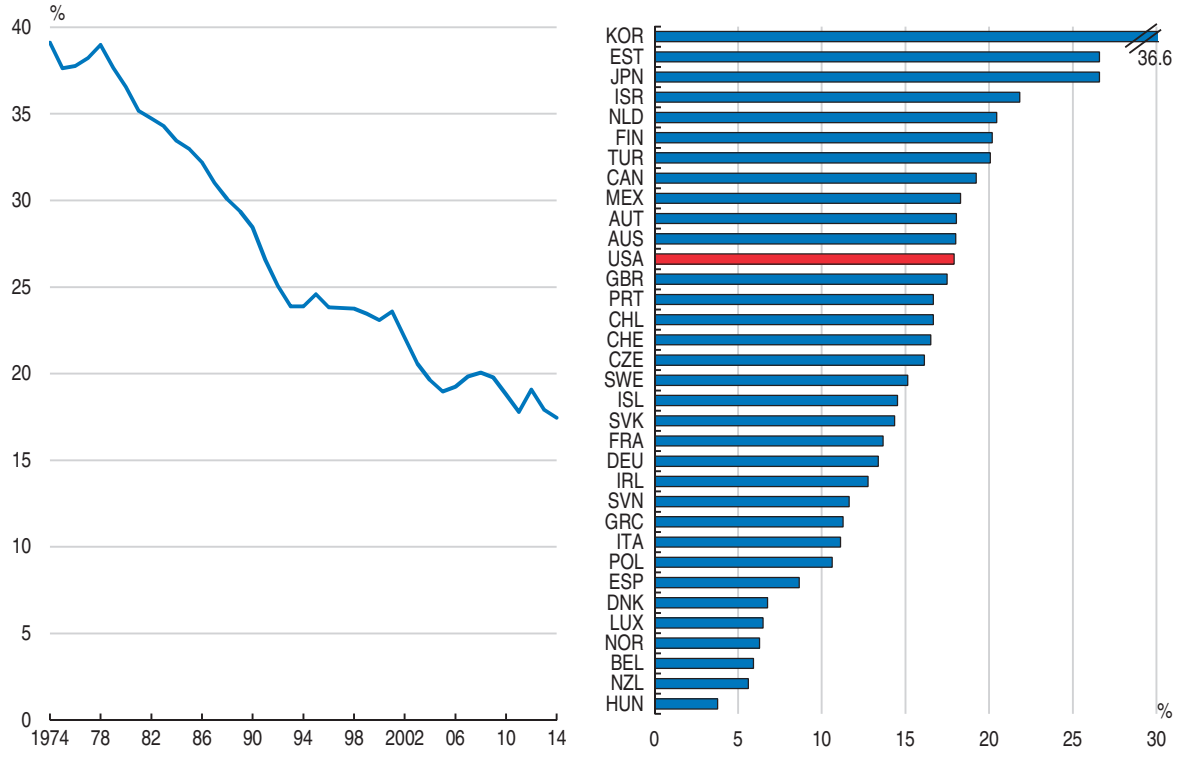
Improving opportunities not only requires breaking down barriers to finding work but also being appropriately remunerated. The gender pay differential, as measured by the differences in the median wages for men and women, has fallen in the United States (Figure 28), although substantial differences remain across States. Part of this wage inequality

Table 6. **Past OECD recommendations to improve work-life balance**

Recommendation	Actions taken since the 2014 Survey
Provide support to parents with young children by expanding access to paid family leave nationally.	The proposed 2017 budget includes $2.2 billion to support the creation of State paid leave programmes as well as offer federal employees six weeks of paid leave. Since 2014 some States, such as California, have introduced State-wide programmes and more than 20 cities or counties, such as San Francisco, require paid maternity leave.
Help States develop right-to-ask policies to support flexible working arrangements.	Since June 2014, all federal employees have such rights.
Increase access of low and moderate-income families to quality preschool and childcare.	The Preschool for All initiative would invest $75 billion over 10 years with the aim of providing access to high quality preschool for all 4-year olds from low and moderate income families. Support is included in the 2017 budget proposal.

Figure 28. **The gender wage gap has declined over time, but remains comparatively high**

% difference in gross earnings of full-time dependent employees



Source: OECD Labour Force Statistics.

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arises from sorting by occupation and firm. Men typically work at higher paying firms and receive larger wage increases when they switch jobs. Further progress in closing gender wage gaps requires changes in job structure and remuneration, particularly if job flexibility comes at the cost of reduced hourly wages (Goldin, 2015). States with more flexible work arrangements tend to have greater employment rates and smaller gender wage gaps. With women increasingly outperforming men at all levels of education, failure to make occupations attractive to women will hold back the economy and individual well-being (Table 7).

Table 7. **Gender inequalities are large**

		United States		OECD	
		Women	Men	Women	Men
Health status	Life expectancy at birth (years)	81	76	83	78
	Share of people in good/very good health conditions	89%	90%	67%	72%
Education and skills	Tertiary degrees awarded (all fields)	58%	42%	58%	42%
Jobs and Earnings	Employment rates (tertiary educated individuals)	76%	84%	79%	88%
	Wage gap between men and women		+18%		+16%
	Share of poor single-adult households	33%	49%	37%	30%
Work-Life balance	Number of hours dedicated to household tasks (per week)	27	18	32	21
Civic engagement and governance	Share of seats in national parliament	19%	81%	29%	71%
Personal security	Share of people feeling safe when walking alone at night	67%	82%	61%	79%
Subjective well-being	Level of life satisfaction on a 0 to 10 scale	7.2	7.1	6.6	6.5

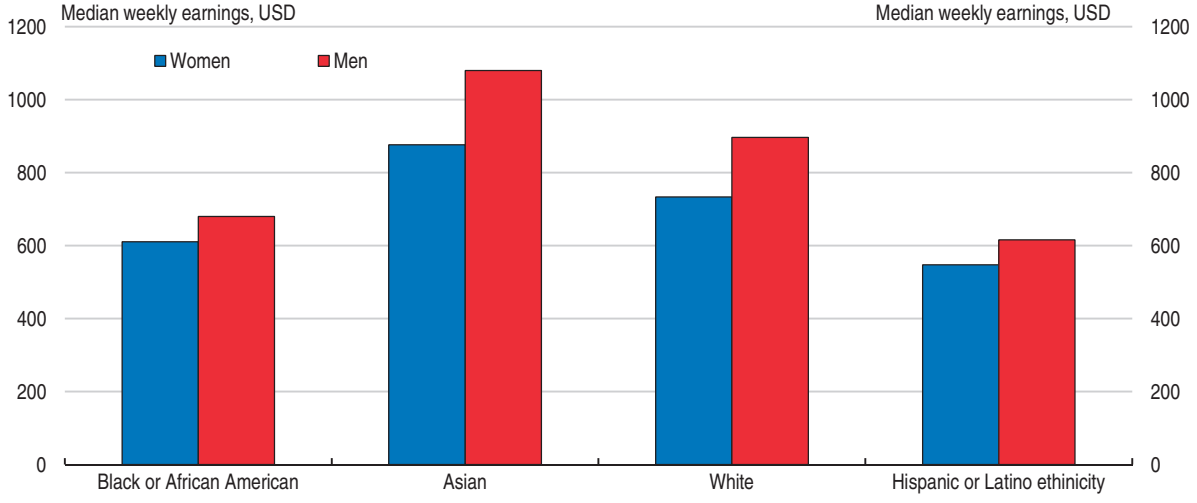
Source: OECD Better Life Index.

Substantial gaps in the median earnings of full-time workers also exist across races (Figure 29). Black and African American and Hispanic and Latino male workers earn a bit less than three quarters of that earned by white males. The gaps between women workers across races are less pronounced. Asian workers generally earn significantly more than other groups. In part, differences in educational attainment may account for these differences, though improvement in test scores by minority students over time has not translated into the wage gap narrowing over the last few decades. Black and Hispanic workers tend to work in lower-paying jobs and their returns to experience have tended to be lower.

Current disability insurance provides little incentive to re-enter the labour market for those whose health condition has improved and would like to work, as earnings above a limit will lead to the disability benefit being withdrawn. People qualifying for disability benefits also qualify for Medicare. Currently, there are some programmes aimed at helping transition individuals back into the workforce, such as retraining, continuing cash benefits for a period of time, and extending Medicare benefits for 102 months after resuming work. These efforts should be carefully evaluated and, if needed, the incentives should be strengthened to get off disability rolls for people who want to work and are again capable of doing so. The number of disability benefit recipients, which exceeded 10 million in 2014, now exceeds the number of unemployment benefit recipients, which dropped below 8 million in 2015. The previous *OECD Economic Survey* recommended encouraging greater labour market attachment, both by helping maintain labour force attachment during the claims process and by reducing the disincentives to work once receiving disability insurance (Table 8).

Another group facing difficulties in finding jobs are people with criminal records. By some estimates, almost 30% of the adult population have been arrested, and even those who are released without charge may still have a record that shows up during a background check (Solomon, 2012). The United States has the highest incarceration rate in the OECD by a considerable margin. In 2009, over 754 persons for every 100 000 population were incarcerated, compared to 140 on average in the OECD. The administration is working

Figure 29. **Wage gaps are large between population groups**



Note: Median usual weekly earnings of full-time wage and salary workers.
Source: Bureau of Labor Statistics (BLS).

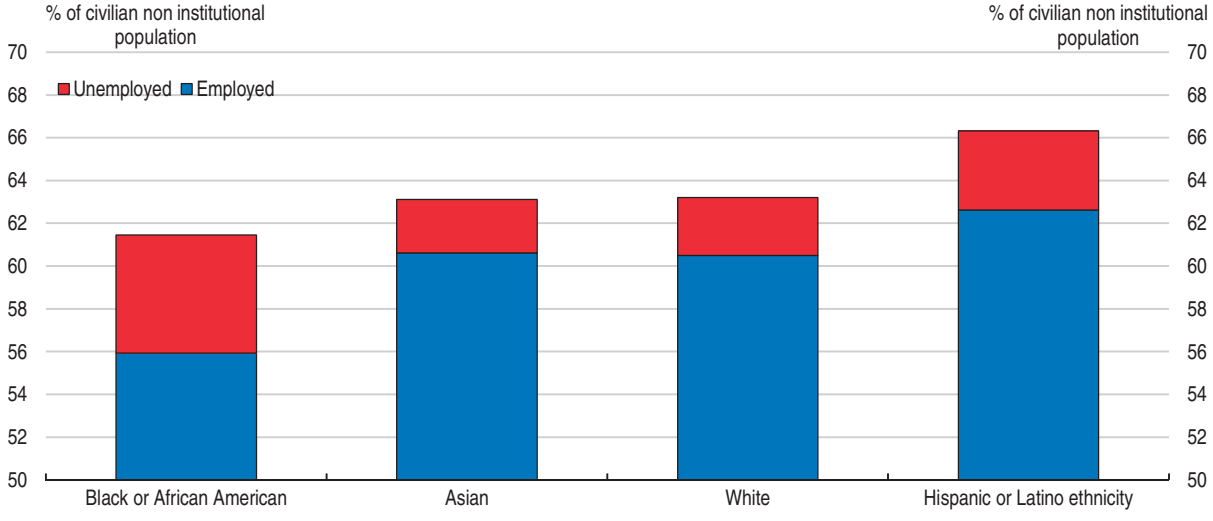
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Table 8. **Past OECD recommendations on disability and health care reform**

Recommendation	Actions taken since the 2013 Survey
Provide comprehensive work support to get disability recipients back to work.	The 2014 *Workforce Innovation and Opportunity Act* put some emphasis on states putting in place policies to improve employment outcomes for people with disabilities
Reform the individual and small-group market to facilitate greater risk pooling. To this end, require community-rated and guaranteed issue policies and make health insurance compulsory. Introduce means-tested subsidies to help low-income persons afford health insurance.	These were features of the Affordable Care Act of 2010.

to reduce incarceration and efforts in Congress are underway to reform the criminal justice system to reduce incarceration through the reduction of overly long sentences. The administration is also working to help reintegrate individuals who have been incarcerated into the labour market though improving access to employment, job training, housing and healthcare. These actions are needed, as possessing a criminal record reduces employment prospects. In some cases, criminal records may be misused to discriminate on the basis of race, which can compound the disadvantages certain groups already face in the labour market, stemming from factors including poorer quality schools, residential segregation and discrimination (Bertrand and Mullainathan, 2004). Given the over-representation of blacks in prison populations, black males, particularly young males, have much higher unemployment rates and lower employment rates (Figure 30). To counter discrimination, 23 States and the District of Columbia (and over 100 cities or counties) have introduced "ban the box", which removes pre-screening questions from application forms, but does not prevent firms subsequently checking a candidate's past. A number of major firms and the federal government have removed these questions during their recruitment processes. Rolling out this initiative nationally would give this marginalised group a fairer chance in getting a job. On the downside, new empirical evidence suggests job applicants without work experience suffer because potential employers have introduced new questions about work experience as a way to mimic the criminal record question.

Figure 30. **Employment rates are lower amongst blacks**



Source: BLS Current Population Survey.

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Reducing mismatch

Reducing mismatch between the supply and demand of skills is a means to boost growth while raising well-being. Past technological disruptions have eliminated some jobs, but also created others, making it important to facilitate the skilling and reskilling of workers throughout their working lives. The pace at which changes are occurring is now arguably faster and policy settings need to be adjusted to keep pace with it. Reducing mismatch has become more complicated with the decline in business dynamism. Fewer people have been leaving their job voluntarily and moving to new jobs in the aftermath of the last two recessions (Hyatt and Spletzer, 2013). Historically, this type of job switching has been closely associated with individual earning growth, reflecting gains from better resource allocation and matching the demand and supply of skills. The evidence from Mukoyama (2015) suggests that a share of the recent slowdown in total factor productivity (up to 0.5% annual decline) can be traced to workers finding it harder to move to a job that better match their skills. OECD empirical work on policies that could reduce mismatch, such as bankruptcy procedures and housing policies, suggests opportunities to raise the level of US output by over 3% (Adalet McGowan and Andrews, 2015).

A growing number of firms are aware of the societal challenges posed by inequality of opportunity and are beginning to address them by raising their own minimum wage, improving working conditions (such as offering parental leave), allowing greater flexibility and removing screening on the basis of criminal records. It is in the interest of businesses to engage with educational institutions, both to ensure the right skills are being taught and to counter problems with professional certificates not being portable across the country and which contributes to mismatch (Table 9). In some sectors, such as construction, firms have worked with educational institutions to ensure that credentials are widely recognised. Helping other sectors reach similar arrangements will ensure the right skills

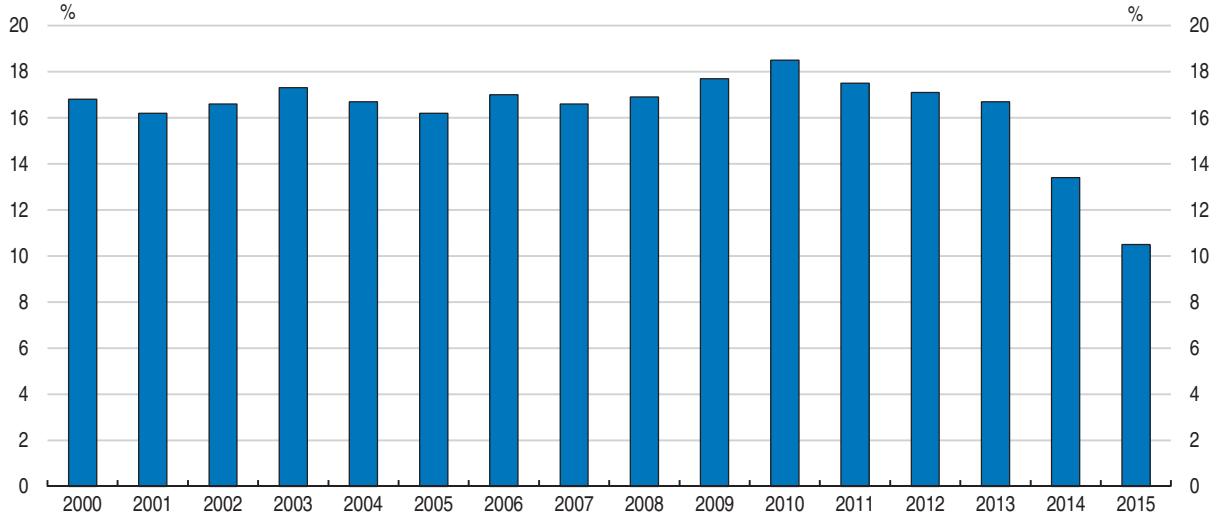
Table 9. **Past OECD recommendations on business sector contribution to well-being**

Recommendation	Actions taken since the 2014 Survey
Strengthen the portability and recognition of training by involving employers in programme design.	The Department of Health and Human Services introduced the Licensure Portability Grant Program to support State professional licensing boards cooperating in reducing statutory and regulatory barriers to telemedicine. The FY2016 Budget included $7.5 million to support efforts by a consortium of States to expand reciprocity for a range of occupational licenses. The proposed FY2017 budget also calls for a community college partnership tax credit. This proposal would provide businesses with a new tax credit for hiring graduates from community and technical colleges as an incentive to encourage employer engagement and investment in these education and training pathways. The proposal would provide $500 million in tax credit authority for each of the five years, 2017 through 2021. The tax credit authority would be allocated annually to states on a per capita basis and would be available to qualifying employers that hire qualifying community college graduates
Work with employers in preventing the negative effects of job strain on mental health, prolonged sick leaves, job loss and disability-benefit claims	No action taken.
Raise labour earnings at the low end by expanding the EITC, which would be more effective if supported by a higher minimum wage.	EITC expansions were made permanent in 2015 as were similar expansions made to the Child Tax Credit. The 2017 budget proposes to expand the earned income tax credit to workers without qualifying children. 14 States and over 30 cities and counties have introduced minimum wages that are higher than the federal minimum wage in 2014 and 2015.

are being taught while increasing the scope of opportunity for students. The proposed FY2017 budget calls for a tax credit to strengthen partnerships between businesses and community colleges.

Investment in health can also make growth more inclusive and expand opportunities. The introduction of the *Affordable Care Act* has led to considerable progress in addressing the lack of health insurance coverage (Figure 31). As a result, fewer people lack access to adequate healthcare coverage, which could enable them to participate in the job market or take more productive jobs. Among other things, the law helps address shortcomings with employer-provided healthcare coverage, which can create lock-in effects that discourage inter-firm mobility. The expansion of coverage has also helped ease access to healthcare for would-be entrepreneurs, who previously would have relied on a spouse's employer-provided coverage, purchased more expensive coverage in the individual market, or opted for no coverage.

Figure 31. **Health un-insurance has dropped since 2013**



Source: Centres for Disease Control and Prevention, National Health Interview Survey.

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Meeting environmental challenges

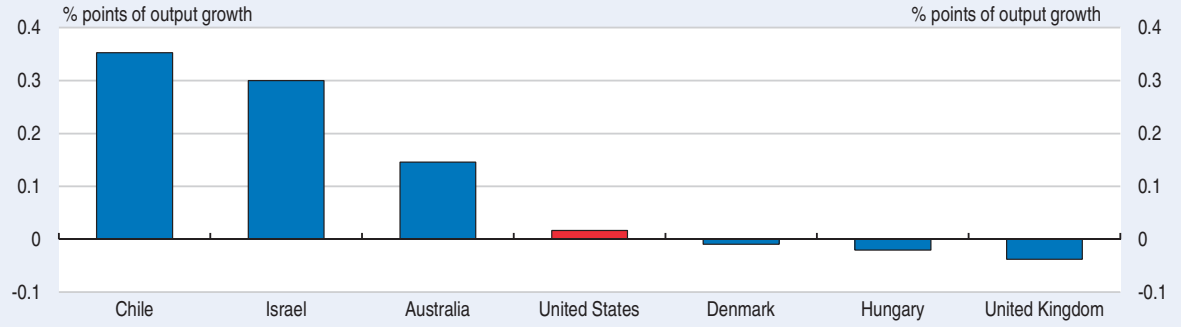
Ensuring environmental sustainability is an overarching challenge. Greenhouse gas emissions remain relatively high per capita, but are around one-tenth lower than their peak in 2007. The United States has recently made a number of agreements to support emission reduction, notably with China. Reducing carbon dioxide emissions remains an area in which the US performs relatively poorly in comparison with the rest of the OECD, despite the strengthening of fuel economy standards, and significant use of policies and incentives for renewable energy and energy efficiency at the State level (Box 8). The Administration has proposed a $10 per barrel oil fee to fund infrastructure. Implementation of further measures to abate climate change should include the roll-out of Clean Power Plan for new, modified, and reconstructed coal, oil and natural gas-fired power plants

The Administration recently proposed the 21st Century Clean Transportation System, an initiative designed to address the challenges of climate change mitigation. The plan would levy modest fees on oil producers to finance investment in clean transportation

Box 8. **Economy-environment linkages in the United States**

The US economy benefits from abundant natural resources. Their contribution to output growth has been positive until 2013 (Figure 32).

Figure 32. **Contribution of domestic natural capital to output growth, 1991-2013 averages**



Note: The contribution is measured in percentage points of output growth, long-term annual average over 1991-2013. The United States is compared to three OECD countries from the top and bottom of the range.

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Energy intensity and carbon intensity of the economy have declined. The United States is a net importer of CO2 emissions, which started to grow in the previous decade and stabilised after the 2008 crisis. The rising share of gas in energy production lowers CO2 intensity although fugitive emissions of methane from fracking are an offsetting factor.

The exposure of the population to air pollution by fine particulates has declined steadily for several decades even in periods of stronger economic growth, although still above the WHO target levels for long-term exposure (10 µg/m³). Such pollution is not only an industrial or urban phenomenon. High levels of particle pollution in Los Angeles are likely associated with manufacturing and the urban environment. Neighbouring Central Valley, also with high levels of pollution, is predominantly agricultural (EPA Green Book).

Municipal waste generation, though it has declined on a per capita basis, remains higher than the OECD, though less so when compared with GDP. Recycling rates are below the best performers, though similar to the OECD average. For non-recycled waste, the share dealt with through incineration is well below average as low overall population density often makes landfill the preferred option.

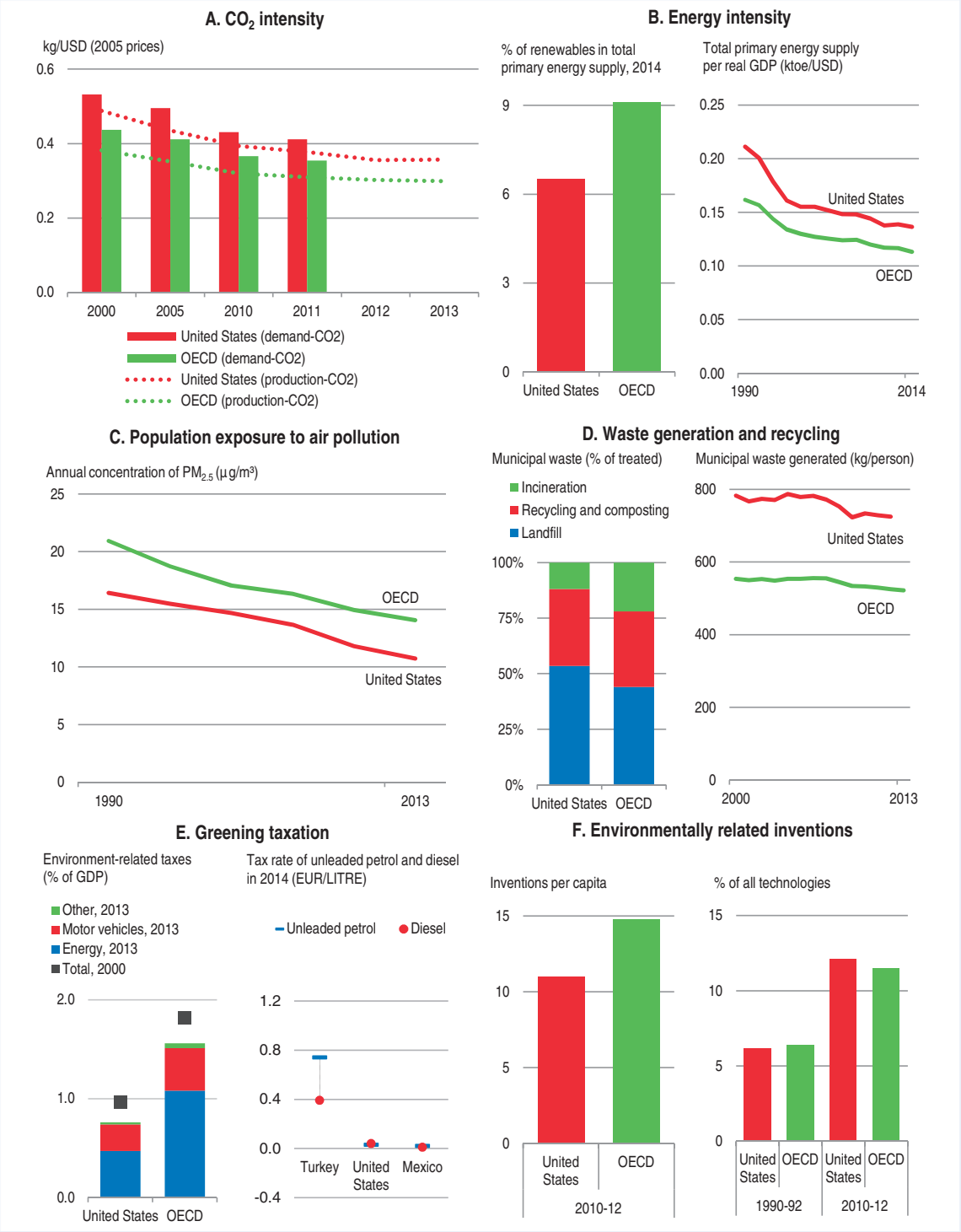
Revenues from environmentally related taxes are very much lower than in other countries, largely because of low energy taxation. The average tax rate on motor fuel is between 10 and 20% of the level in Europe, for example. Diesel is taxed higher than gasoline in the United States, more in line with their relative externalities than in most other OECD countries.

The backlog of investment in public infrastructure covers many sectors including public water supply and sewage systems. Many legacy sites with hazardous waste have been cleaned up over the 30 year history of the Superfund and other programmes but resources devoted to this have diminished. Water quality can be seriously affected by polluted sites. In other areas, for example in California, water availability is the key issue, as water pumping, mainly for agriculture, from some of the largest aquifers continues at unsustainable rates.

A high proportion of innovation activity is associated with green inventions, higher than the average for the OECD. The United States is a leader in innovation on energy-efficiency technologies, although only a small fraction of government R&D support (less than 2.5%) is allocated to the environment and energy. R&D expenditure on energy technologies has been relatively stable since 1990, but picked up more recently and as a share of GDP is around average for the OECD.

Box 8. **Economy-environment linkages in the United States** *(cont.)*

Figure 33. **Green growth indicators for the United States**



Source: OECD Green Growth Indicators, OECD Environment Statistics, OECD National Accounts; World Energy Balances (IEA), OECD Municipal waste statistics, Taxes and charges - Environment-related database; OECD Environmental Patents, OECD Historical population and projections.

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infrastructure and to promote innovation in clean technologies. Putting a price on greenhouse gas emissions and supporting innovation in clean technologies were previous recommendations in past *Economic Surveys* (Table 10). While implementing climate change policy may have an impact on the budget, the net effect on public finances over the longer term is ambiguous. The impact will partly depend on innovation, the speed at which businesses and individuals adopt greener environmental solutions and the extent to which adaptation costs are reduced as a result. In addition, to the extent that addressing climate change also reduces local air pollution, the impact on health of reduced pollution would boost productivity and reduce health care costs (OECD, 2014).

Managing water presents challenges in ensuring safe supply and long-run sustainability. Water service providers are often small municipal corporations that lack the institutional capacity needed to raise funding for major capital investments. However, many drinking water systems are ageing and require upgrading to meet environmental requirements. The Environmental Protection Agency has estimated that $384 billion is needed over 20 years to maintain and improve water infrastructure, with the majority accounted for by investment in transmission and distribution networks (EPA, 2013). In addition to water supply systems, large swathes of the country confront challenges in addressing groundwater depletion and water stress, which may ultimately reduce drinking water sources and lead to desertification and saltwater intrusion in coastal areas. Co-ordinating groundwater withdrawals across catchment areas and between the multiple uses of water has proven challenging in parts of the country.

Table 10. **Past OECD recommendations on environmental sustainability and energy**

Recommendation	Actions taken since the 2014 Survey
Further lower emissions with efficient policy tools, as part of the climate-change strategy, notably by putting a price on greenhouse gas emissions, though well-designed regulation and investment in renewables also have a role to play.	The Clean Power Plan of 2015 aims to reduce greenhouse gas emissions from electricity generation, from reducing emissions from coal-fired power stations while promoting renewables.
Promote innovation in energy saving and low carbon technology.	The 21st Century Clean Transportation System would fund low carbon technology and infrastructure.
Ensure that trade restrictions do not hamper energy exports.	The ban on crude oil exports was lifted at the end of 2015

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ANNEX

Progress in structural reform

The objective of this Annex is to review action taken since the previous Survey (June 2014) on the main recommendations from previous Surveys.

A. Recommendations on monetary and financial policy

Recommendations	Actions taken since the 2014 Survey
Gradually reduce and ultimately remove monetary accommodation as the economy approaches full employment and inflation returns to the Fed's 2% target.	The process of raising policy rates began in December 2015, though policy remains appropriately accommodative.
Continue to roll out macro-prudential policy tools, including those associated with the Dodd-Frank Act and those addressing vulnerabilities in wholesale funding, repo market and money-market mutual funds.	Capital requirements for systemically important banks are substantially higher than before the crisis, stress tests have been implemented to reveal vulnerabilities, and regulations require systematically important institutions to form "living wills" to avoid a disorderly unwinding in the case of failure. New rules on securitisation and money market funds as well as enhanced transparency apply to the shadow banking sector.
Reform the housing finance system to ensure access to mortgage credit by creditworthy homebuyers while providing better guarantees of financial stability and avoiding again exposing taxpayers to costly bailouts.	Several housing finance reform proposals have been made, but none progressed past the committee stage in Congress.
Leave the securitisation of mortgages to the private sector. This would entail privatising the Government Sponsored Enterprises, cutting off their access to preferential lending facilities with the federal government, subjecting them to the same regulation and supervision as other issuers of mortgage-backed securities, and dividing these entities into smaller companies that are not too big to fail.	Fannie Mae and Freddie Mac remain under government stewardship. The Senate Banking Committee passed in May 2014 a bipartisan proposal ("Johnson-Crappo GSE reform") seeking to reform the housing finance system, create greater competition and reduce taxpayer risk, while ensuring affordable fair access to all creditworthy homebuyers. The proposal has not gone beyond the committee stage.

B. Recommendations on fiscal policy

Recommendations	Actions taken since the 2014 Survey
Fiscal policy needs to remain cautious and prepared to take actions to ensure longer-term sustainability.	There have been no large changes in fiscal policy.
Act towards rapid international agreement and take measures to prevent base erosion and profit shifting (BEPS).	The United States participated in the OECD/G20 Base Erosion and Profit Shifting (BEPS) Project, endorsed by the G20 Leaders in November 2015.
Increase reliance on consumption taxation.	No action taken
Make the personal tax system more redistributive by restricting regressive income tax expenditures.	The President's proposed FY2017 Budget has measures to limit regressive tax expenditures, reform capital income taxation, and reconcile different tax bases.
Replace the health tax exclusion (i.e., the exclusion from taxable personal income and payroll tax of compensation paid in the form of health insurance cover) with subsidies that do not encourage overly-generous health plans (subject to minimum standards of coverage).	The 2010 Affordable Care Act included an excise tax that will be levied on high-cost health insurance plans starting in 2018, but now delayed to 2020. The Administration is continuing to develop and implement regulations on the tax on high-cost health insurance plans, so called Cadillac tax.
Speed up the phased increase in the retirement age at which full social security benefits are paid from 65 to 67. Link the retirement age to active life expectancy thereafter. Reduce the replacement rate for higher earners and raise the Social Security tax cap.	No action taken. Recent research has revealed that life expectancy for low-income pensioners has remained static, undermining the case for an automatic link between average life expectancy and the retirement age.

C. Recommendations on innovation

Recommendations	Actions taken since the 2014 Survey
The federal R&D budget should be protected from the expenditure cuts. Make the R&D tax credit permanent	The R&D tax credit was made permanent in 2015.
Patent reform (America Invents Act) needs to be taken further by ensuring that courts grant injunction relief and damages awards for patent infringement that reflect realistic business practices and the relative contribution of patented components of complex products.	The Supreme court has allowed costs to be shifted in case of a lost appeal.
Tertiary education attainment in STEM fields needs to be increased. An important step in doing so is improving access to quality secondary education so that students are better prepared for STEM tertiary studies.	Every Student Succeeds Act was introduced in 2015. The 2017 budget proposal includes $4 billion in mandatory funding over three years for States to increase access to K-12 STEM coursework, and $80 million for a new, competitive program to promote the redesign of secondary schools with a focus on STEM-themed schools that expand opportunities for all students, particularly girls and other under-represented groups in STEM fields.
Establish a national innovation office to increase coherence and continuity in implementation of the national innovation strategy.	No action taken. Other OECD countries have established productivity commissions.

D. Recommendations on education policy

Recommendations	Actions taken since the 2014 Survey
Improve quality secondary education to better prepare students for STEM tertiary studies.	The United States is taking policy actions to improve quality secondary education, based on a 5-year strategic plan for enhancing STEM education, including supporting state-led standards for secondary education; making investments toward the goal of preparing 100 000 more STEM-qualified teachers over the next decade; and initiating a STEM Master Teacher Corps. The 2017 budget proposal includes $4 billion in mandatory funding over three years for States to increase access to K-12 STEM coursework, and $80 million for a new, competitive program to promote the redesign of secondary schools with a focus on STEM-themed schools that expand opportunities for all students, particularly girls and other under-represented groups in STEM fields.
Greatly raise limits on Stafford loans, especially for unsubsidised direct loans, so that they cover the full cost of study. The interest rate on these loans should vary with the long-term bond rate. The default repayment plan should be income-contingent.	In August 2013 the Bipartisan Student Loan Certainty Act re-established interest rates for new Federal Direct Student Loans. Interest rates at origination are tied to the 10-year Treasury note, plus a margin, but are fixed for the life of the loan. For loans made between July 1, 2013 and June 30, 2014, the interest rate was 3.86% for undergraduates, 5.41% for graduate students, and 6.41% for PLUS loans. The bill also imposes a cap to ensure interest rates never exceed 8.25% for undergraduate students, 9.5% for graduate students, and 10.5% for PLUS borrowers. The Administration has expanded income driven repayment plans, allowing all who borrowed federal direct loans as students to cap their payments at 10 per cent of their monthly incomes.

E. Recommendations on improving work-life balance

Recommendation	Actions taken since the 2014 Survey
Provide support to parents with young children by expanding access to paid family leave nationally.	The proposed 2017 budget includes $2.2 billion to support the creation of State paid leave programmes as well as offer federal employees six weeks of paid leave Since 2014 some States, such as California, have introduced State-wide programmes and more than 20 cities or counties, such as San Francisco, require paid maternity leave.
Help States develop right-to-ask policies to support flexible working arrangements.	Since June 2014, all federal employees have such rights.
Increase access of low and moderate-income families to quality preschool and childcare.	The Preschool for All initiative would invest $75 billion over 10 years with the aim of providing access to high quality preschool for all 4-year olds from low and moderate income families. Support is included in the 2017 budget proposal.

F. Recommendations on disability and health care reform

Recommendation	Actions taken since the 2013 Survey
Provide comprehensive work support to get disability recipients back to work.	The 2014 Workforce Innovation and Opportunity Act put some emphasis on states putting in place policies to improve employment outcomes for people with disabilities
Reform the individual and small-group market to facilitate greater risk pooling. To this end, require community-rated and guaranteed issue policies and make health insurance compulsory. Introduce means-tested subsidies to help low-income persons afford health insurance.	These were features of the Affordable Care Act of 2010.

G. Recommendations on business sector contribution to well-being

Recommendation	Actions taken since the 2014 Survey
Strengthen the portability and recognition of training by involving employers in programme design.	The Department of Health and Human Services introduced the Licensure Portability Grant Program to support State professional licensing boards cooperating in reducing statutory and regulatory barriers to telemedicine. The FY2016 Budget included $7.5 million to support efforts by a consortium of States to expand reciprocity for a range of occupational licenses. The proposed FY2017 budget also calls for a community college partnership tax credit. This proposal would provide businesses with a new tax credit for hiring graduates from community and technical colleges as an incentive to encourage employer engagement and investment in these education and training pathways. The proposal would provide $500 million in tax credit authority for each of the five years, 2017 through 2021. The tax credit authority would be allocated annually to states on a per capita basis and would be available to qualifying employers that hire qualifying community college graduates
Work with employers in preventing the negative effects of job strain on mental health, prolonged sick leaves, job loss and disability-benefit claims	No action taken.
Raise labour earnings at the low end by expanding the EITC, which would be more effective if supported by a higher minimum wage.	EITC expansions were made permanent in 2015 as were similar expansions made to the Child Tax Credit. The 2017 budget proposes to expand the earned income tax credit to workers without qualifying children. 14 States and over 30 cities and counties have introduced minimum wages that are higher than the federal minimum wage in 2014 and 2015.

H. Recommendations on environmental sustainability and energy

Recommendation	Actions taken since the 2014 Survey
Further lower emissions with efficient policy tools, as part of the climate-change strategy, notably by putting a price on greenhouse gas emissions, though well-designed regulation and investment in renewables also have a role to play.	The Clean Power Plan of 2015 aims to reduce greenhouse gas emissions from electricity generation, from reducing emissions from coal-fired power stations while promoting renewables.
Promote innovation in energy saving and low carbon technology.	The 21st Century Clean Transportation System would fund low carbon technology and infrastructure.
Ensure that trade restrictions do not hamper energy exports.	The ban on crude oil exports was lifted at the end of 2015

Thematic chapters

Chapter 1

Unleashing private sector productivity

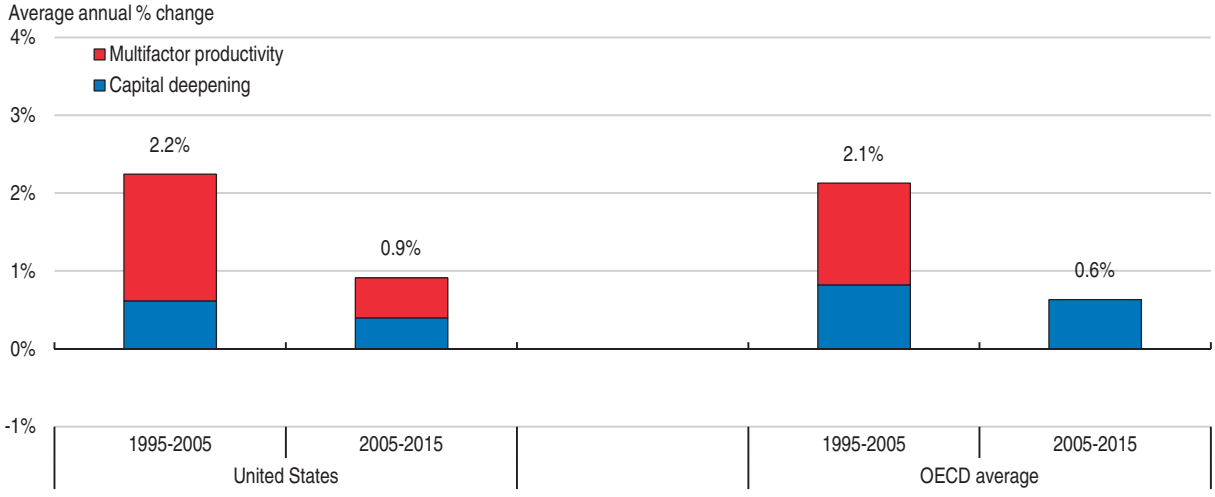
Productivity growth has been sluggish since the Great Recession and had been slowing before it. This slowdown has touched nearly every industry. Although part the slowdown may be related to weakness of investment related to the slow recovery of aggregate demand, structural issues also appear to be playing a role, including persistent declines in business dynamism (market entry and exit of firms) and signs of diminishing competitive pressures. Historically, young productive firms have been an important source of productivity growth, but start-up rates have been slowing for some time and have been especially low in the aftermath of the crisis, and failure rates of new firms have risen. This diminished dynamism appears to be associated with other trends such as population ageing, funding difficulties, reforms in 2005 to the personal bankruptcy code that made debt discharge more difficult, intellectual property rights that favour some established companies, the spread of state-level occupational licensing requirements, as well as zoning and land use restrictions that inhibit resources from flowing to their most productive use. There are also signs that market power is gradually intensifying on balance, restraining competitive forces that would otherwise translate productivity gains into broad-based improvements in household purchasing power.

Labour productivity has suffered a broad-based deceleration

Available measures show that US labour productivity has slowed at most levels of aggregation. One broad measure, real GDP per worker, rose at an average annual rate of 0.9% from 2005 to 2015 after having increased at annual rates of 2.2% from 1995 to 2005 and 1.5% from 1970 to 2005. Aggregate measures of US business sector productivity – which exclude production by governments and non-profits – have also slowed, as have measures that calculate productivity using hours worked rather than workers. Similar patterns can also be seen in the OECD as a whole (Figure 1.1). Although it is too early to dismiss the possibility that the deceleration is mainly cyclical, there are legitimate worries that the slowdown is being driven by more persistent forces.

The sources of this slowdown are not entirely understood. Growth decompositions attribute the deceleration of aggregate productivity from 2005-2015 in comparison to the preceding ten-year period to slower multifactor productivity growth, and, to a somewhat lesser extent, a diminished pace of capital deepening (Figure 1.2). Although productivity growth initially surged in the aftermath of the crisis as employment fell disproportionately relative to output, since 2010 capital formation has failed to keep pace with steady gains in employment and hours worked, whilst multifactor productivity growth has been meagre by historical standards. By comparison, growth decompositions show that the productivity slowdown from 2005 onward in the OECD as a whole can be mainly attributed to a levelling of multifactor productivity.

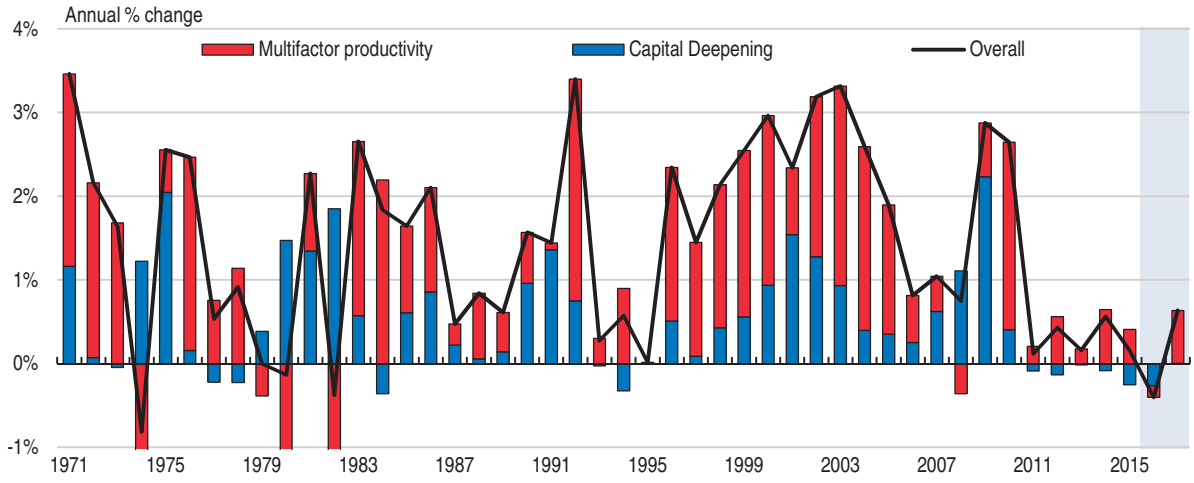
Figure 1.1. **Productivity has slowed in the USA and in the OECD as a whole**



Note: Real GDP per employed worker. OECD average is for 32 countries that have data available for the full timespan shown.
Source: OECD, Analytical database and OECD calculations.

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Figure 1.2. **Capital deepening and multifactor productivity have held back U.S. productivity growth**

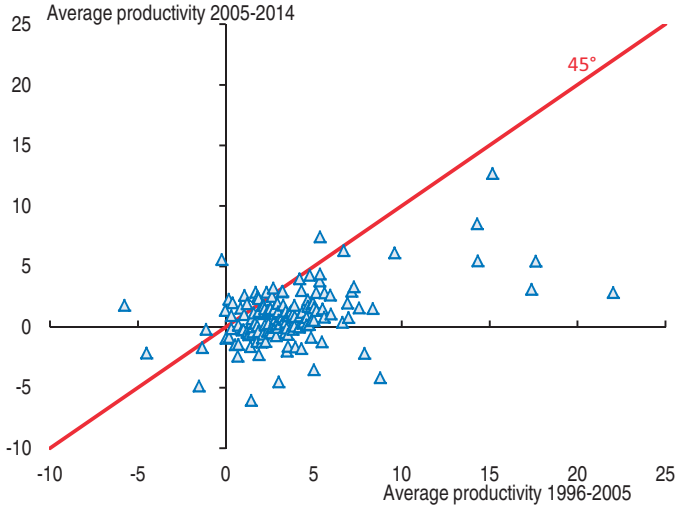


Note: Productivity is aggregate real GDP per work hour and capital deepening is capital per work hour.
Source: OECD, Analytical database and OECD calculations.

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The labour productivity slowdown is equally evident in more disaggregated data. Available estimates show that gross output per hour (which includes industry value added and intermediates) decelerated in all but a handful of industries in 2005 to 2014 relative to the preceding nine-year period (Figure 1.3). To be sure, productivity growth varies substantially across industries, and these differences are persistent. Yet even though productivity advances in many high tech industries (such as semiconductors, computer equipment, and telecommunications) remain comparatively strong, gains have nonetheless slowed in these industries. The pervasiveness of the productivity deceleration

Figure 1.3. **The productivity slowdown is pervasive across industries**



Note: Productivity is calculated as real gross output per hour for 153 industries at the four-digit NAICS level.
Source: OECD calculations using yearly industry productivity estimates from the Bureau of Labor Statistics (BLS).

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across industries is an important piece of the puzzle because it redirects some focus from explanations that rely on developments (such as measurement difficulties) in particular industries or upon shifts in the composition of activity away from industries with faster productivity growth (Box 1.1 explores the role of such compositional shifts). Cross-industry regressions (weighted by nominal pruduction) show that rates of increase in productivity were nearly two-thirds slower, on average, from 2005 to 2014 than in the preceding nine-year period. This deceleration is highly significant and is broadly in line with that seen in aggregate data.

Studies using firm-level data provide additional insights into the slowdown. One robust finding is that productivity varies substantially across firms even at the detailed industry level (Syverson, 2004; Foster *et al.*, 2008; Foster *et al.*, 2016b) and that such discrepancies persist over time. There is also tentative evidence that such productivity discrepancies across firms are widening over time (Decker *et al.*, 2016) – and perhaps rapidly (Andrews *et al.*, 2014). Recent evidence shows that variations in wages are primarily *across* firms rather than *within* firms (Song *et al.*, 2015), which may imply that cross-firm differences in productivity or rent-sharing may be contributing to widening income inequality. These studies raise concerns that distortions are undermining the US economy's allocative efficiency to a greater extent than in the past, as – holding all else equal – productivity would seemingly be boosted by redistributing inputs to the most productive firms in each industry. Such inefficiency could be contributing to the overall productivity slowdown.

Findings from firm-level studies point to a number of possible explanations for the slowdown (Foster *et al.*, 2016b). One hypothesis is that the slowdown reflects cyclical influences (such as funding constraints or uncertainty) which should wane as slack narrows. Another possibility is that technological innovations are no longer diffusing from frontier firms to non-frontier firms as effectively as in the past, or that the cost of redistributing resources to more productive firms could have risen. Yet another explanation is that competitive pressures have diminished within industries, so that firms with better technologies are content to use this advantage to sustain higher mark-ups rather than acquiring additional capacity and driving out less efficient competitors. That said, productivity measurement is challenging, especially at more detailed levels of aggregation, in part because studies struggle to disentangle the role of quantities and relative prices in driving variations in nominal value added. Hence, it is also possible that variations in product quality and mark-ups are being misidentified as variations in physical productivity (Box 1.2 discusses measurement issues in more detail). Combinations of these various explanations cannot be ruled out as well.

The remainder of this chapter discusses in more detail the many influences that may be contributing to the productivity slowdown, starting with a discussion of business investment, moving on to innovation, then to many influences that may be damping business dynamism. The chapter then transitions to some evidence on whether market power has intensified and how this might be affecting productivity, then closes with a discussion about whether better management practises or public infrastructure provision might help compensate for influences slowing the pace of business productivity that may be beyond the reach of policy.

Box 1.1. **Are shifts in industry composition slowing overall productivity?**

Baumol (1967) long ago advanced the "cost disease" theory, which posits that overall productivity growth can be slowed by shifts in the composition of activity from industries with high productivity growth and falling relative costs (such as durable goods manufacturers) to industries with slow growth and rising relative costs (such as healthcare providers). Shifts in activity away from industries with high productivity growth can occur when goods and services produced by high productivity growth industries are poor substitutes for those with low growth, especially when products from low growth industries cannot be imported (as with many services). Such compositional shifts can be allocatively efficient even though they diminish the overall pace of productivity growth. Gains in productivity in individual industries allow economies to produce more of anything (or everything) using existing resources, and in the cost disease case, households allocate freed resources to goods and services with rising relative costs and become better off as a result. However, such compositional shifts could be a symptom of allocational inefficiency if constraints prevent inputs from being reallocated to reflect market signals.

To investigate whether such compositional effects are making a meaningful contribution to the deceleration in overall productivity, this box uses formulas developed by Tang and Wang (2004) and Diewert (2013) to decompose value-added productivity growth into contributions from (1) value-added productivity growth within industries holding the relative allocation of labour and relative prices constant, as well as (2) reallocation effects that arise due to changes in relative prices and the relative allocation of labour across industries. These formulas, which account for the non-additivity of output across industries and sectors that arises with chain-weighted aggregation, take the form:

$$\%\Delta\left(Y_{A,t}/H_{A,t}\right) = \sum_{i=1}^{N} s_{i,t-1} \cdot \left\{\left[1 + \%\Delta\left(Y_{i,t}/H_{i,t}\right)\right]\left[1 + \%\Delta\left(H_{i,t}/H_{A,t}\right)\right]\left[1 + \%\Delta\left(p_{i,t}/p_{A,t}\right)\right] - 1\right\},$$

where $Y_{A,t}$ is a chain-aggregated measure of the quantity of private business output and $H_{A,t}$ is aggregate hours worked in private business, $p_{A,t}$ is the aggregate price deflator for private business value added, where $Y_{i,t}$, $H_{i,t}$ and $p_{i,t}$ are the same variables for industries $i = 1,\ldots,N$, and where s_i is the share of aggregate nominal value added by industry i. If one ignores covariance effects that will derive from interactions between the growth rates In the above equation, the formula simplifies to the following approximation,

$$\%\Delta\left(Y_{A,t}/H_{A,t}\right) \cong \sum_{i=1}^{N} s_{i,t-1} \cdot \left\{\%\Delta\left(Y_{i,t}/H_{i,t}\right) + \%\Delta\left(H_{i,t}/H_{A,t}\right) + \%\Delta\left(p_{i,t}/p_{A,t}\right)\right\}.$$

This equation shows that aggregate productivity growth is affected directly by average within-industry productivity growth and indirectly by relative changes in hours worked and prices across industries. When $\%\Delta(H_{i,t}/H_{A,t}) + \%\Delta(p_{i,t}/p_{A,t}) > 0$, firms in the industry either attract more labour, experience relative price changes that increase their relative value weight, or both, thereby amplifying the influence of their productivity growth on the aggregate level. When this sum is negative, the opposite effects tend to occur, on balance. Only when both of these growth rates are zero will aggregate productivity growth be a simple value-weighted average of productivity growth across industries.

This decomposition is performed using KLEMS data from the BLS, which extend through 2013 and include selection of two- and three-digit NAICS industries that collectively span the private business sector. Before applying the formulas, each industry's nominal gross output is converted to nominal value added by subtracting intermediate costs, and to real terms using formulas derived by Domar (1961). Real value added and prices for the private business sector are formed chain-aggregating across sectors. Consistency is not imposed between KLEMS and the published aggregates, so implied aggregate productivity growth estimates can differ somewhat from yearly published figures.

Box 1.1. **Are shifts in industry composition slowing overall productivity?** *(cont.)*

Table 1.1 decomposes private business productivity growth into total contributions by selected industries (column T) and into average contributions for each industry from within-industry productivity growth (column D) and from the combined effects of labour reallocation and relative price changes (column I). The decomposition is shown for 2004 to 2013, for the preceding 1995 to 2004 period, and as changes from 2013 to 2004 relative to 1995 to 2004. The decomposition for overall growth (first row) suggests that cross-sector reallocation played no meaningful role in the overall productivity deceleration, as the weighted average within-industry productivity deceleration – at nearly 2 percentage points – more than accounts for the deceleration in overall productivity growth. As in Figure 1.3, the within-industry slowdown is broad-based, with nearly all sectors – with the exception of the mining and financial, insurance, and real estate (FIRE) sectors – experiencing slower productivity growth from 2004 to 2013 than in the earlier period. Notably, the total contribution to the overall productivity slowdown from the FIRE sector is substantially negative, as price changes and reallocation away from that sector more than offsets this within-industry acceleration. It is also notable that even though productivity growth in high-tech sectors has slowed on the whole (most notably for computers and electronic products), these effects are mostly offset by labour reallocation and by relative price changes. The overall productivity deceleration remains broad-based after accounting for relative price and reallocation effects, with especially large negative contributions from the construction, finance, and service sectors.

Table 1.1. **Contributions to slowdown in aggregate private business productivity by selected sectors and industries**

Sector or Industry	1995-2004			2004-2013			Change		
	D	I	T	D	I	T	D	I	T
Overall	3.5	-0.2	3.1	1.5	-0.1	1.3	-1.9	0.1	-1.8
Agriculture, forestry, fishing	0.1	-0.1	0.1	0.1	0.0	0.1	-0.1	0.1	0.0
Mining	0.0	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1
Oil and gas extraction	0.0	0.2	0.1	0.0	0.2	0.1	0.1	0.0	0.1
Utilities	0.1	-0.1	-0.1	0.1	0.0	0.1	0.0	0.1	0.2
Construction	0.0	0.4	0.4	-0.1	0.0	-0.1	-0.1	-0.4	-0.5
Manufacturing	1.3	-1.2	0.1	0.4	-0.3	0.0	-0.9	0.8	-0.1
Durable goods	1.0	-0.9	0.0	0.3	-0.3	-0.1	-0.7	0.6	-0.1
Computer and electronic products	0.8	-0.7	0.0	0.2	-0.2	0.0	-0.6	0.5	0.0
Transportation equipment	0.1	-0.1	0.0	0.1	-0.1	0.0	-0.1	0.0	-0.1
Nondurable goods	0.4	-0.3	0.1	0.1	0.0	0.1	-0.3	0.3	0.0
Petroleum and coal products	0.1	0.0	0.1	0.0	0.2	0.1	-0.1	0.1	0.0
Chemical products	0.1	-0.1	0.1	0.0	0.0	0.1	-0.1	0.1	0.0
Wholesale trade	0.4	-0.2	0.2	0.0	0.1	0.1	-0.4	0.3	-0.1
Retail trade	0.4	-0.2	0.2	0.0	0.0	0.0	-0.4	0.1	-0.2
Transportation and Warehousing	0.1	0.0	0.1	0.1	0.0	0.1	-0.1	0.0	-0.1
Information	0.3	0.0	0.3	0.3	-0.3	0.1	0.0	-0.3	-0.3
Publishing (includes software)	0.1	0.0	0.1	0.1	-0.1	0.0	-0.1	-0.1	-0.1
Broadcasting and telecomm.	0.1	0.0	0.1	0.2	-0.2	0.0	0.1	-0.1	0.0
Data processing, internet pub., and other	0.1	0.0	0.1	0.0	0.0	0.0	-0.1	0.0	-0.1
Finance, insurance, and real estate	0.4	0.3	0.6	0.5	-0.2	0.2	0.2	-0.5	-0.4
Services	0.3	0.9	1.2	0.1	0.5	0.6	-0.2	-0.4	-0.6
Legal	0.0	0.1	0.1	0.0	0.0	0.0	-0.1	0.0	-0.1
Misc. professional, scientific & technical	0.1	0.2	0.3	0.0	0.1	0.1	-0.1	-0.1	-0.1
Management of companies & enterprises	0.1	0.1	0.1	0.0	0.1	0.1	-0.1	0.0	-0.1
Food services and drinking places	0.0	0.1	0.1	0.0	0.1	0.0	-0.1	0.0	-0.1

Note: D denotes average direct contributions from productivity growth within the sector, while I denotes average indirect contributions from labour reallocation and relative price changes. These two contributions exclude covariance effects. For some sectors or industries, D and I may not sum to the overall contribution (denoted T) because of these covariance effects and rounding. Contributions also may not sum to overall totals because of rounding.

Box 1.2. **Can mismeasurement help account for the productivity slowdown?**

One potential explanation for the productivity slowdown is that technological changes are boosting output in ways that are not being adequately captured by measurement techniques used for official statistics. If so, the policy challenges posed by the slowdown may not be meaningful. Evidence for this view is not yet convincing, in part because the magnitude of the slowdown is so large and because such mismeasurement problems are not new.

The mismeasurement hypothesis mostly boils down to challenge of inferring quantities when the characteristics of goods and services sold – and how they are produced – change over time. Although disentangling quantities from prices has always been a challenge, some argue that the problems are particularly daunting at present. For almost all final goods and services, quantity indexes are inferred by dividing measures of nominal value added by a price deflator. Ideally, the deflator should capture price changes over time for an identical item, adjusting for implicit changes in quantity that account for product characteristics. Examples where measurement may fall short of this ideal abound, especially when there are rapid changes in the mix of available products and where they are sold. Among other things, techniques fail to capture declines in effective prices as new products are introduced and as buyers substitute toward lower-priced sales outlets and toward imported goods, and may fail to adequately capture quality changes for products with rapid innovation (such as computer processors and televisions). Existing techniques are also not well equipped to account for fragmented production process that arise with globalisation, and, by construction, will likely fail to capture goods and services that are provided on the internet at no direct cost to consumers.

Some evidence suggests that high-tech capital goods may be particularly susceptible to such measurement biases, and may help explain why measured price declines for such goods have slowed even though technological advances in the sector have remained rapid (Byrne *et al.,* 2015; Byrne and Pinto, 2015). If so, capital deepening may have been faster than recent estimates suggest. That said, since many high tech capital goods are imported, the implied mismeasurement of real output growth and productivity is likely modest. To be sure, price declines for some varieties of high tech capital with a higher concentration of domestic content (such as software) have also slowed, and measurement problems for these products could help explain a small part of the productivity slowdown.

Although measurement challenges clearly exist, it is not obvious that the effects on overall productivity are meaningful. Recent studies (Syverson, 2016; Byrne *et al.*, 2016) suggest that the magnitude of such mismeasurement is likely modest compared to the observed productivity slowdown. As with high tech capital, many goods and services that have experienced rapid technological change are manufactured abroad, so such mismeasurement need not have meaningful effects on measured domestic production. As for globalisation, some evidence suggests that official measures may actually *understate* the foreign-produced content of outsourced intermediates, thereby contributing to over-measurement of output and productivity growth (Houseman *et al.*, 2011). More broadly, problems associated with rapid technological change and other factors distort historical estimates as well, so it is difficult to form the appropriate historical counterfactual that would be needed to fully inform such a comparison.

The business investment climate

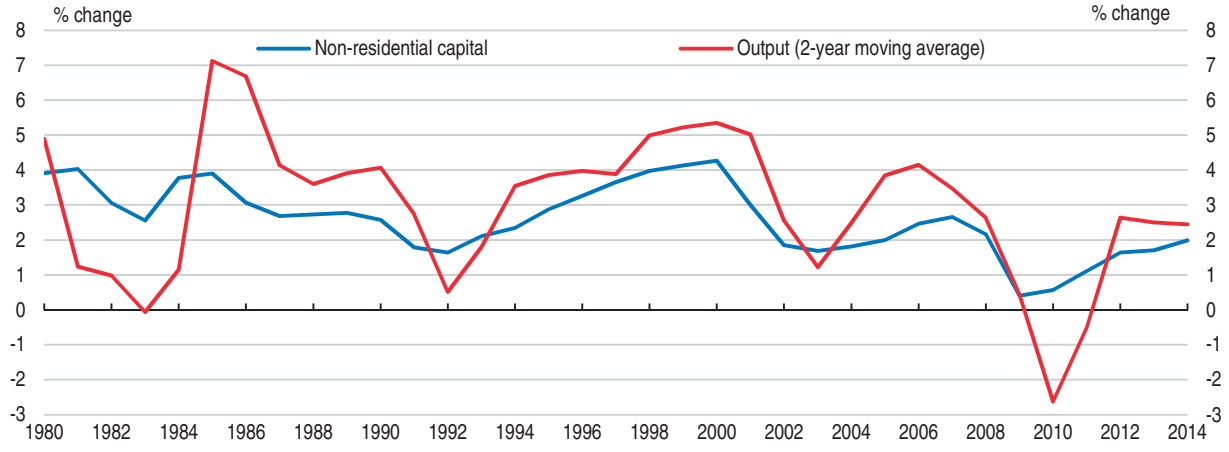
A good portion of the slowdown in aggregate productivity growth over the past decade can be directly attributed to sluggishness in capital formation, especially following the financial crisis when investment failed to rebound as vigorously as in previous recoveries. This sluggishness may help explain some of the slowness of multifactor productivity as well, as exploiting new technologies frequently goes hand in hand with investing in the appropriate capital.

It is difficult to pinpoint specific reasons why capital formation has lacked vigour. Private capital formation has been broadly consistent with what one would expect given the historical accelerator relationship and the lower-frequency trends in business output growth (Figure 1.4). Therefore, the slow pace of capital formation can be regarded, at least in part, as a symptom of various longer-term influences that are restraining aggregate demand, such as lingering hysteresis effects that derive from the financial crisis, fiscal retrenchment, and limitations on the effectiveness of monetary stimulus at the zero lower bound (for example, Summers, 2014). If this is the case, policies designed to directly boost domestic aggregate demand more generally, such as fiscal policy, would help kick-start investment, especially if such measures were coordinated across countries to help negate leakages through imports (OECD, 2015a).

To be sure, the explanation that sluggish capital formation is wholly a symptom of weak demand is not entirely satisfying because business investment is itself a component of overall spending. Hence, factors that might be discouraging investment more directly – such as tight credit conditions, elevated uncertainty, and diminished business confidence – might also be a primary cause of aggregate demand weakness. If this is the case, it is not obvious that stoking aggregate demand would reinvigorate capital accumulation if the factors directly restraining investment are still in force.

That said, many plausible influences that were once thought to be directly restraining investment are fading in intensity as the recovery advances. The post-crisis jump in corporate leverage (as measured by aggregate ratio of debt to assets, in market value terms)

Figure 1.4. **Capital formation has been broadly in line with overall activity**

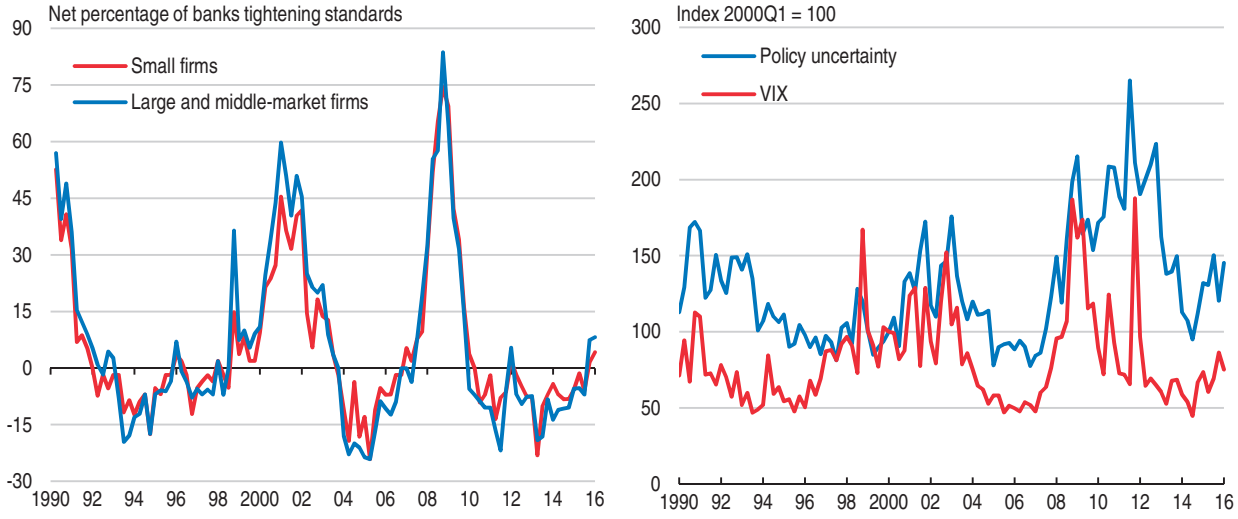


Note: Private business sector.
Source: OECD calculations using Bureau of Economic Analysis (BEA) capital stock estimates.

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has unwound, lending conditions have steadily eased, and uncertainty has descended toward historical norms (Figure 1.5). However, there are still signs that businesses are failing to undertake investments that would seemingly boost overall efficiency. In particular, nonfinancial corporations continue to accumulate low-yielding financial assets even though aggregate measures show that a wide gap has opened between the rate of return on productive capital – net of depreciation – and capital costs (Figure 1.6). Estimates

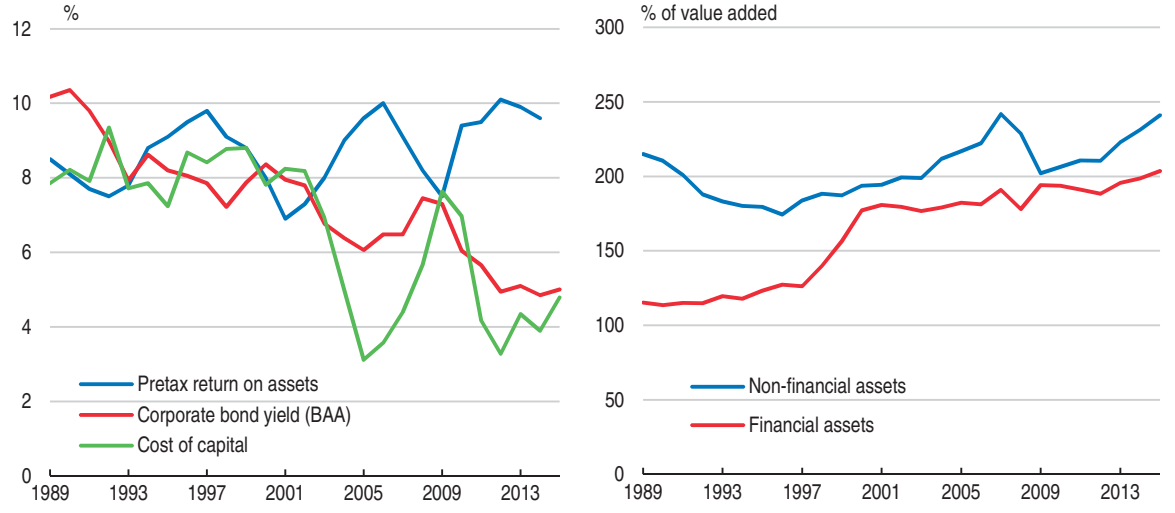
Figure 1.5. **Lending conditions for businesses have been eased since the crisis, and uncertainty has subsided**



Note: Data for lending conditions are for commercial and industrial loans; uncertainty is measured by the Baker-Bloom Policy Uncertainty Index.
Source: Board of Governors of the Federal Reserve System.

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Figure 1.6. **Despite a wide gap between returns on produced assets and borrowing costs, corporations are accumulating financial assets**



Note: Aggregates for non-financial corporate business. Assets are stated as a percentage of gross nominal value added. Return is calculated as net operating profit divided by net stock of produced assets. Cost of capital is bond yield minus the percentage change in the price deflator for non-residential fixed investment.
Source: OECD calculations using estimates from BEA and Board of Governors of the Federal Reserve System.

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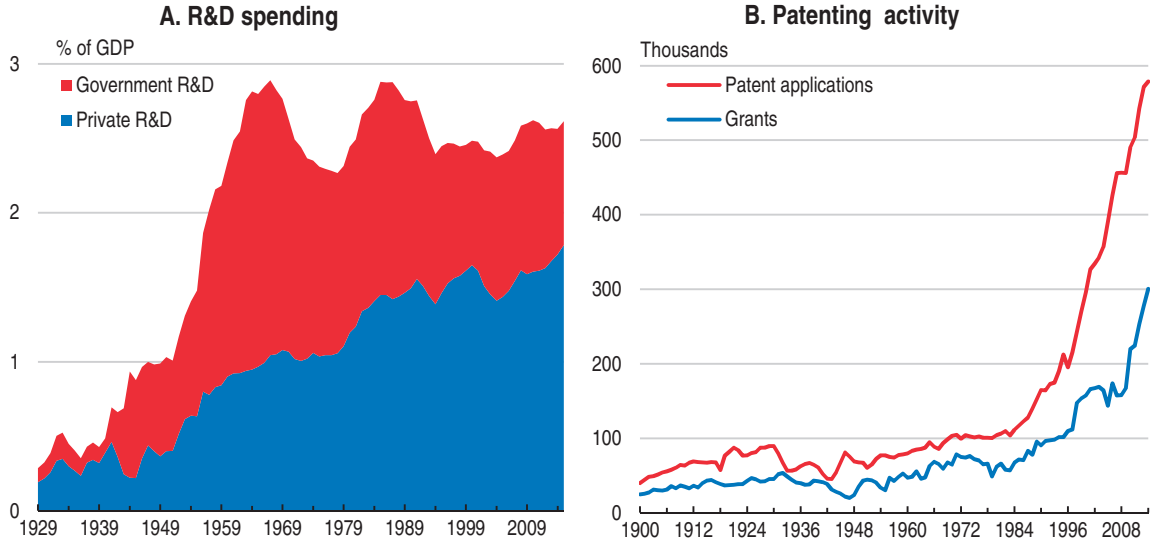
from the BEA (Corea and Retus, 2015) suggest that a similar pattern also holds across industries. This gap suggests that the sluggishness of capital formation may reflect, at least in part, structural influences discussed in the remainder of this chapter, such as diminished market competitiveness and dynamism, reduced fluidity of productive inputs, or changes in how technology diffuses through the economy.

The role of innovative activity

Economists are engaged in a very active debate about whether the pace of innovation has slowed. If innovation has slowed, this might help explain the slowdown in both multifactor productivity and capital accumulation. Optimists, such as Brynjolfsson and McAfee (2011), argue that the underlying rate of technological progress remains rapid and that the observed slowdown reflects measurement problems or shortcomings in current business structures in adapting to the ongoing IT revolution. Pessimists, such as Gordon (2012), argue that productivity has permanently slowed because the quality of recent innovation pales in comparison to the transformative advances that occurred in the first half of the 20th century, and that these advances derived from exceptional circumstances that are unlikely to be repeated. As yet, there is insufficient evidence to dismiss either view.

Even though the debate about innovation quality is inconclusive, it is worthwhile to consider whether policy levers can be manipulated to boost innovative effort and exploit existing technologies more effectively. According to many measures, overall resources devoted to innovative effort remain in line with historical standards, and patenting activity has ascended rapidly in recent decades (Figure 1.7). Total private and public investment in research and development (R&D) has been hovering at around 2.5% of GDP for some time, somewhat above the OECD average (Figure 1.8). However, spending has been shifting from government to the business sector – especially since the financial crisis – with government supporting about one-sixth of business R&D through direct grants, procurement contracts,

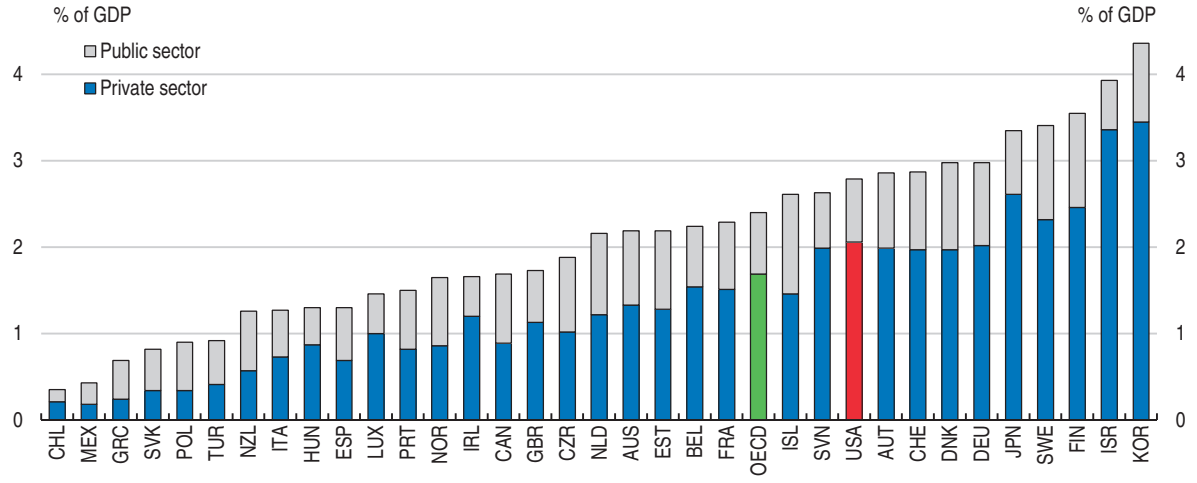
Figure 1.7. **Innovative effort seems robust overall, but is shifting toward the private sector**



Source: United States Patent and Trademark Office (USPTO) patents; Bureau of Economic Analysis (BEA), R&D.

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Figure 1.8. **The US ratio of overall R&D expenditures to GDP is somewhat above the OECD average**



Note: 2012 or latest available year.
Source: OECD Science, Technology, and Industry Indicators.

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and non-refundable business tax credits. Such supports can favour incumbents with established reputations, and which are more likely to have tax obligations to offset with tax credits. Moreover, even though the design of the tax credit seems to provide comparatively stronger marginal incentives for additional R&D (OECD, 2015b), R&D tax subsidies as a share of GDP are relatively small in comparison with other OECD countries. In late 2015, the government took a positive step by making permanent the R&D business tax credit, which had expired at end-2014 and whose continuation had been uncertain for some time. Another positive step might be to make the R&D tax credit refundable for new firms, but this would need to be balanced against the administration costs of doing so.

More broadly, the gradual transition of R&D away from public research to business support may be inefficient given the substantial social externalities associated with many types of research. Social externalities are especially large for basic research and science, where research by universities and government have enabled the development of key technologies subsequently adopted by the private sector in areas such as agriculture, chemicals, healthcare, aerospace and information technology (Bernanke, 2011). Users of government R&D also need not navigate legal restrictions for private intellectual property, which boosts its social return. Other proposals have called for the establishment of a so-called patent box (or innovation box, in a US context), which lowers the tax rate on income from patents and intellectual property that may help firms internalise positive externalities from innovation. However, patent boxes cast a needlessly wide net, providing the greatest tax benefit to existing innovations, and windfall gains to existing patents. There is little evidence that this approach addresses positive externalities from R&D better than targeted government supports. Patent boxes also contribute to greater complexity in the tax system and may exacerbate problems with base erosion and profit shifting.

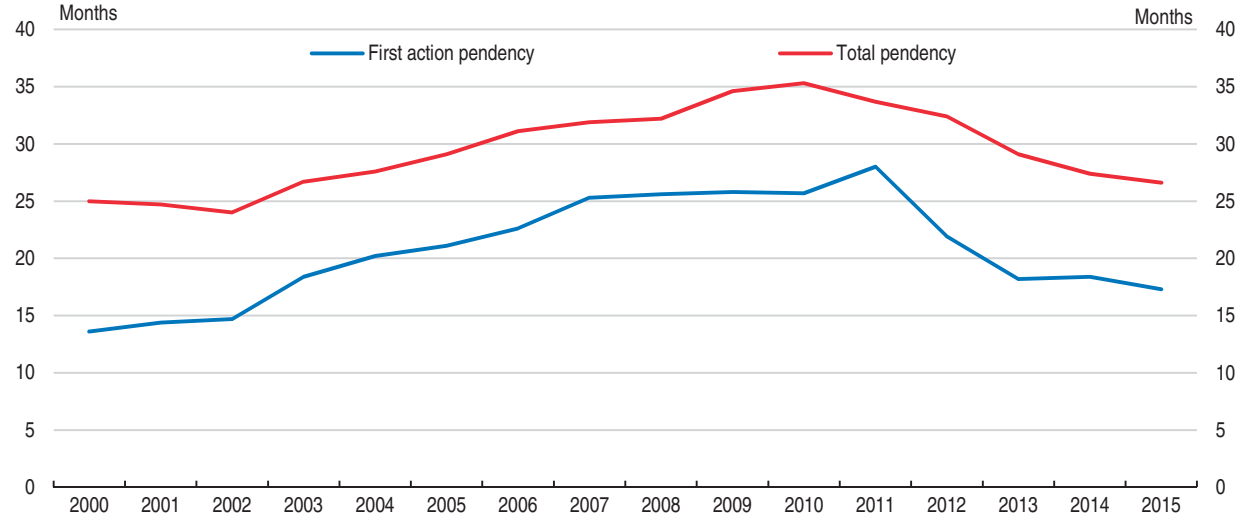
Evidence about the pace of technological change at the firm level is limited, but available evidence suggests that the deceleration of productivity owes more to structural issues that affect the diffusion of technology following an innovation than to the pace of

innovation, per se. Evidence from firm-level data shows that shocks to multifactor productivity are no less prevalent than in the past (Decker *et al.*, 2016), but that firms are no longer reacting as aggressively to scale up operations when favourable shocks occur (Decker *et al.*, 2016; Guzman and Stern, 2016).

Structural issues related to intellectual property rights may help explain why shocks to multifactor productivity are not triggering firms to expand as aggressively as in the past. Inability to obtain timely patents may be one such issue. Evidence suggests that small firms that obtain patents are able to gain financing and expand operations more easily than otherwise, and that delays in the patenting process can hinder growth (Farre-Mensa *et al.*, 2015). Patent processing delays rose substantially through much of the 2000s, with the time from submission to action increasing around 12 months over a decade (Figure 1.9). Following the introduction of the *America Invents Act* in 2012, the US Patent and Trademark Office (USPTO) made progress in working down the application backlog and reducing the time for examiners to review applications and then grant or deny patents. Further reductions have been targeted, and patent fees have also been reduced for small firms. Despite progress to date, the USPTO should work to further shorten processing times in ways that do not undermine patent quality.

Firms incorporating new technology may also be targeted by patent assertion entities, or "patent trolls" (Chien, 2015), whose business model is primarily to purchase and accumulate patents in hopes of extracting payoffs from firms. While such entities can play an important role in monetising innovation, they can also unfairly impede innovation by new firms. More work – be it from further legislative, judicial or executive actions – is needed to curtail abusive litigation. In 2014, the Supreme Court acted to give the court discretion to shift the attorney fees to the loser of patent litigation as a deterrent to rent-seeking, and the Federal Trade Commission (FTC) is currently undertaking an investigation of patent assertion entities. Similarly, entrepreneurs can be restrained by the need to obtain licensing fees with owners of existing technology in order to build upon or modify intellectual property. Such situations can encourage rent-seeking by licensors, especially in

Figure 1.9. **Efforts to speed patenting are paying off, but the process is still lengthy**



Source: USPTO.

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cases where the existing technologies enjoy a dominant market position. Public policy measures could help level the playing field in these negotiations, such as by requiring dominant players to offer standardised licensing agreements that generate a fair return.

Since patents temporarily grant market power to innovators, calibrating a patent regime to encourage innovation likely entails meaningful trade-offs in terms of income inequality – and inefficiency more generally. Aghion *et al.* (2015) confirm that US States with more innovative activity tend to exhibit wider inequality in market income. Even so, innovation appears to contribute only modestly to overall income inequality overall (about 17% of the increase in top 1% income share between 1975 and 2010). Moreover, inequality associated with innovation appears to be more favourable in nature than that driven by other sources, since it is associated with upward income mobility. Although inventors do tend to ascend the income scale, their improved position does not become entrenched because the rents are temporary and is subject to creative destruction by subsequent innovators. Evidence from this research also suggests that policymakers can blunt the positive impetus to productivity and social mobility from innovation by yielding to lobbying efforts by incumbents seeking to lock in rents.

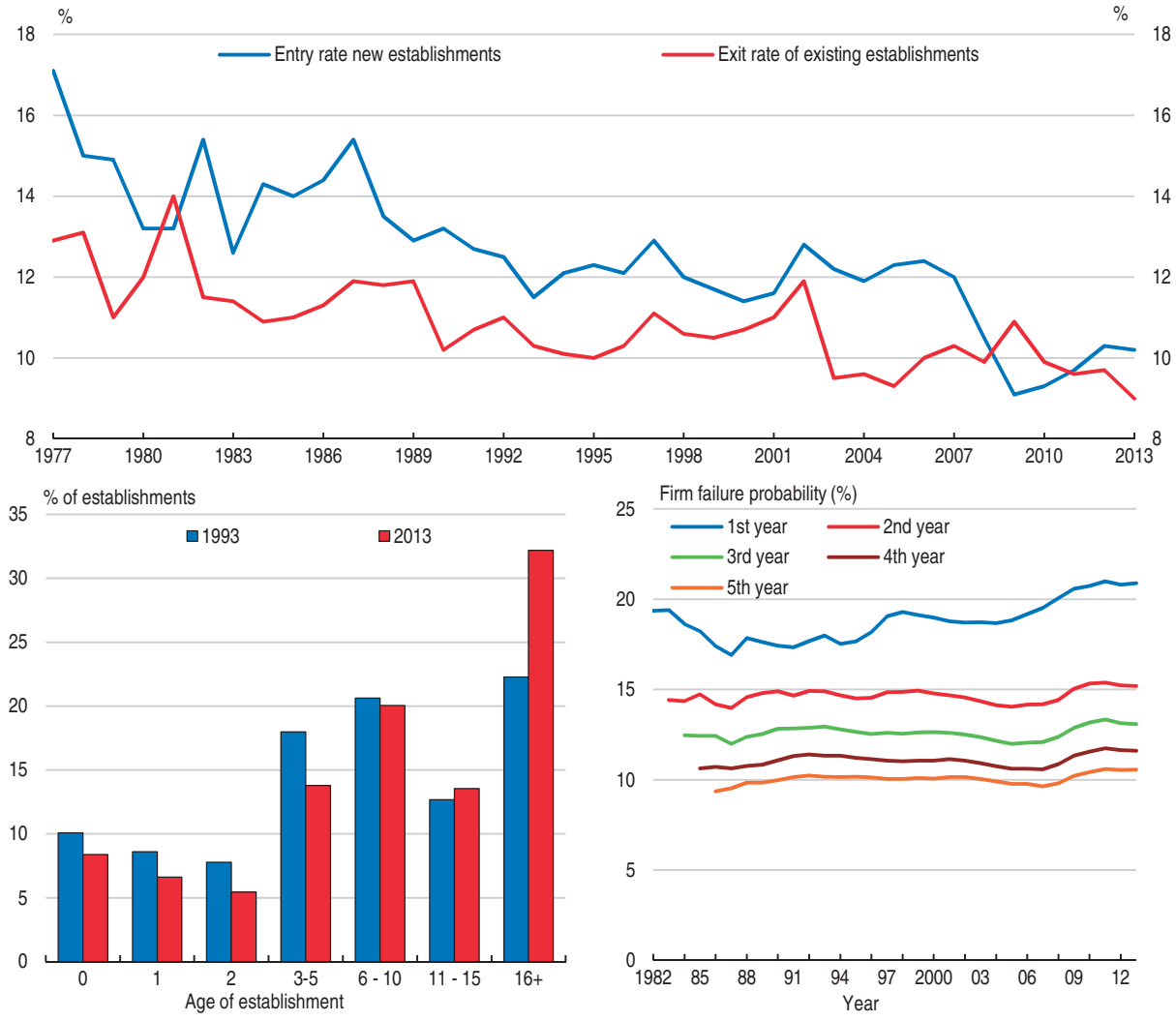
Business dynamism and technological diffusion

Numerous indicators show that the US business sector is becoming less dynamic: Entry rates by new establishments have been slowing, incumbents are exiting less frequently, the typical establishment is becoming older, and failure rates for start-ups are trending upward (Figure 1.10). Moreover, these signs of waning dynamism are broad-based across industries, geographic areas and firm sizes (Hathaway and Litan, 2014). Evidence also suggests that inputs are not flowing as fluidly as in the past to the firms and industries where they would be most valuable, thereby inhibiting allocational efficiency. As mentioned earlier, firm-level studies show that available measures of productivity vary widely across firms within narrowly defined industries (Syverson, 2004; Foster *et al.* 2016b) and that this dispersion may be widening (Decker *et al.*, 2016).

Waning business dynamism may also be contributing to widening income inequality and diminished intergenerational income mobility (Aghion *et al.*, 2015). In addition to showing that some firms systematically pay higher wages than others, the firm-level evidence cited earlier by Song *et al.* (2015) also shows that cross-firm variations in wages explain nearly all of the widening of labour income inequality in recent decades. These developments suggest that the economic forces that translate technological innovations at the firm level to overall gains in wellbeing may not be functioning as well as in the past.

The slowdown of business dynamism is also closely linked with signs that new firms are becoming less prevalent, and that productive young firms are becoming less of an impetus for creative destruction than before. Previous research demonstrates that young firms play a key role in promoting allocative efficiency, by adopting new technologies, expanding rapidly, and thereby placing competitive pressures on incumbents. This disruptive influence helps boost overall productivity growth, in part by driving out less productive firms (for example, Haltiwanger *et al.*, 2013). Decker *et al.* (2015) show that the overall decline in entry rates for new firms has been accompanied by signs that, over the past decade or so, fast-growing young firms are not pushing the pace of economic growth as before.

Figure 1.10. **The business sector is gradually becoming less dynamic**



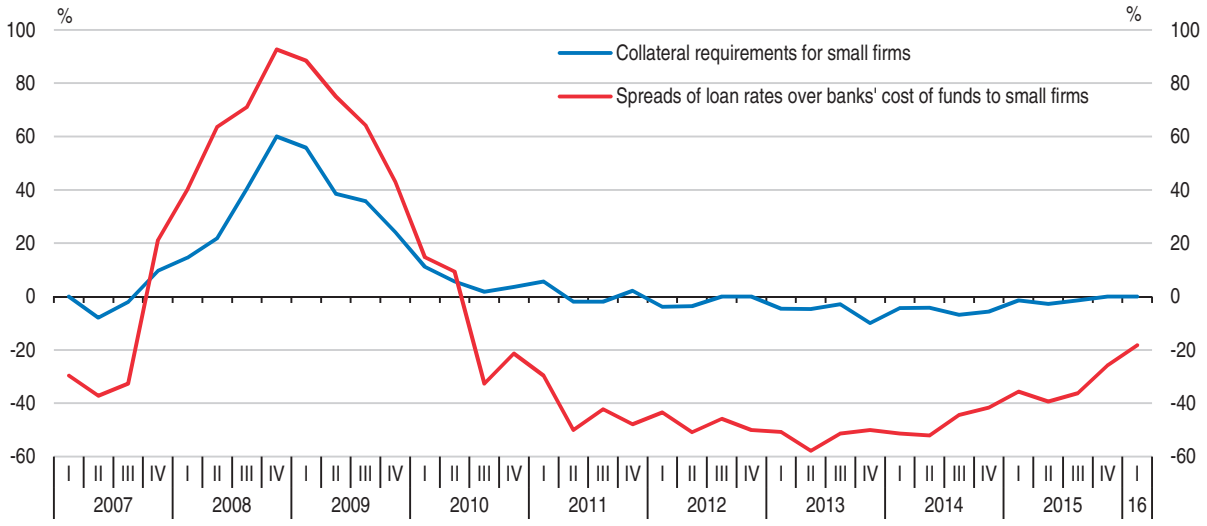
Note: The establishment entry and exit rates are the number of new and closed establishments as a percentage of total establishments, respectively. The failure rate is number of failures divided by average number of firms in the current and preceding year. The data shown for failure rates are five-year moving averages.
Source: OECD calculations using Business Dynamics Survey, Census Bureau.

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To be sure, business dynamism – and especially start-ups – may have been restrained to some extent by lingering aftereffects of financial crisis that are likely fading as the recovery advances. In the years following the crisis, entry rates fell below exit rates in many markets, intensifying market concentration and thereby dampening competitive pressure on incumbents. Weak aggregate demand conditions no doubt discouraged new firms from entering some markets, the collapse of home equity erased collateral that could otherwise have been tapped by entrepreneurs, while income inequality likely hindered the ability of some would-be entrepreneurs to accumulate savings. Transitory constraints on funding availability also likely played an important role, as tighter credit conditions hit small firms especially hard due to their limited collateral (Figure 1.11). Failures and consolidation in the banking industry disrupted lending relationships with small businesses, which can play an important role in overcoming problems with imperfect information.

Figure 1.11. **Increases in small business collateral requirements during the crisis have not been reversed**

Net percentage of domestic banks tightening collateral requirements or reducing spreads



Source: Federal Reserve Senior Loan Officers Survey.

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Some of this post-crisis tightening of financial conditions can also be attributed to post-crisis measures intended to address shortcomings in prudential and macro-prudential policy, which could potentially leave a permanent negative imprint on credit availability and business dynamism. Time will tell whether policymakers need to recalibrate these measures as the trade-offs between financial stability and funding availability become more apparent. The financial industry continues to develop new forms of intermediation that may entail less risk for the banking system (such as crowdsourcing and FinTech). Although these new funding models could help satisfy funding needs for new businesses, it remains to be seen whether innovations can entirely fill shortfalls in traditional bank lending.

Secular influences are likely contributing to the longer-term declines in business dynamism as well. Some of these influences may be beyond the direct influence of policy, such as demographic forces that are gradually shifting a greater share of the population into older age ranges that tend to be associated with slower rates of business formation (Liang and Lazear, 2014). There are also signs that an increasing share of industries are impacting by technologies that accentuate scale economies and "winner-take-all" effects, thereby contributing to market concentration. For example, larger retail firms (such as Walmart) can gain enduring economies of scale advantages over potential entrants by establishing large supply networks and by using their leverage over suppliers to help narrow overall mark-ups for their products. Outcomes in the high tech sector also frequently suggest that network externality effects can push a single firm (such as Facebook) to a dominant position.

However, policy settings may have traction on some secular influences. At the federal government level, policymakers might reconsider laws that govern competition policy, as merger and acquisition activity is showing signs of blunting market forces in some industries. This is particularly apparent in the high-tech industry, where deep-pocketed incumbents have acquired promising young firms – such as the recent acquisition by

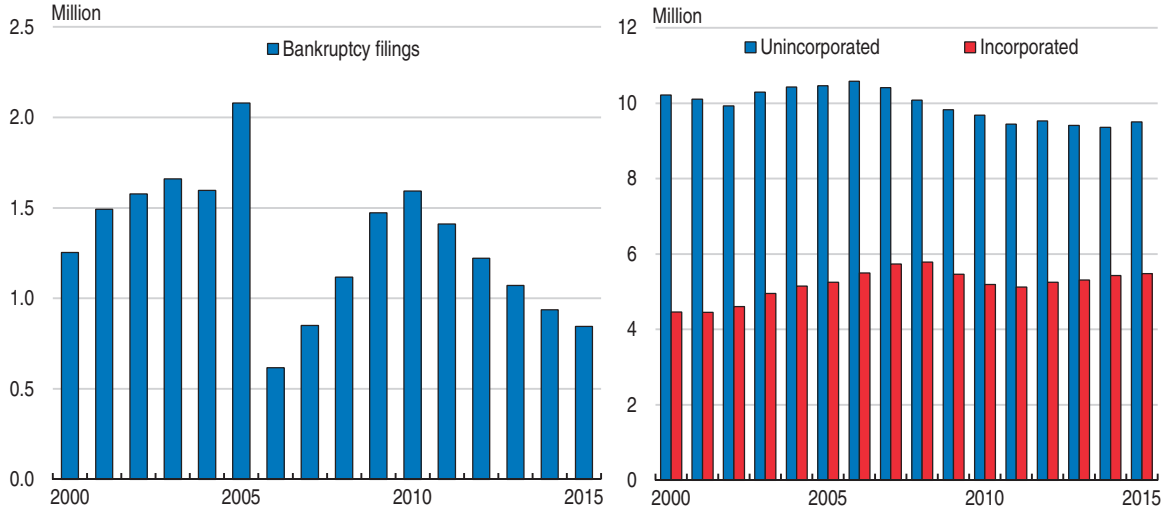
Facebook of WhatsApp. While such acquisitions need not blunt incentives for market entry, they tend to side-line the strong-performing young firms that play a key role in pushing market innovation and challenging incumbents.

In addition, reforms to the personal bankruptcy code in 2005 made it more difficult for entrepreneurs with "high incomes" to declare Chapter 7 bankruptcy, and put limits on the how quickly an entrepreneur could re-enter bankruptcy proceedings. Although failed entrepreneurs can still opt for Chapter 11 bankruptcy, this route is more onerous because it requires the filer to set out a repayment schedule, thereby heightening risks that entrepreneurs would be saddled with debt repayment obligations if they were to fail. Indirect evidence suggests that this change may have raised the implicit costs of starting a business (Figure 1.12), prompting a noticeable overall decline in personal bankruptcy filings prior to the financial crisis, and encouraging a shift in ownership from sole proprietorships and partnerships toward the more costly option of incorporation (Paik, 2013). States that have offered exemptions for the new Chapter 7 rules have done comparatively better than other States in generating firm creation (Rohlin and Ross, 2016), suggesting that more onerous personal bankruptcy rules have inhibited firm creation. However, the repercussions of stricter bankruptcy laws for firm creation are complex, as some research suggests that stronger creditor protections might also increase credit availability for some borrowers (Cerqueiro *et al.*, 2016; Gropp *et al.*, 1997).

Policy-driven distortions from state and local regulations may also be obstructing the fluidity of resources across firms and industries. In particular, occupational licensing requirements that vary across States have become more pervasive in recent decades, perhaps contributing to the decline in inter-state migration documented by Molloy *et al.* (2014) and others. Such licensing has grown considerably in past decades (Kleiner and Krueger, 2013), with recent estimates from the household survey suggesting that about 25% of employed persons in 2015 were either licensed, certified, or both. Although this growth

Figure 1.12. **Bankruptcy reforms in 2005 reduced filings and increased the likelihood of incorporation**

Filings and impact on incorporation



Note: Incorporation and non-incorporation are measured as the number of self-employed workers with each designation.
Source: United States Courts, BLS CPS.

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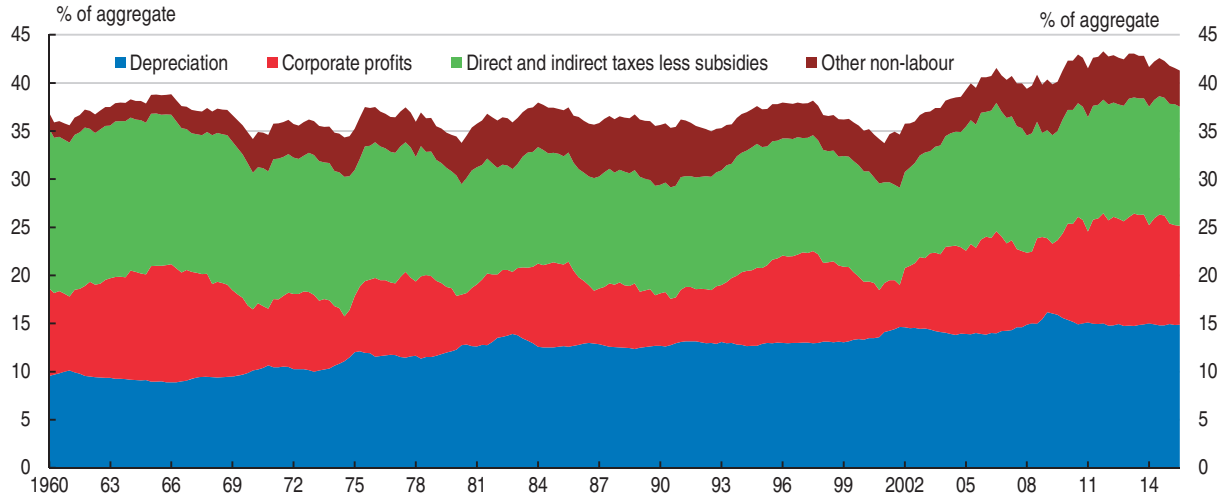
has been driven, to some extent, by shifts in the composition of economic activity towards sectors where the overall public interest in licensing is very compelling (such as healthcare), there are signs that licensing differences across jurisdictions are restricting labour flows and distorting wages in some occupations. Evidence suggests that people in licensed occupations are less likely to move across state lines (CEA, 2015), and that wage premia increase over time in jurisdictions and occupations where licensing requirements are introduced (Han and Kleiner, 2015).

Indicators and anecdotal evidence also suggest that restrictions placed by local zoning may also be inhibiting allocative efficiency (Furman, 2015). In highly productive areas, zoning constraints can artificially restrict housing supply and thereby raise the cost of living and driving lower-skilled persons from these areas (Ganong and Shoag, 2015). Restricting low-skill workers from these markets can lead to skill mismatches that diminish allocative efficiency, dampen overall productivity growth, and help lock in income inequality across geographic areas.

The role of market power

There are many indications that market power may be increasing, on balance. The recent divergence between labour and non-labour compensation – reflected in the rising income share of non-labour compensation in many sectors (Figure 1.13) – may be a symptom of gains in overall market power, as is the fact that profits by domestic corporations have risen to an unusually high proportion of GDP (Figure 1.14). The widening distribution of market incomes may also be consistent with rising market power. However, evidence from these aggregate measures is not conclusive, as a host of compositional shifts and other influences are also affecting the labour share (Elsby *et al*, 2013; Rognlie, 2015). In addition, though profits by US corporations are hovering near record levels in relation to GDP, much of this increase has been driven by net profit remittances from abroad.

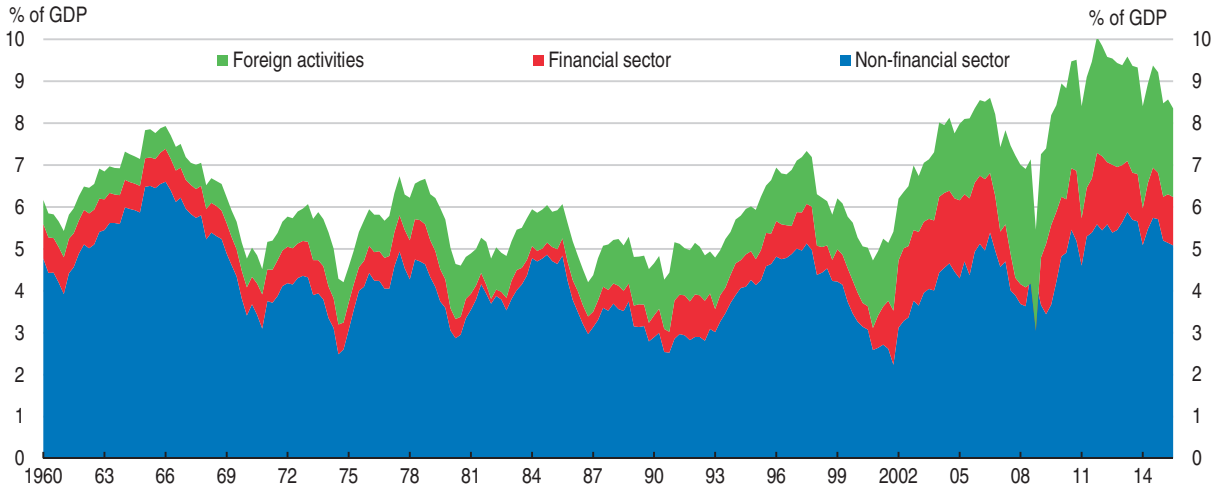
Figure 1.13. **The share of non-labour compensation in aggregate income has risen**



Note: Share of non-financial corporate business income.
Source: BEA.

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Figure 1.14. **Foreign activities have helped boost profits by domestic corporations to record highs**

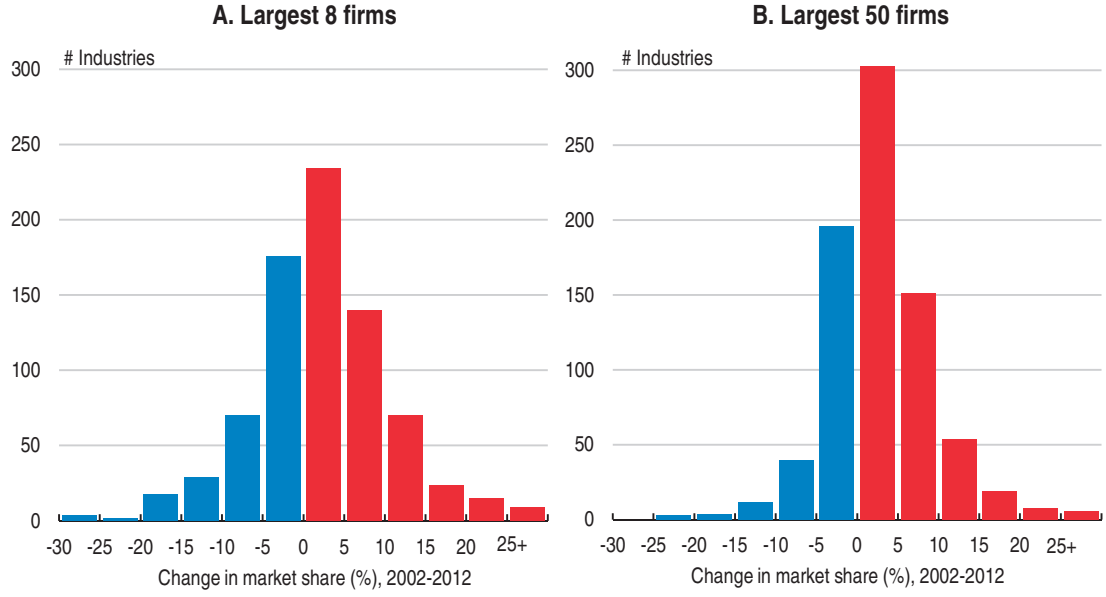


Source: BEA.

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Some evidence does suggest that market power may be increasing at the industry level, on balance. Various measures of market shares show that most markets have become more concentrated since the early 2000s (Figure 1.15). This concentration process was already underway prior to the financial crisis, and gained momentum in its aftermath in the face of attrition by smaller firms and diminished market entry. This concentration has coincided with signs of diminished competitive pressures in many markets.

Figure 1.15. **Markets have become more concentrated, on balance**



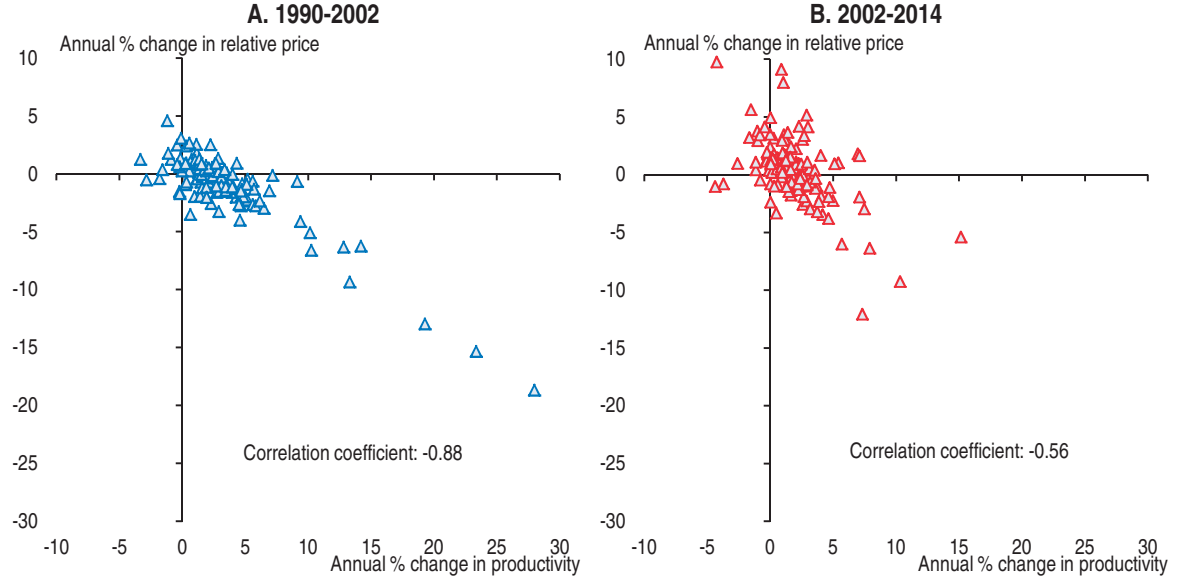
Note: Data are for the 719 six-digit NAICS industries that are consistently defined from 2002 to 2012.
Source: OECD calculations using data from the quinquennial Economic Census.

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Historically, productivity and relative prices have exhibited a tight inverse relationship across industries, as the initial jump in price margins following a productivity gain attract additional competition and boost relative supply. This negative correlation is an important means through which the benefits from productivity gains are disseminated broadly, as falling relative prices and freed up resources contribute to enhanced household purchasing power and well-being. Recently, the strong inverse relationship between relative prices and productivity at the industry level has become substantially looser (Figure 1.16), and, moreover, a much larger proportion of industries are seemingly able to sustain simultaneous increases in relative prices and productivity. These developments suggests that firms in many industries have greater scope to sustain higher mark-ups following productivity gains, consistent with diminished competitive pressures. Box 2.3 takes a more formal look at the empirical link between mark-ups and market concentration at the industry level.

Increasing market shares likely owe to a number of influences. Consolidation may be consistent with market forces seeking out more efficient production processes in some industries where technology exhibits increasing returns to scale. The multi-decadal slowing of business dynamism (discussed earlier) has likely diminished competitive pressures somewhat, especially as credit conditions tightened in the aftermath of the financial crisis. Market consolidation may also be consistent with anticompetitive behaviour. Even with cyclical fluctuations, merger and acquisition activity has been elevated for over 25 years (Figure 1.17), and has been especially prevalent in a number of industries – such as retail, telecommunications, and pharmaceuticals – where consolidation is especially evident. Antitrust authorities at the Department of Justice and the Federal Trade Commission (FTC) have actively used the judicial system to combat anticompetitive behaviour, but they must choose targets carefully as the burden of proof for such cases has been interpreted more stringently by the courts (even though

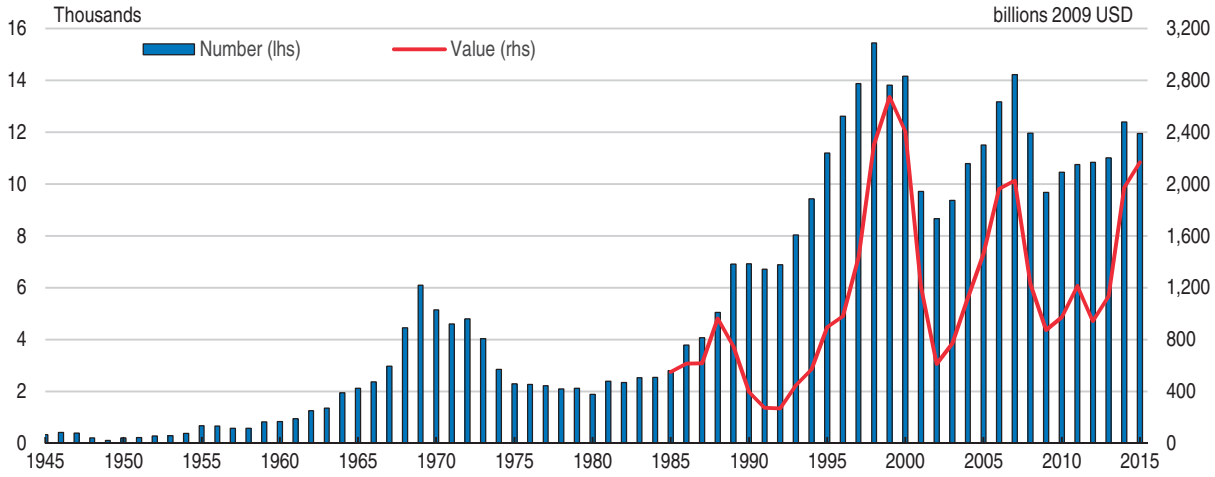
Figure 1.16. **The link between an industry's productivity and its relative price has loosened**



Note: Productivity is calculated as real gross value added per hour for industries at the four-digit NAICS level.
Source: OECD calculations using annual industry-level estimates from the BLS.

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Figure 1.17. **Merger and acquisition activity has been elevated over the past two decades**



Source: Institute for Mergers, Acquisitions and Alliances.

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competition laws have not changed). Even so, recent actions seem to have paid substantial dividends in terms of lowering margins and intensifying competitive forces, such as measures that effectively blocked proposed mergers of T-Mobile with other mobile phone carriers (AT&T in 2011 and Sprint in 2014). The FTC has also been actively rooting out other anticompetitive behaviour, such as "pay-for-delay" agreements in which pharmaceutical companies offer patent settlements that pay producers of generics not to market lower-cost alternatives. Although continued vigilance is appropriate, legislative measures may be warranted to either broaden the scope of existing antitrust laws or to clarify their interpretation.

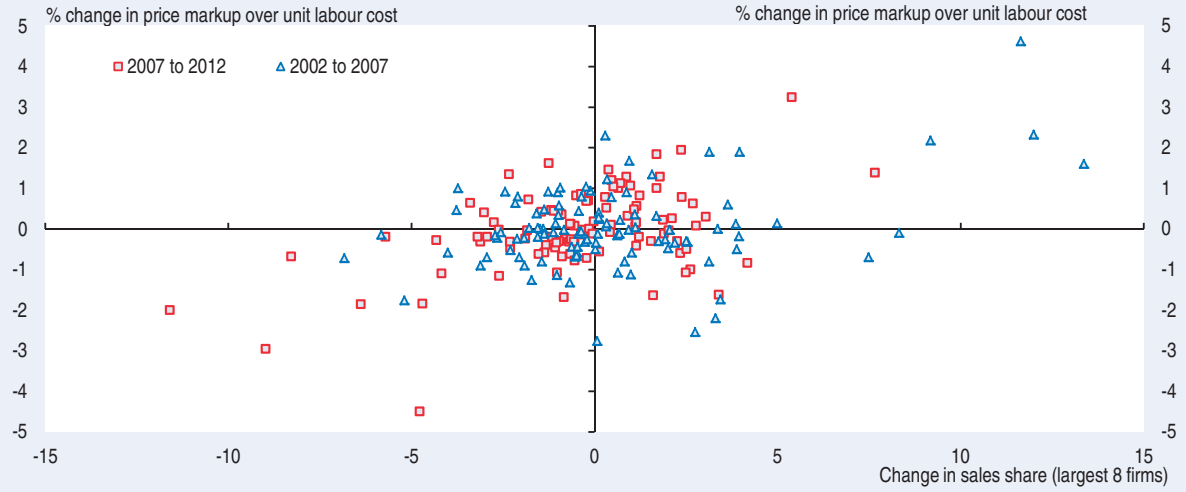
Box 1.3. **Is intensifying market concentration contributing to higher mark-ups?**

This box investigates the empirical relationship between mark-ups and concentration using available data at the detailed (six-digit NAICS) industry level. In practise, market shares in a given industry could be a misleading proxy for market power, as the competitive environment in a given industry likely also depends on a host of other characteristics such as the elasticity of demand, the intensity of import competition, the prevalence of increasing returns to scale, the number of firms contesting local markets, and the nature of strategic interaction.

To estimate whether there has been an empirical relationship between the two measures, annual industry-level data on market shares from the quinquennial Economic Census in 2002, 2007 and 2012 are paired with corresponding annual estimates from the Bureau of Labor Statistics of the mark-up of prices over unit labour costs (a proxy for the mark-up over marginal costs) for detailed (six-digit NAICS level) industries. Since industry definitions in the NAICS evolve somewhat over time, market shares are only used for industries whose definitions were unchanged in the available census years and for which mark-up estimates are available from the BLS. Measures of the market share are available for the largest 4, 8, 20 and 50 firms in each industry. Figure 1.18 shows a scatterplot of the change in market share of the 8 largest firms and the change in mark-ups for 105 industries from 2002 to 2007 and from 2007 to 2012, after removing industry fixed effects. A positive association between the two measures is visually apparent, and is broadly similar to that using the other market share measures.

Box 1.3. **Is intensifying market concentration contributing to higher mark-ups?** *(cont.)*

Figure 1.18. **Price mark-ups and market concentration at the industry level**



Note: Data for 105 six-digit NAICS industries that are consistently defined from 2002 to 2012 and that can be paired industry-level productivity estimates. Industry fixed effects have been removed. Mark-up is industry price level divided by unit labour cost.
Source: OECD calculations using annual industry-level estimates from the BLS and market shares from the quinquennial Economic Census.

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This positive association is confirmed by results shown in Table 1.2, which shows estimated panel regressions that project the annual rate of change in the mark-up from 2002 to 2007 and from 2007 to 2012 on the average annual change in each available measure of the market share. These regressions control for both industry and period fixed effects. All specifications show a highly significant and economically meaningful positive association between changes in an industry's market concentration and its mark-up. The estimated responsiveness of the mark-up to a one percentage point increase in the market share ranges from 1.1% to 1.7%, depending on the measure. Not surprisingly, estimated year effects (not shown) suggest that the financial crisis and its aftermath placed downward pressure on industry mark-ups notwithstanding any effects associated with market concentration; excluding this effect does not materially alter the coefficients shown.

Table 1.2. **Estimated Effects of Market Consolidation on the Mark-up**

Market Share Measure	Estimated Coefficient	Standard Error	R2 (within)
Largest 4 firms	1.14	0.30	0.25
Largest 8 firms	1.44	0.33	0.32
Largest 20 firms	1.59	0.41	0.29
Largest 50 firms	1.63	0.45	0.24
Observations	210		
Industries (six-digit)	105		

Source: Regressions control for fixed industry and period effects. Standard errors are robust for industry clusters.

Box 1.3. **Is intensifying market concentration contributing to higher mark-ups?** *(cont.)*

The overall effect of concentration on mark-ups from these panel regressions can be decomposed to provide further insight into how increases in market share are affecting households. The percentage change in the mark-up of industry i can be expressed as contributions from the percentage changes in its relative price, its real wage, its output, and its labour hours:

$$\Delta ln\left(p_{i,t}/ulc_{i,t}\right) = \Delta \ln\left(p_{i,t}/p_{A,t}\right) - \Delta \ln\left(w_{i,t}/p_{A,t}\right) + \Delta \ln\left(y_{i,t}\right) - \Delta \ln\left(h_{i,t}\right),$$

where $p_{A,t}$ is the overall price deflator for non-farm business output. Hence, the effect of a change in market share can be decomposed into separate effects from each of these components. Table 1.3 shows results of separate panel regressions for each of these components, where each regression includes controls for industry and period fixed effects. (By construction, the overall effect on the mark-up in Table 1.2 is the sum of these relative price and output effects, less the sum of these effects on real wages and hours.) These regressions indicate that mark-ups have a large and statistically robust effect on output, but that the effects on relative prices, real wages, and hours are smaller in magnitude and cannot be distinguished from zero at standard levels of statistical significance. Although the point estimates show that intensifying market concentration in a given industry was associated with productivity gains that lowered real unit labour costs, these efficiency gains do not appear to have passed through to households in the form of lower relative product prices or higher real wages.

Table 1.3. **Decomposition of the Estimated Mark-up Effect**

Market Share Measure	Contribution to effect of market share on the industry mark-up from:			
	Relative Price	Real Wage	Output	Hours
Largest 4 firms	0.27 (0.22)	-0.14 (0.30)	1.02 (0.23)	0.29 (0.40)
Largest 8 firms	0.52 (0.41)	-0.34 (0.30)	0.94 (0.32)	0.36 (0.52)
Largest 20 firms	0.51 (0.45)	-0.37 (0.27)	1.08 (0.37)	0.36 (0.48)
Largest 50 firms	0.43 (0.35)	-0.29 (0.21)	1.04 (0.41)	0.13 (0.36)
Observations	210			
Industries (six-digit)	105			

Source: Regressions control for fixed industry and period effects. Standard errors (shown in parenthesis) are robust for industry clusters.

Innovative management practises and productivity

Management practises can be thought of as a type of intangible capital that is ultimately reflected in both productivity and profitability, as superior practises induce better outcomes out of a given set of productive resources. A growing body of firm level evidence suggests that managerial practises can have considerable effects. For example, results in Bloom and Van Reenen (2007) show that cross-firm variations in management quality can explain between roughly a quarter and a half of cross-firm variations in productivity and profitability. Consistent with the link between business dynamism and competition discussed earlier, their study documents a meaningful positive association between a firm's management quality and the intensity of competition in its product market. Evidence suggests that management quality is also negatively associated with whether a firm's upper management was chosen strictly by hereditary succession – perhaps hinting at additional linkages between productivity and income inequality. Studies that track corporate asset returns when top executives switch employers suggest

that at least some of this intangible is associated with the skills of specific managers (Bertrand and Schoar, 2003).

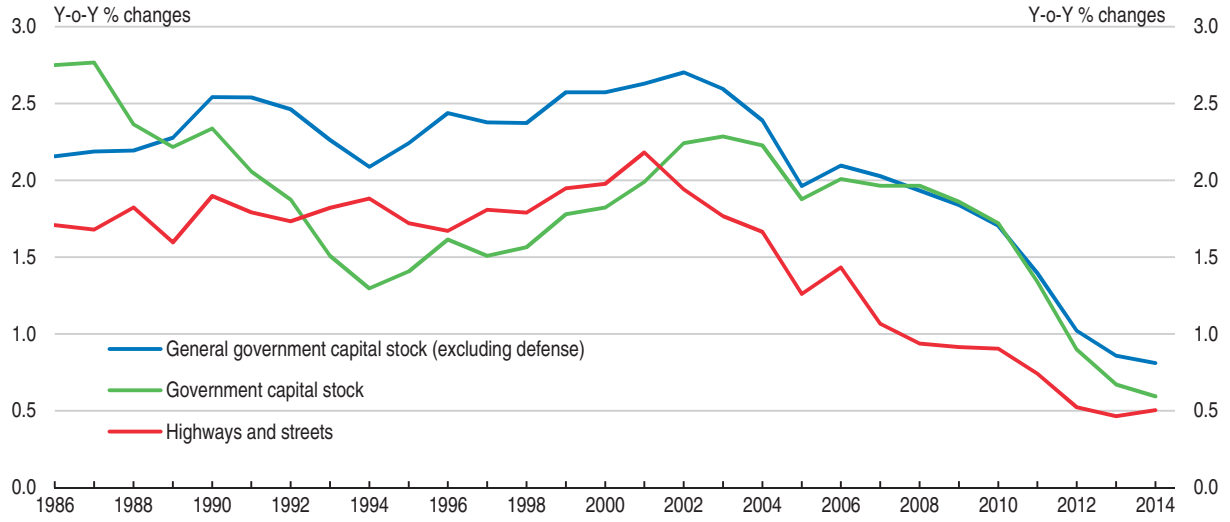
One specific way that management can boost firm performance is by adopting non-traditional human resource practises that might help attract a more productive mix of workers and boost labour effort. Numerous studies have documented links between productivity and non-standard human resource practices such as work teams (Boning *et al.*, 2007) incentive pay mechanisms (Lazear, 2000), and high performance work practices (OECD, 2016). Another set of human resource innovations that are of particular interest to policymakers are family friendly work policies and flexible working conditions – such as paid parental leave, child care assistance, and flexible work hours. Studies about the effect of such initiatives on productivity are hard to come by, but some evidence does suggests that such programmes can pay off in terms of reduced labour turnover costs, diminished absences, and retaining productive employees (Thévenon and Solaz, 2013; Bassanini and Venn, 2008; Bloom *et al.*, 2011a). Such advantages have prompted many employers to introduce flexible work initiatives on their own accord: For instance, survey data from the National Study of Employers (Matos and Galinsky, 2014) show that about 43% of employers allow employees to opt for a compressed workweek versus 38% in 2008, while 67% of employers now allow employees to occasionally work from home compared to 50% in 2008.

Even so, the business case for more costly flexible working conditions (such as employer-funded childcare and paid leave) is not always straightforward. For instance, 58% of employers provided some form of replacement pay for maternity leave in 2014, but, of these, only 9% provided full replacement, while the remainder offer only partial pay replacement either directly or indirectly in the form of temporary disability insurance benefits (Matos and Galinsky, 2014). Given the positive social externalities associated with labour market attachment and having workers allocate themselves to activities where they provide the highest social value, there is a compelling case that additional policy support could encourage workers with children to select jobs where they are most productive, thereby improving labour allocation and overall productivity. Existing US government programmes do provide some limited support, such as the *Family and Medical Leave Act* (FMLA), passed in 1993, which ensures that workers in large companies can take up to 12 weeks of protected unpaid leave. Many employers also sponsor *Dependent Care Assistance Plans* that allow workers to pay child care expenses using pre-tax dollars. If the authorities did opt for more comprehensive support measures, they might build on the successful experiences with Paid Leave programmes at the state level (California, New Jersey, Rhode Island and soon New York) by developing a national social insurance programme that provides paid leave for all workers funded through a small increase in the payroll tax.

Harnessing complementarities between business productivity and public infrastructure

Public infrastructure has not kept pace with the economy. The rate of increase in the government capital stock (Figure 1.19) has slowed to a crawl over the past decade, and countless anecdotes point to deterioration in public infrastructure. The World Economic Forum's *Global Competitiveness Report* ranks US infrastructure below most of its G-7 peers, including France, Germany, Japan, and Great Britain. The gradual deterioration of US infrastructure contributes to declines in overall wellbeing in a wide variety of respects, including longer commutes, congestion, shortages of suitable water, poorer school resources, and vulnerability to natural disasters (to name just a few). Since many types of

Figure 1.19. **Public capital formation has slowed to a crawl**



Source: OECD calculations using BEA capital stock estimates.

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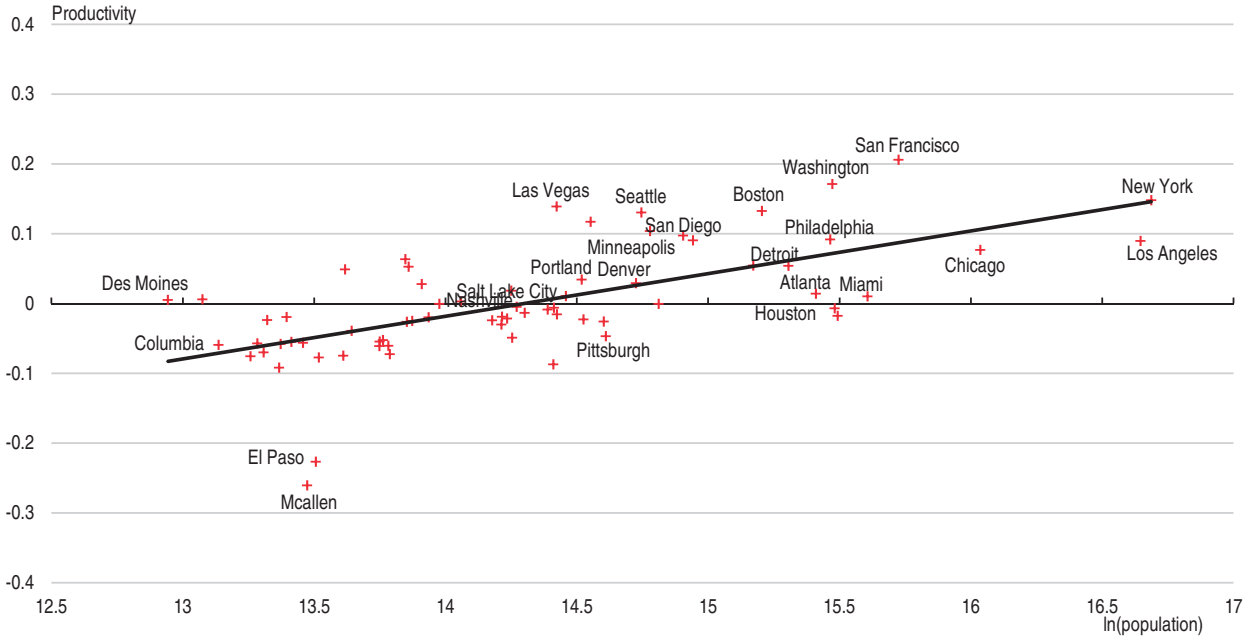
infrastructure complement productive activity, this deterioration also weighs on productivity. For example, the CEA estimates suggest that negative externalities from congestions are costing American families and businesses USD 120 billion per year, 30 billion of which can be traced to truck congestion. These costs are felt in a number of dimensions, including sub-par performance of public utilities (including communications), increased costliness of transporting goods and materials, and substantial losses in household time.

Potential side effects of deficiencies in public infrastructure are particularly evident when comparing differences in productivity across large metropolitan areas. Most economic growth is metropolitan, with some areas performing very well and other cities and rural areas lagging behind. Although broader economic forces have played a role in these variations, self-inflicted problems stemming from ill-adapted governance structures also seem to be holding parts of the country back. In a recent study that analysed the agglomeration benefits of urban areas in the United States and four other OECD countries, Ahrend *et al.* (2014a) find that productivity is positively associated with city size in all five countries, and the strength of the relationship is strongest for the US. Estimates suggest that a doubling in a US metropolitan area's population, holding other factors constant, generally increases its productivity by about 6.3%. However, several metropolitan areas in the US fall short of this benchmark given their population size (Figure 1.20). Some metropolitan areas that appear to perform relatively poorly, such as Atlanta, Miami and Houston, have in common that they are less compact and accessible. The set of metropolitan areas that are more productive includes some of the more accessible and connected cities, such as San Francisco, Washington and Boston (Hamidi and Ewing, 2014; Owen and Levinson, 2014).

Larger-sized urban agglomerations are usually associated with higher productivity. Since state and local governments make most decisions regarding infrastructure provision, the positive effects of agglomeration may go unrealised if infrastructure provision is not well coordinated across local jurisdictions. Generally, the capacity for co-ordinated

Figure 1.20. **Agglomeration benefits and city size**

2007



Note: Productivity is defined as the wage premium associated with each metropolitan area after accounting for characteristics of its workforce. This premium is estimated in separate regressions that control for the individual characteristics of the workforce in order to account for sorting of individuals to metropolitan areas.
Source: Ahrend *et al.*

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planning across such jurisdictions is relatively under-developed and is subject to co-ordination failures. Empirical evidence suggests that these problems mitigate the benefits of agglomeration. Ahrend *et al.* (2014a) show that a city with twice the number of municipalities within its functional boundaries is on average about 3.4% less productive, holding other factors equal. However, negative effects from fragmentation on productivity is cut by almost half when a governance body exists at the metropolitan level (Ahrend *et al.*, 2014b). This suggests that metropolitan governance arrangements that reduce fragmentation have the potential to boost overall productivity by helping to better harness the gains from agglomeration.

The lack of coordination across jurisdictions is manifested, in part, in urban transport systems that are not integrated across jurisdictions (OECD, 2012). Empirical work that has looked at functional urban areas within the OECD suggests that improvements in city governance can help boost private productivity (Ahrend *et al.* 2014a), both by improving allocative efficiency and by helping to harness externalities. The federal government has some scope to help solve such coordination problems using various incentives such as formula-based funding and competitive grants, as well as through programmes that provide information to State and local authorities. Some federal programmes have been directed to encourage co-ordination at the metropolitan level regarding infrastructure that contributes to wider social and environmental goals, but the outlays to date are relatively small. The *Transport Infrastructure Finance and Innovation Act* (TIFIA) of 1988, which is a major source of transportation funding for larger population areas, requires the existence of a Metropolitan Planning Organization as a precondition for funding. Another existing

initiative, the *Moving Ahead for Progress in the 21st Century Act* (MAP-21), develops performance metrics to evaluate the impact of government investment. Building on these evaluations will be an important means to prioritise future investment and will help the federal government better leverage its future efforts to overcome co-ordination difficulties.

Revenue constraints at the state and local level may contribute to shortfalls in public infrastructure as well. Federal government funding is one way to help alleviate these constraints. The TIFIA programme provides the federal government with additional tools (such as loan guarantees and standby lines of credit) that can help steer State and local governments toward financing sources other than municipal bonds that are better suited to a project's risk profile. TIFIA has also helped develop the market for public-private partnerships (P3s) that can overcome funding constraints at the State and local level. The federal government has further supported P3s by establishing a Build America Transport Investment Center to support States in their implementation.

Funding constraints are particularly acute for surface transport infrastructure. Existing transportation networks are deteriorating and not keeping pace with demand. The main federal funding source for road transport, the Highway Trust Fund, has required repeated injections from general revenue, as the nominal (per-gallon) gasoline tax intended to fund road transport infrastructure has not been adjusted since 1993. After a series of last-minute fixes, the *Fixing America's Surface Transportation Act* in December 2015 secured funding for the trust fund from general revenues until 2020. In the absence of rate increases, revenues from the gasoline tax will need to be supplemented on an ongoing basis from general revenues, as a combination of tightening in Corporate Average Fuel Economy Standards, the spread of electric cars, and hydrogen fuel cells have acted to increase fuel efficiency and diminish gasoline usage (Geddes, 2015). The increasing shortfall of the Federal Highway Trust Fund and uncertainty over future federal transportation infrastructure funding arrangements have triggered state initiatives to raise funding, including via higher state gasoline taxes and toll roads.

Surface transportation infrastructure funding could be put on a sounder footing by making better use of user fees to address negative externalities more effectively. For example, heavy trucks account for just 4% of road users but represent almost one-quarter of the road maintenance costs, mainly because they cause greater damage to the road pavement (Austin, 2015). Boosting user fees for heavy trucks would help users internalise these externalities. Electronic distance-based charges are one way of implementing cost-based user fees. These have become more widespread in Europe following their introduction in Austria, Germany and Switzerland in the early 2000s. In Germany, the mileage fee is based on the truck's axle weight and emission class. In addition, user tolls in urban areas help reduce congestion while providing funding to support needed improvements and expansion – which is becoming increasingly costly in built-up areas. While such fees would likely have direct adverse distributional consequences, less regressive approaches are available. For example, high-occupancy or express toll lanes can be used to help mitigate congestion without necessarily imposing fees on low-income drivers. This approach was pioneered in California in the mid-1990s and has been adopted more widely by other States. The UK provides another notable alternative, as London has introduced a congestion charge for vehicles entering the city centre, combined with a boost in investment on mass transit to broaden travel alternatives.

Recommendations for unleashing productivity growth

Key recommendations

- Boost investment in, and maintenance of infrastructure; in particular, promote mass transit. Use federal programmes to encourage co-ordination across State and local jurisdictions.
- Make R&D tax credits refundable for new firms.
- Ensure personal bankruptcy procedures do not undermine incentives for entrepreneurship.
- Continue to speed up patenting decisions in line with targets without compromising patent quality.
- Adapt antitrust policy to new trends in digitalisation, financial innovation and globalisation. Strengthen compliance with merger remedies.
- Continue to strengthen pro-competitive policies, including in telecoms.
- Use federal funding to remove unnecessary occupational licensing requirements and make others more easily portable across States.

Other recommendations

- Consider additional policy measures to encourage workers with children to remain in jobs that best utilise their skills, such as by boosting support for maternal leave and childcare or by establishing a national social insurance programme.
- Consider implementing and expanding user fees for transportation infrastructure designed to address externalities, such as mileage-based charges for heavy trucks and express toll lanes in congested areas.
- Consider shifting government supports for business R&D spending toward direct public funding of basic research and science, which likely has a higher social return.

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Chapter 2

Realising and expanding opportunities

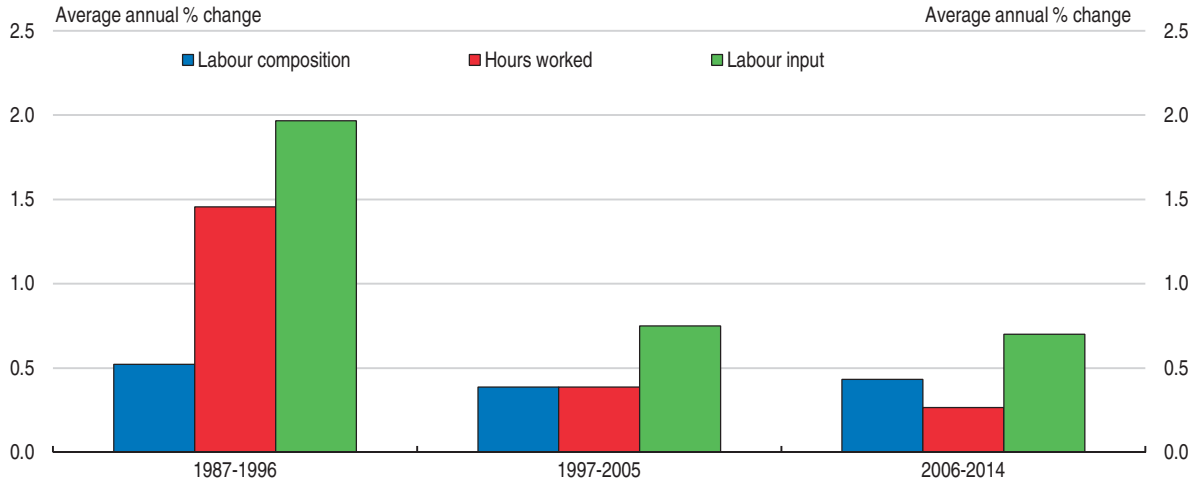
Measures that enable the acquisition of new skills and reduce mismatches between the demand and supply of existing skills can boost US economic growth and make its benefits more inclusive. Although overall schooling performance has generally improved over time, many disadvantaged students still fail to achieve basic numeracy and literacy. Many parents are denied the opportunity to make their most productive contribution to the economy due to a lack of paid parental leave provisions, publicly-funded childcare and early-childhood education. Discrimination against individuals on the basis of race and gender or those with criminal records can also create barriers to opportunity. Some geographic areas of the country are performing very well, while others are being held back by governance structures that are ill-equipped to deal with economic, social, and environmental challenges. Getting the right policies and infrastructure in place in a timely manner can expand opportunity in these areas.

Actions that enable skill acquisition and eliminate obstacles to employment will foster opportunities for individuals to participate more fully in the economy. Although increased educational attainment can improve employment opportunities, policy should also emphasise the acquisition of portable, adaptable skills and dismantle barriers that prevent workers from obtaining jobs where their skills are most highly valued. Barriers such as needless variations in occupational licensing across jurisdictions and discrimination against people on the basis of race, gender or criminal records inhibit the efficient matching of employee skills with employer needs in the labour market. Opportunities can also be hindered by ineffective governance structures across cities and states that fail to use local resources in a way that nurtures development and enables residents to fulfil their potential.

Measures to support the acquisition of skills needed in the modern economy and to remove barriers to job matching could help support growth both by boosting labour market participation and by unleashing productivity gains. Available estimates show that aggregate US labour input, which includes inputs to production from both human capital services and hours worked, has been decelerating since the late 1990s (Figure 2.1). Although the quality of the workforce has continued to improve, this trend has been insufficient to offset an ongoing slowdown in overall hours worked (Figure 2.1). Working against the drag on overall economic growth from the deceleration in labour input would require some combination of raising labour supply (such as by boosting labour market participation and reducing underemployment) or accelerating labour quality (such as by enabling investments in skills and improving attainment in compulsory education).

This chapter discusses ways that policymakers might help boost skills, raise employment and reduce job mismatch, with the topic selection largely guided by areas

Figure 2.1. **Labour quality is not rising fast enough to offset decelerating hours worked**



Note: Changes in overall labour input equal changes in both hours worked and a labour composition effect that accounts for overall changes in workers' experience, education and gender.
Source: BLS (Bureau of Labor Statistics) multifactor productivity database.

StatLink http://dx.doi.org/10.1787/888933380890

where the United States appears to be lagging behind the OECD's best performers. Addressing these issues would not only help enlarge the overall economic pie, but would have wider effects on well-being and economic inclusiveness. The chapter first looks at education and retraining before turning to barriers to employment from discrimination and other sources. The chapter then focuses on geographical dimensions by examining how improvements in infrastructure and governance might help enable opportunity.

Skills and opportunity

Raising attainment in compulsory education

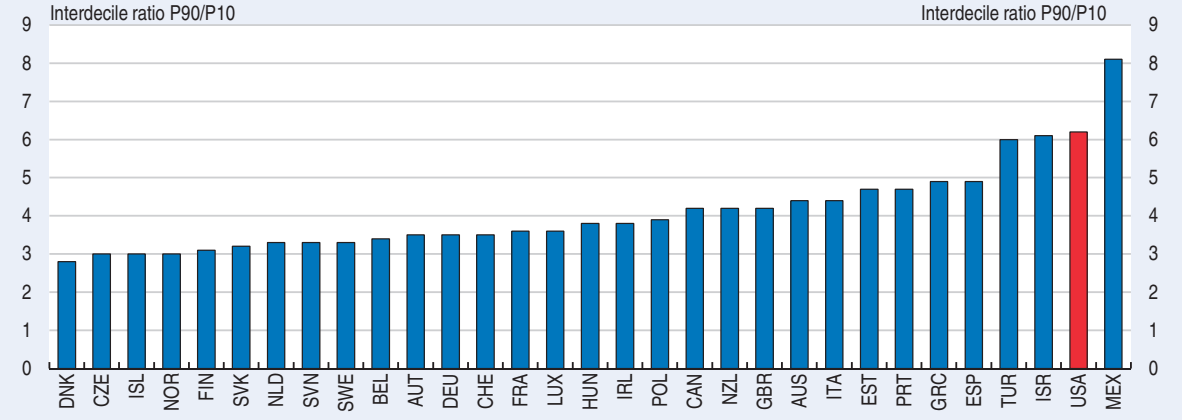
Skills acquired through education and training help enable students to succeed. Good schools help equip students with the necessary skills to find well-remunerated employment and to ascend the income scale. For this reason, using policy tools to improve educational attainment is an important means promote opportunity, reduce income inequality and facilitate inter-generational income mobility. Income mobility across generations is especially low in the United States in comparison with many other OECD countries (Box 2.1),

Box 2.1. **Inter-generation income mobility**

Disparities in disposable income are especially wide in the United States by OECD standards. US estimates of two widely-used measures of income inequality, the Gini coefficient and the decile ratio (which measures disparities between the top and bottom deciles of the income distribution) are amongst the highest in the OECD (Figure 2.2). Both of these measures have also been rising over time. This growing and significant income and wealth inequality would be less worrisome if it were paired with high income mobility (i.e. if people could improve their relative position through innovation and entrepreneurship rather than purely through inheritance or rent-seeking behaviour). However, differences in earnings between rich and poor families are not only wide, but persistent across generations – especially in comparison with other OECD countries (Corak, 2013; Figure 2.3 left panel). Much of this persistence is explained by relative stability of family income across generations in the upper half of the income distribution (Mitnik *et al.*, 2015). Indeed, the probability of a child in a low-income family ascending the income scale in adulthood to become a high-income household is small: Only 7.5% of children from families in the lowest income quintile ascend to the highest income quintile, and fewer than 20% even ascend to the upper 40% of the income distribution (Chetty *et al.*, 2014). In Canada, 13.5% of children born in low-income families rise up the income ladder (Reeves, 2016)

Figure 2.2. **Income inequality is pronounced in the United States**

Disposable household income, 2012 or latest available year



Source: OECD Income Distribution and Poverty dataset.

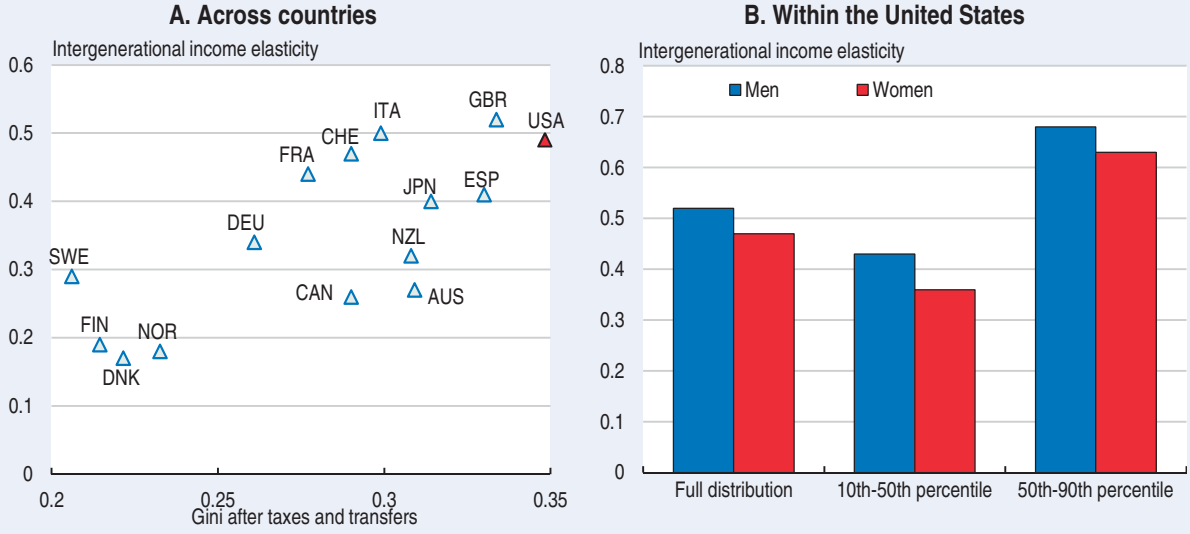
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Box 2.1. **Inter-generation income mobility** *(cont.)*

Previous *Economic Surveys* have discussed growing income inequality in the United States, recommending, *inter alia*, extending the earned income tax credit and raising the national minimum wage. Addressing disparities in the quality of K-12 education would also complement these approaches.

Figure 2.3. **Intergenerational income mobility is comparatively low**

Intergenerational earnings elasticity: estimates from various studies



1. The height of each bar measures the extent to which sons' earnings levels reflect those of their fathers. The estimates are the best point estimate of the intergenerational earnings elasticity resulting from an extensive meta-analysis carried out by Corak (2006) and supplemented with additional countries from d'Addio (2007). The choice of empirical estimates in this meta-analysis is motivated by the fact that they are based on studies that are similar in their estimation technique, sample and variable definitions. The higher the value, the greater is the persistence of earnings across generations, thus the lower is the intergenerational earnings mobility.

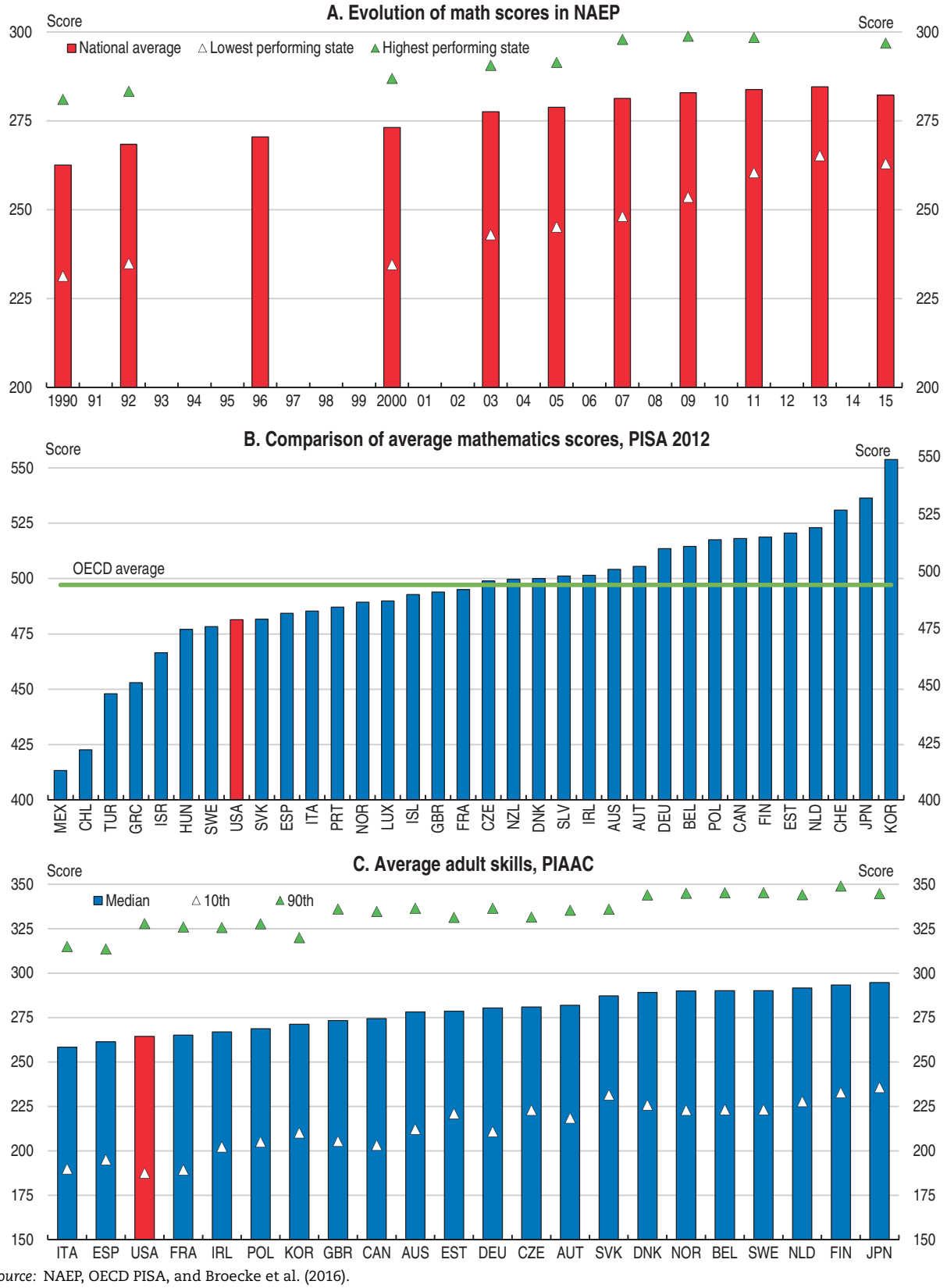
Source: D'Addio (2007) left panel, Minik et al (2015) right panel.

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and tends to be especially weak in areas with poor performing schools, higher poverty rates, wider inequality, and residential segregation by income and race (Chetty and Hendren, 2015). Differences in school quality across areas suggest that not all children are provided with the same opportunity to succeed, which contributes to widening income inequality.

National evidence does point to gradual improvements in overall student performance in compulsory education (K-12), at least until relatively recently. Enrolment and graduation rates have increased over time and the quality of schooling, as measured by the National Educational Assessment Program scores for mathematics and literacy, has been improving steadily (Figure 2.4, panel A). The poorest performing US states have been catching up, on average, over the past few decades, although wide geographical differences in performance remain (Figure 2.5). However, progress in overall educational attainment appears to have stalled of late. In comparison to other OECD countries, student attainment is around average as measured by PISA (Figure 2.4, panel B), while skills in the adult population, as measured by the OECD's Programme for the International Assessment of Adult Competencies (PIAAC), are relatively low on average and widely dispersed (Figure 2.4, Panel C).

Figure 2.4. **Education performance has improved though skills remain weak on average**

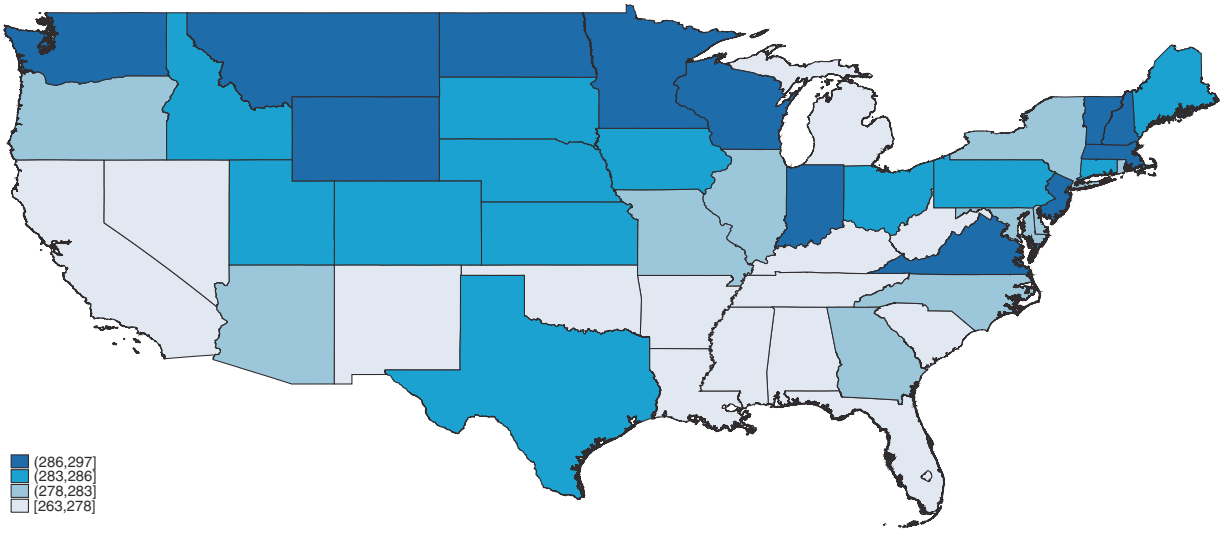


Source: NAEP, OECD PISA, and Broecke et al. (2016).

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Figure 2.5. **Educational performance is mixed across the US**

State average numeracy score for 8th grade students



Note: Darker-shaded States have a higher average Score. Map generated using publically available files from the National Weather Service.
Source: NAEP.

These performance benchmarks continue to show significant heterogeneity in attainment and skills across individuals. Importantly, many students still fail to achieve basic numeracy and literacy, particularly amongst students from disadvantaged backgrounds. For example, in standardised tests from 2015, 52% of black 8th grade students scored below "basic" for mathematics and 42% for reading, well above the national averages of 33% for mathematics and 29% of reading. Although still inadequate, these scores represent considerable improvement from the early 1990s, when the proportion of such students failing to achieve "basic" numeracy or literacy was closer to four-fifths. Lower scores on these tests are clearly related to poorer employment outcomes: Individuals lacking basic skills are much more likely to be unemployed and are more susceptible to job losses – especially around economic downturns. Against this background, there appears to be high economic returns to improving attainment in compulsory K-12 education – especially at the low end of the attainment scale.

The *Every Students Succeed Act* of 2015 replaced the nationwide K-12 standards in *No Child Left Behind*, and gives States control in setting their own educational objectives. By setting ambitious targets, States can help ensure that their students are well prepared for the job market and can help narrow geographic differences in attainment. An important aspect of the new law is increased State accountability for educational outcomes, including an intervention requirement for underperforming schools. However, there is as yet no evidence of the impact of the Act and States will need to resist the temptation to revert to less demanding standards.

The pronounced heterogeneity in US educational attainment may partly reflect substantial differences in resources across schools. For example, instructional spending per student in Arizona ($4 100 per student) is less than half the level in Vermont ($11 000) (Schanzenbach *et al.*, 2016). While boosting school funding has not always yielded commensurate improvements in performance (Hanushek, 1997), targeted interventions in under-performing schools may help offset difficulties faced by particular institutions. For

example, teacher shortages appear to be especially severe in less-advantaged schools in the United States (OECD, 2015b). Resource disparities across school areas can often arise because school funding schemes are largely based on local property tax collections and on state-level revenues from income and sales taxes, and thereby tend to allocate more funding to higher-income areas. While State and federal transfers are already targeted to reduce these disparities, effectively tackling underperformance will likely require further levelling of the playing field in the most disadvantaged areas.

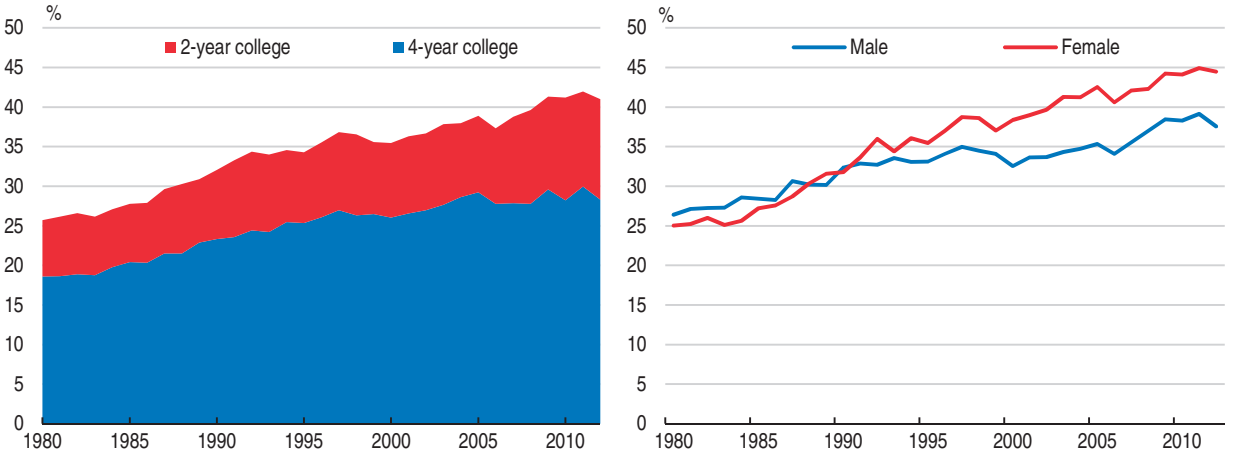
Improving access to higher education and post-secondary training

Evidence suggests that the educational system may not be turning out enough workers with the skills needed to flourish in the modern economy. To be sure, the U.S. has many of the finest institutions of higher education in the world, which helps satisfy the demand for highly skilled graduates from firms at the global productivity frontier. However, research (Hulten and Ramey, 2015) and survey evidence suggest that these outflows are insufficient to keep up with demand for certain skills: For example, the Dice-DFH measure of mean vacancy duration increased by 10 days to 26 working days between 2009 and early 2016, with open positions in health services taking almost 50 working days to fill. By contrast, open positions in construction took 13 working days to fill.

The United States has made significant progress in expanding student enrolment in post-secondary programmes, which has risen quite strongly since 1980 (Figure 2.6). This has contributed to an increase in the share of the population gaining college degrees. Expansion has also led to progress in broadening access to post-secondary education, with enrolment rates of Black and African American and Hispanic and Latino students rising rapidly over the past decade and with an increasing share of women entering higher education. Women also appear to graduate at higher rates than men, perhaps, in part, because men's weaker performance in compulsory education leaves them less adequately prepared to continue into higher education (Hulten and Ramey, 2015). Although the

Figure 2.6. **Enrolment in higher education has risen**

Percentage of 18- to 24-year-olds enrolled in degree-granting institutions



Source: Digest of Education Statistics.

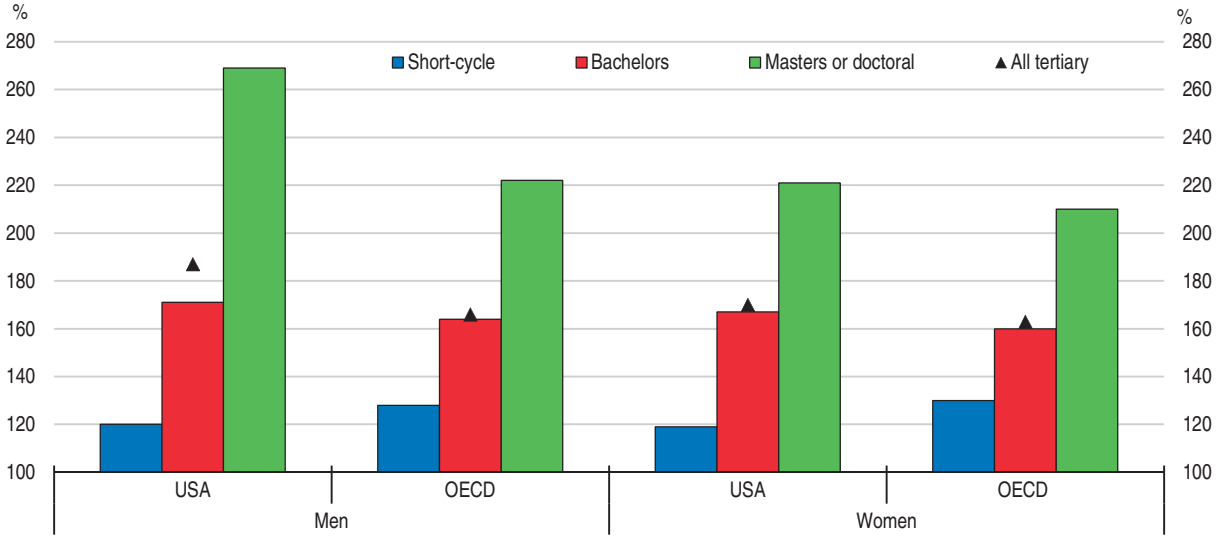
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majority of students attend traditional 4-year colleges, over time the share attending 2-year often vocationally-orientated colleges has also grown.

The individual returns to investment in education have been substantial on average, both in terms of raising earnings and employment and in reducing the risk of unemployment. The skill premium, calculated as the ratio of median hourly earnings for college graduates to workers who only completed high school, rose rapidly in the 1980s and has remained roughly stable at around 90% (James, 2012). In 2015, the employment rate for persons who had only completed high school was 54%, compared to an employment rate of 72% for persons with Bachelor's degrees and unemployment rates amongst college graduates (2.6%) are around three percentage points lower than those with only high school education. In comparison with other OECD countries, the wage premium has been larger for males, particularly for those obtaining Masters or Doctoral degrees (Figure 2.7). Women with college education appear to be considerably underrepresented amongst those earning more than twice the median income (OECD, 2015b). In addition, the wage premium for vocational programmes is generally less than elsewhere in the OECD and less likely to boost relative earnings. For instance, around 50% of workers who completed vocation programmes (but not higher degrees) earn above median earnings, whereas the OECD proportion is 10 percentage points higher.

Higher education has been an important driver of inter-generational income mobility: Children from lower-income families have been much more likely to move out of the bottom income quintile if they have completed a higher education degree (80%) than otherwise (55%) (Isaacs, Sawhill and Haskins, 2008). The rising supply of college graduates from all backgrounds would, other things being equal, reduce the college wage premium by helping to satisfy strong demand for skills, thereby helping to narrow some measures of income inequality. However, colleges vary substantially in quality and many students receive a smaller wage premium on completion of their studies, with students from disadvantaged backgrounds in particular appearing to obtain lower returns (Hershbein, 2016).

Figure 2.7. **Wage premia for college are varied**



Note: Relative earnings compared to completion of upper secondary school.
Source: OECD, Education at a Glance 2015.

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The expansion of higher education enrolment has been accompanied by an expansion of student debt (Box 2.2). In part this has reflected increasing costs. Since the early 1980s, college fees have risen steadily, making college education increasingly expensive. Whereas the annual fees for a private non-profit college was equivalent to a quarter of median household disposable income in the early-1980s, these costs are now approaching 60%. Fees are smaller for public schools and 2-year colleges, but have been increasingly equally

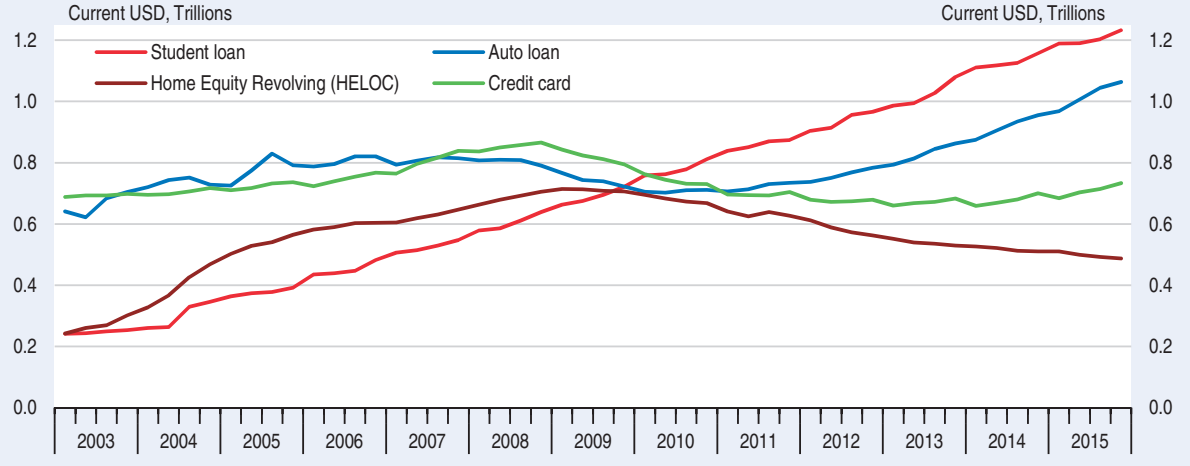
Box 2.2. **Student loans**

Student loan balances represent investments in education that enhance earnings power. Rising costs of college education combined with increased enrolment in degree-granting institutions has contributed to the total outstanding balance of student loans tripling to $1.2 trillion over the past decade (Figure 2.8). For the overwhelming majority of students the amounts borrowed remain relatively modest, with around 70% of undergraduates in the early 2000s borrowing $10 000 or less (Dynarski, 2016), while the lengthening tenor of loans has helped keep debt repayment as a share of income relatively constant (Akers and Chingos, 2014).

Some students nonetheless get into financial difficulties, often when they have relatively little borrowing, which can arise when students drop out. Default rates are more likely for students who attended private for-profit schools or community colleges (Looney and Yannelis, 2015). As debt discharge is rare, students – or their families who can borrow on the student's behalf – can be burdened for a considerable time. Since 2009, income-contingent repayment options have been available and terms were eased in 2014 to lower the maximum repayment to 10% of discretionary income and to reduce the forgiveness time to 20 years. Take-up for these types of loans was initially modest, but now accounts for one in five borrowers with federally managed debt. The administration has made some important steps recently by reporting the debt and employment outcomes of previous cohorts of students at individual institutions, thereby boosting accountability. Furthermore, the *Gainful Employment* rule acts to limit the ability of students to obtain federal loans when they are enrolled on-all programmes at for profit institutions and on non-degree programmes at public and non-profit institutions that are unable to demonstrate that their entering students will earn enough after graduation to justify tuition costs.

Figure 2.8. **Student loans have become a much more important element of household debt**

Household debt balances



Source: Federal Reserve Bank of New York, Consumer Credit Panel/Equifax.

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rapidly. In some cases, students accumulate debt without seeing commensurate benefits, often because a significant share of college students fail to complete their studies. This is especially true for those enrolled in private for-profit education institutions, which have expanded their footprint dramatically over the past twenty years. While completion rates at private for-profit institutions were always lower than other types of educational institutions, they have recently dropped below one-third after having been around one-half at the end of the 1990s.

Against this background, whilst college education can be an important driver for income mobility, the outcomes are mixed and the cost have increased, which can leave some students burdened with debt repayments without enjoying much boost to earnings capacity. In this respect, the recent actions by the authorities to ensure that students are more aware of the possible consequences by providing information on college performance are welcomed.

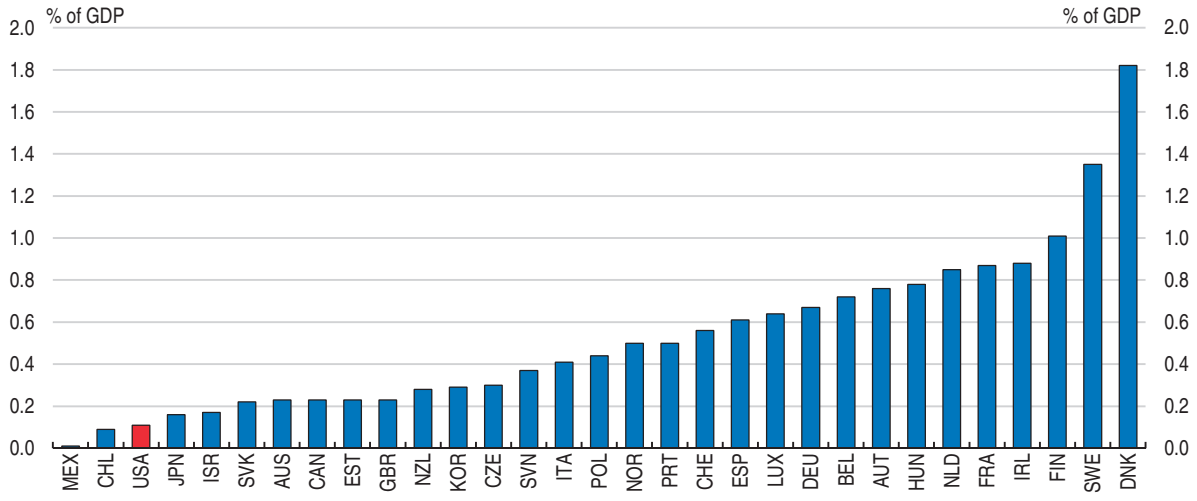
Given the tendency for skill demands to shift over time, another important way to enable workers is to provide opportunities to retrain or enhance existing training. For example, technological advances and foreign trade contribute to a process of job displacement, reducing demand for some types or jobs while creating opportunities in other areas. The hollowing out of demand for many repetitive and programmable jobs, displacing many workers from middle income occupations, creates a need to acquire new skills in order to regain employment or limit wage losses between the old and new jobs. Such displacement is likely to continue, as the McKinsey Global Institute (2015) has estimated that around 10% of middle-skill jobs could be lost over the next decade. Although these job losses are painful for those that experience them, these developments also help pave the way for high-paying jobs in information technology and other fields and also provide broader economic benefits such as lower prices for many consumer goods. With the pace of such displacements arguably hastening, public workforce policy will have to be stepped up to help displaced workers find new opportunities and minimise the personal cost of job losses, forestall hysteresis-type effects, and work against widening income inequality.

There are a wide variety of programmes which target people who have either lost their jobs or are threatened by job loss from opening up international competition (including trade adjustment assistance). The *Workforce Innovation and Opportunity Act* of 2014 put greater emphasis on one-stop centres achieving results for jobseekers and businesses, providing career services, education and training and other support services. The Administration has also been working to expand apprenticeships and encouraging businesses to increase training of their workforces ("Upskill initiative"), including in technology fields ("TechHire").

In comparison with other OECD countries, overall resources devoted to active labour market policies in the U.S. are meagre (Figure 2.9). Except for trade-related cases, displaced workers would usually be eligible for very little training. Furthermore, programmes tend to have stringent eligibility criteria and uncertain funding streams. Many jobseekers would benefit from professional training counselling and recent innovations in the training field, including worker pre-assessment, stackable training and skill credentials as well as strong employer involvement and a link to the local job market (OECD, 2016b). Evaluations of active labour market programmes in other countries suggest that the effects usually only become apparent two to three years after programme completion and more so if the

Figure 2.9. **Spending on active labour market programmes is comparatively low**

Per cent of GDP, 2013 or latest available year



Source: OECD Public expenditure and participant stocks on labour market programmes dataset.

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programmes emphasise human capital accumulation, such as training programmes rather than job search assistance (Box 2.3). The target group is also important, with evidence from international studies suggesting that the programmes are more effective for women and the long-term unemployed (Card *et al.*, 2015). In the United States, Barnow and Smith (2015) note that abandoning labour programmes with poor evaluation results is politically difficult, which risks locking in scarce funds in ineffectual programmes. Given this shortcoming, they argue for designing programs with greater emphasis of making it easier for to policymakers to scale up budgets for successful programmes and to scale down ineffectual ones. Experimentation using such a process could help policymakers identify the most effective active labour market programmes and expand them.

Box 2.3. **Activation policies in the OECD**

Activation policies – the combination of income and re-employment support to job-seekers – if well designed and implemented at the national and local level, promote matching of job opportunities with job-seekers. There is no one-size-fits-all approach to promoting an effective activation strategy, which depends on the economic context, the institutional setting and the administrative capacity of the country. Experience from across the OED suggests that effective activation strategies typically incorporate the following elements (OECD, 2015a):

- People need to find useful support and motivation to search actively for work. This can take the form of developing tailored individual action plans (as in Sweden and Switzerland) and regularly monitoring ongoing job search efforts (as in Australia, Portugal and the United Kingdom).

Box 2.3. **Activation policies in the OECD** *(cont.)*

- Employability should be strengthened where a rapid return to work is unlikely. With resources scarce, the public employment service needs to concentrate resources where they will have the largest impact. A number of countries (such as Australia, Austria, Denmark and Germany) use profiling techniques to allocate jobseekers to different types of support. There are a number of ways to strengthen employability. Intensive counselling in Denmark and France appears to increase employment possibilities. Career guidance is also offered by a number of countries, which may lead to a set of training programmes being offered. Time-limited in-work benefits have been offered in Canada and a number of other countries to support low-income groups getting a foothold in employment.
- The set of available employment opportunities needs to be expanded. Public employment services need not passively register vacancies. In Australia, employment service providers will often actively promote hard-to-place jobseekers. In the United Kingdom, the employment service provides dedicated support for small businesses. There are cases of supporting placements as well as dedicated programmes to support young people (as programmes in Europe attempt to minimise scarring effects of prolonged weak labour force attachment), single mothers and the elderly.
- The institutions that implement active labour market policies need to be fit for the purpose. Evaluation of employment services and active labour market programmes are essential to ensuring spending is effective. Australia, Germany and Switzerland use performance measurement systems to monitor, with Germany using benchmarking against similar employment services offices. In the Netherlands, many employment services can be offered using e-services.

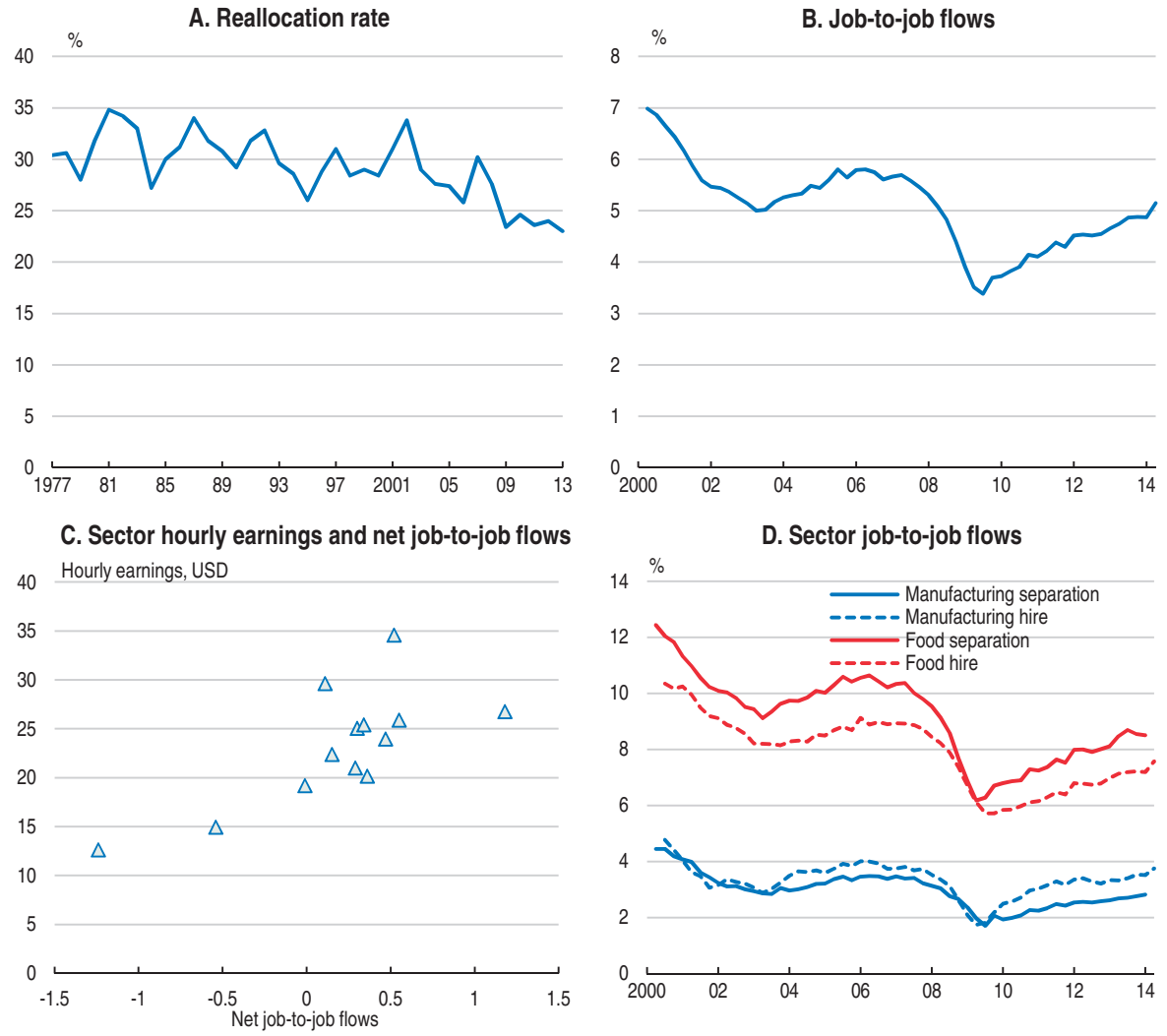
Barriers to opportunity

Reducing mismatches between the supply and demand of skills can serve as an important means to boosting individual opportunity. However, a number of influences appear to be compromising the economy's ability to direct skills toward the activities where they are most highly valued. Labour markets are becoming less fluid, and although employment opportunities are becoming more balanced over time, various influences still tilt the playing field against some groups – such as women, African-Americans, and those with criminal records. A growing portion of the working-age population is collecting disability insurance, a programme which presents barriers to participating in the labour market. While indicators suggest that barriers to matching are low in the United States in comparison with other OECD countries, some evidence suggests that well-targeted policies, such as reducing the costs of closing a business and reducing transaction costs for housing, to diminish those barriers could potentially raise US output by over 3% (Adalet McGowan and Andrews, 2015).

Barriers to labour market fluidity

Many indicators suggest that the fluidity of the US labour market is declining. The job reallocation rate (the sum of the job creation rate and job destruction rate) – has been trending down on balance for some time (Figure 2.10, Panel A), while job-to-job flows have also decreased on net since the early 2000s (Figure 2.10, Panel B). There is also a notable cyclical dimension to these declines (Haltiwanger *et al.*, 2014b). After the last two

Figure 2.10. **Labour market flows have diminished**



Note: The reallocation rate is the sum or job creation rate and job destruction rate minus the absolute net job creation rate. The job-to-job flows are the average of hires from employment and separations to employment as a share of total employment in the quarter.
Source: Census Bureau Business Dynamic Statistics and Job-to-Job Flow databases.

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recessions, Hyatt and Speltzer (2015) document declines in job-to-job flows and in rates of hiring, separation, job creation and job destruction that were not subsequently reversed in the following expansion.

One notable source of income mobility in the U.S. is the career ladder by which individuals transition from lower- to higher-paying jobs over their lifetime. The tendency of workers to move to new jobs with better conditions is evident in sector-level data, with job-to-job transitions on net moving from lower-paying jobs (such in the accommodation and food sectors) toward higher-paying jobs (such as in manufacturing) (Figure 2.10, Panel D). This pattern is reflected in the positive relationship between a sector's average wage and the difference between its rates of job-to-job entry and separations (Figure 2.10, Panel C). Job-to-job transitions such as these are therefore an important source of opportunity, which makes the downtrend in job-to-job flows particularly worrisome.

Evidence from Mukoyama (2015) suggests that a share of the recent slowdown in total factor productivity (up to 0.5% annual decline) can be traced to diminished allocative efficiency as workers are finding it harder to move to jobs that better match their skills.

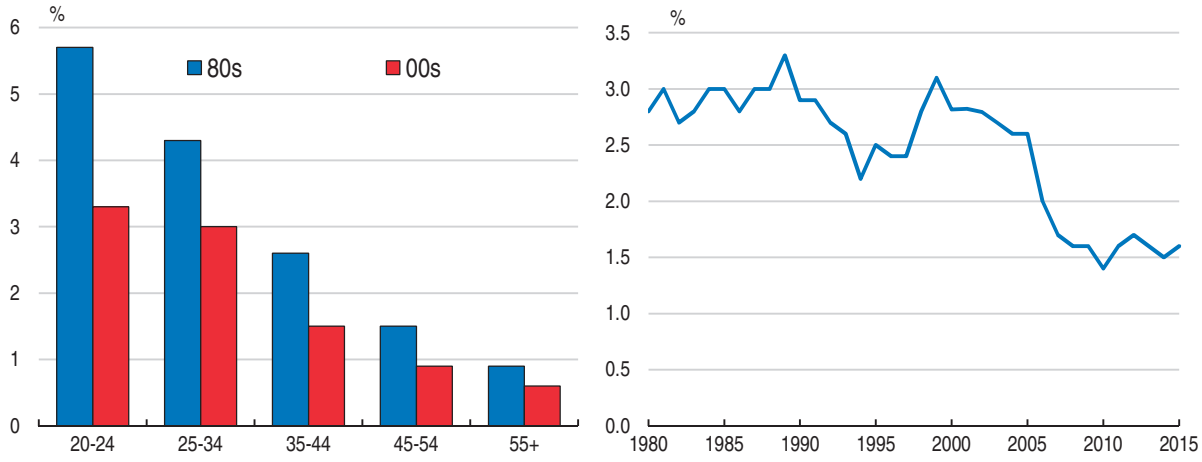
Diminishing labour market fluidity has been fed, in part, by declines in business dynamism. Business dynamism and labour market fluidity are closely related, so it is difficult to disentangle their distinct roles. However, it is well established that firm creation is an important driver of labour market churn. Historically, the distribution of employment growth across firms tends to be skewed by new firms enjoying especially rapid growth, but this is becoming less so over time as fewer young firms enter the market and blossom. Young firms are also a key source of labour market churn, often attracting workers from established firms during their initial years of existence (Haltiwanger *et al.*, 2014a). As such, factors holding back business dynamism (Chapter 1) are, in turn, reducing opportunities for workers to improve remuneration over their careers.

As with business dynamism, part of the reduction in labour market fluidity is also connected with population demographics. Worker mobility is lower with older workers (OECD, 2009). Older workers also tend to work for older firms, and some estimates suggest that the ageing of the workforce accounts for around 10% of the slowdown in employment by new firms between 2000 and 2012 (Goetz et al, 2015). Comparisons of migration rates across age groups also demonstrate that older people are much less likely to migrate (Figure 2.11, left panel), thereby contributing to less labour market churn with population ageing.

However, inter-state migration rates have also declined noticeably for younger groups, suggesting that diminishing migration it is not just a symptom of demographics. Molloy *et al.* (2014), argue that the potential wage gains from switching jobs have declined over time, thereby giving workers less incentive to move both across firms and spatially. In addition, as the share of employment in more cyclical sectors of the economy has decreased over time, variations in economic conditions across the United States have diminished, thereby

Figure 2.11. **Inter-state migration has been declining**

Interstate migration rates by age group and over time, per cent



Source: Census Bureau, Current Population Survey March Supplement and Molloy *et al.* (2014).

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weakening the pull towards migration. This diminished geographic variation is evident in state-level unemployment rates, which converged dramatically after the 1980s and have remained more tightly distributed since. Finally, improving communication technologies reduce the need for employees to work in the same location in at least some occupations, which can reduce the need to migrate.

Regulatory barriers may also be playing a role in diminished labour market fluidity as well. The prevalence of occupational licensing has grown considerably over the past decades, with some estimates suggesting that these licenses cover around one-quarter of the workforce (Kleiner and Krueger 2013). Licensing restrictions often create barriers to entry by requiring people to attend specific training programmes to obtain certification. Evidence suggests that professional qualifications are often not mutually recognised across states (Carpenter *et al.*, 2012), and unnecessary variations of this type are a particularly worrisome barrier to labour market fluidity. To be sure, there are instances where such variations are justified, such as requirements that construction contractors in earthquake-prone areas receive special certification. However, some evidence suggests that cross-jurisdictional variations in licensing reflect efforts to restrict entry, as state-specific wage premia tend to increase over time following the introduction of an occupational license (Han and Kleiner, 2016).

There is compelling evidence that geographic variations in licensing requirements impede labour market fluidity and reduce opportunity. Such variations impede job-to-job flows across states, as evidence shows that people in occupations with a higher prevalence of licensing are less likely to move across state lines but are no less likely to move within the state (CEA, 2015). This finding is consistent with broader evidence that inter-state job flows are declining even as job-to-job transitions become more prevalent within state (Molloy *et al.,* 2014). Idiosyncratic licensing requirements can also contribute to labour market mismatches for groups that are compelled to move regularly across state lines, such as spouses of military personnel (U.S. Department Treasury, U.S. Department of Defence, 2012). Measures to improve the portability of professional qualifications across jurisdictions – such as nationwide standards, mutual recognition of other states' standards, or regular reviews of existing licensing requirements – would help reduce barriers to competition and migration, thereby boosting opportunity and income mobility. The European Union has been grappling with similar issues concerning the free movement of professionals and in 2005 introduced the Mutual Recognition of Professional Qualifications Directive that promotes automatic recognition of professional experience across the EU. This directive has contributed to cross-country harmonisation of training for some occupations (Koumenta *et al.*, 2014). A lack of representative data on occupation licensing and labour market outcomes complicates research into the effects of harmonisation across the European Union. In the case of the United Kingdom, wider licensing coverage and more onerous barriers to entry are associated with a lower proportion of migrants in these occupations. There is some suggestive evidence that migrants from the rest of the EU are more likely to be in occupations subject to automatic recognition. However, these sectors also tend to be more open to migration from outside the EU.

The introduction of the *Affordable Care Act* has likely been a step in the right direction in terms of boosting labour market fluidity. There has been considerable progress in addressing the lack of health insurance coverage, which has helped reduce the high number of instances where people lacked access to adequate healthcare coverage that

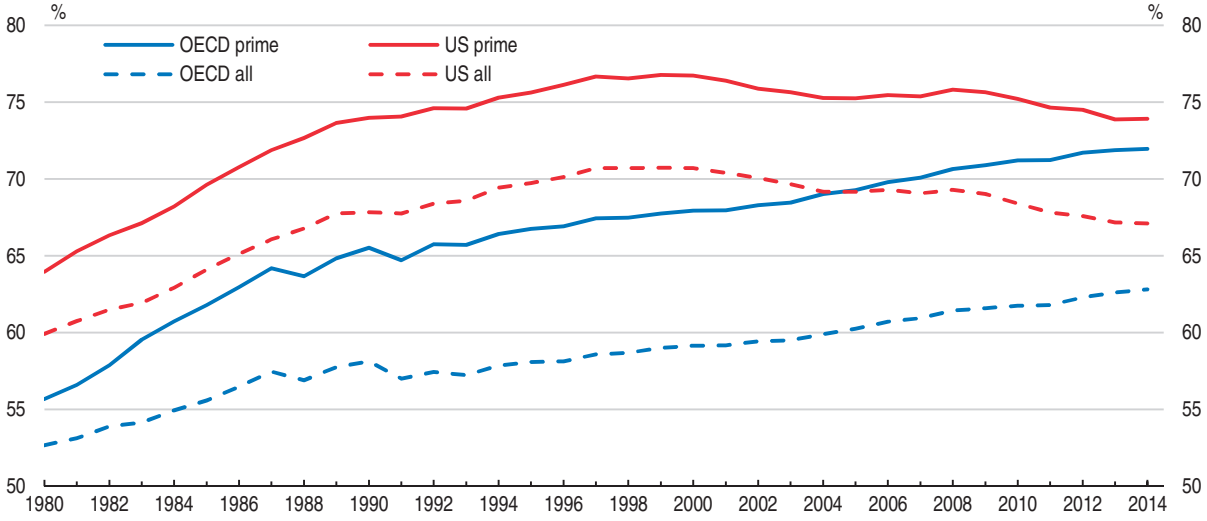
could enable them to participate in the job market or take more productive jobs. Among other things, the law helps address shortcomings with employer-provided healthcare coverage, which can create lock-in effects that discourage inter-firm mobility for fear of ending up without insurance altogether, which is a particularly severe concern for people with pre-existing health conditions. The introduction of health exchanges has also helped ease access to healthcare for would-be entrepreneurs, who previously would have relied on a spouse's employer-provided coverage (Blumberg *et al.*, 2013), purchased more expensive coverage in the individual market, or opted for no coverage.

Improving opportunities for women

US women have valuable skills to contribute to employers. Although women increasingly out-perform men throughout the stages of the education system (in both enrolment and attainment), the participation rate for prime-aged women has been edging downward after having plateaued in the early 1990s (Figure 2.12). While prime-age female labour force participation remains above the rising OECD average, it has fallen below rates observed in other high income countries, partly due to the higher prevalence of part-time work elsewhere (Blau and Kahn, 2013). The rise in female labour market participation leading up to this plateau contributed an important boost to household incomes and helped ease living conditions for families – especially those toward the bottom of the income distribution. Measures to boost female job market participation and level the playing field for women could potentially bring valuable skills back into the labour force and help reduce job mismatch.

Figure 2.12. **Gains in female labour force participation have petered out**

For all working age and prime age women, 25-54 years



Source: OECD Labour market statistics.

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Improving working conditions

Wider female labour market participation can likely be encouraged by improving working conditions and making it easier to balance work and family commitments. Part of the reason that prime-age labour market participation for U.S. women is relatively weak by international comparison is that other OECD countries have introduced more family

friendly policies (Blau and Kahn, 2103). While family friendly policies in these countries have led to some women working fewer hours than otherwise, a higher proportion of prime-age women participate in the labour market. Gender inequalities in workforce participation and pay often become more pronounced when women become mothers. While even childless women do more unpaid care and housework than men (OECD 2016c), the introduction of children makes it even harder for women to compete equally in the labour force. When mothers do engage in paid work, the "motherhood penalty" – in which mothers receive lower wages than men and childless women – remains persistent and strong, even when accounting for self-selection into motherhood (Budig and England, 2001; Gough and Noonan, 2013).

The United States remains the only OECD country that does not offer paid maternity leave on a national basis, and is one of nine OECD countries that does not have a paid leave entitlement reserved for fathers (Box 2.4). Furthermore, only about 60 per cent of American working parents are eligible for twelve weeks of unpaid employment protection around childbirth under the *Family and Medical Leave Act* (FMLA). In states that do offer paid leave,

Box 2.4. **Paid parental leave policies in the OECD and gender equality**

Paid parental leave policies have become widespread in the OECD. The United States is the only OECD country that does not offer a national paid maternity leave programme (although three States do), and is one of nine not offering paid parental leave. Instead, only about 60 per cent of workers in the United States are eligible for twelve weeks of employment-protected *unpaid* leave when a child is born. The experience across the OECD suggests that parental leave policies can support greater (prime-age) female labour force participation, by offering women an incentive to work before childbirth and ensuring that they will have a job after birth. Employers benefit too, as they might otherwise face the high costs of permanently replacing a worker. However, cross-national evidence suggests that prolonged leave entitlements (of two years or more) are associated with lower female employment rates, as a woman's long absence from the market can interrupt human capital formation and career progression. On average in the OECD paid parental leave appears to be associated with a somewhat higher gender wage gap (Thévenon and Solaz, 2013), though there is little evidence that wage penalties occurred in California following the introduction of paid leave.

Besides the direct labour market effects, parental leave helps women recover from pregnancy and childbirth. And indeed, mothers generally use much of their leave entitlements – almost all take maternity leave and often extend it by taking at least some parental leave. Parental leave, which is available to both parents, can also promote greater gender equality: fathers' leave-taking can help reduce employer discrimination against women if both parents are equally likely to take time off around childbirth, and having a father caregiving at home better enables mothers to return to work. Decisions made around childbirth about caregiving and paid work also tend to develop into long-term patterns, often with negative consequences for the initial leave-taker (OECD 2016b). The benefits are not only economic: fathers taking parental leave and actively participating in childcare activities are more likely to stay involved as the child grows up. The children appear to benefit with better cognitive, emotional and physical health outcomes, while the fathers are more likely to report greater life satisfaction. While men commonly take a few days of paternity leave right after the birth of a baby, few use the right for longer leave.

Box 2.4. **Paid parental leave policies in the OECD and gender equality** *(cont.)*

Iceland and Sweden are two countries that have made important advances in promoting greater gender equality by reserving non-transferable leave for both parents. Sweden was the first OECD country to introduce paid parental leave in 1974, with a shareable leave period of 6 months, but introduced a one month "daddy quota" in 1995, which has been subsequently extended. Sweden does not have a separate paid maternity leave system. Instead, 60 days of paid leave are reserved for the exclusive use of mothers. In addition, mothers in Sweden could take another year of paid leave, and another 18 weeks of unpaid parental leave. Iceland introduced parent-specific parental leave in 2001. Before this, only 3% of parental leave days available were taken by fathers. Other countries offer "bonus periods", where a couple may qualify for some extra weeks of paid leave if both parents use a certain period of sharable leave. Germany, for example, provides two months of additional parental leave payments if both parents claim the parental leave allowance for at least two months, effectively reserving two months for each parent.

These initiatives have contributed to relatively equal sharing of parental leave. In Iceland and Sweden, men now take just under 30% of the days for which parental benefits are drawn, whereas this drops below 10% in Denmark and Finland. Furthermore, the differences in take up rates between men and women are relatively small in Iceland and Sweden, whereas in Australia, the Czech Republic and Poland less than one in fifty claimants are male. Take up of parental leave is typically low if the leave is unpaid or low paid, resulting in a considerable loss of household income. In California, fathers' leave-taking rates remain relatively low, but the introduction of family leave increased fathers' leave-taking around birth by about 0.9 percentage points (from a pre-programme average of 1.99 per cent) (Bartel, *et al.*, 2015). Take up rates have increased since programme introduction, perhaps due to increased knowledge of the scheme. The U.S. state experience of offering 55-66% of wages is a plausible model, but could be strengthened to improve workers' ability to afford leave.

These Swedish and Icelandic measures are part of a continuum of support to parents from childbirth though primary school, with the target of enabling parents to balance work and family commitments, and these supports have had some success: Sweden's female employment rate of 72% is one of the highest in the OECD, where the average is 60%.

the likelihood that a mother will remain in the labour market increases (Adema *et al.*, 2015), improves child health outcomes (Bullinger, 2016), and maternal stress is diminished. Employers can also lower replacement and training costs when women return to work for the same companies after childbirth. In light of these benefits, the previous *Economic Survey* recommended that access to paid family leave be expanded nationally, and also recommended more flexible working arrangements, as well as increased access to quality pre-school and childcare to help struggling families better balance work and family commitments. These recommendations remain policy priorities for the current US administration. Second earners, most of whom are women, generally face higher marginal tax rates on labour force participation decisions due to the U.S. family-based tax system in combination with progressive tax rates (OECD, 2016a).

Lack of access to paid parental leave, publicly-funded childcare and early-childhood education also reduces the ability of mothers to contribute productively to the economy. Measures to create more flexibility for mothers in the timing and physical location of hours worked (such as telework) would make balancing work and family commitments easier,

enhance labour force attachment, and better enable women to pursue careers in occupations that currently have very inflexible work conditions (such as finance). New empirical evidence suggests that States with more family-friendly policies also tend to have a higher share of females in the labour force (Box 2.5).

Reducing gender wage gaps

There has been ongoing progress in narrowing the overall gender wage gap, as measured by the median wage for full-time men and women workers (Figure 2.12, left panel). Work by Goldin (2015) documents that gender wage gaps for similar workers within professions have become quite small, but with large gaps persisting in a few occupations such as finance and airline pilots. Large variations in wage gaps still exist across states – with Washington D.C. and Louisiana bookending the distribution – but these variations, reflect, in part, geographic differences in the mix of female occupations. The gender wage gap in the United States is around the average across OECD countries (Figure 2.13, right panel).

Box 2.5. **Female labour force participation and the role of family-friendly policies**

Women's participation in the labour force in the United States greatly increased, on balance, over the past few decades. However, female participation rate in the United States has been falling recently and is below that of other OECD countries such as of Germany and Japan. For the working age population (16+ years old), the female participation rate was nearly 57% in 2015 compared to a male participation rate of nearly 70% (BLS, 2015). The United States remains the only OECD country that does not offer paid parental leave on a national basis, although paid family leave entitlements exist in some States. In States that offer paid leave, females are more likely to be employed (Adema et al., 2015).

To better understand the determinants of female labour force participation in the United States - including family friendly policies at state level - an econometric analysis was conducted that examined the effect on the probability of female labor force participation of individual, household, and state level characteristics. Data for this analysis were from the 2014 American Community Survey (ACS), which provides detailed information about the labour market status and socio-economic characteristics of households and individuals. ACS data are constructed using a representative sample of nearly 1% of the US population, allowing for for a granular analysis of how policy variations affect subgroups at state level. To conduct this analysis, these ACS data were paired with state-level data from the Institute for Women's Policy Research on the existence of paid leave legislation, infant care costs and preschool quality standards.

The main findings from this analysis suggest that supportive policies for paid parental leave, child and elderly care, as well as the ratio of female to male earnings are positively related to the likelihood of female labour force participation, after controlling for individual and family characteristics. As shown in table 2.1, States that rank highly in terms of paid leave legislation boost the probability of female labour market participation by 0.7 percentage points relative to states in the middle rankings, while states with relatively low costs of child care at the state level boost the probability of female labour market participation by 2.6 percentage points relative to the middle range. Women that live in states with a higher percentage of preschool enrollment are 1.4 percentage points more likely to participate in the labour market than in states in the middle range of enrollment, while living in a state ranked near the bottom of preschool enrollment decreases the probability of female participation by 1.4 percentage points. Finally, women in States with the lowest childcare quality are 0.6 percentage points less likely to participate in the labour force than those living in States in the middle ranges of quality.

Box 2.5. **Female labour force participation and the role of family-friendly policies** *(cont.)*

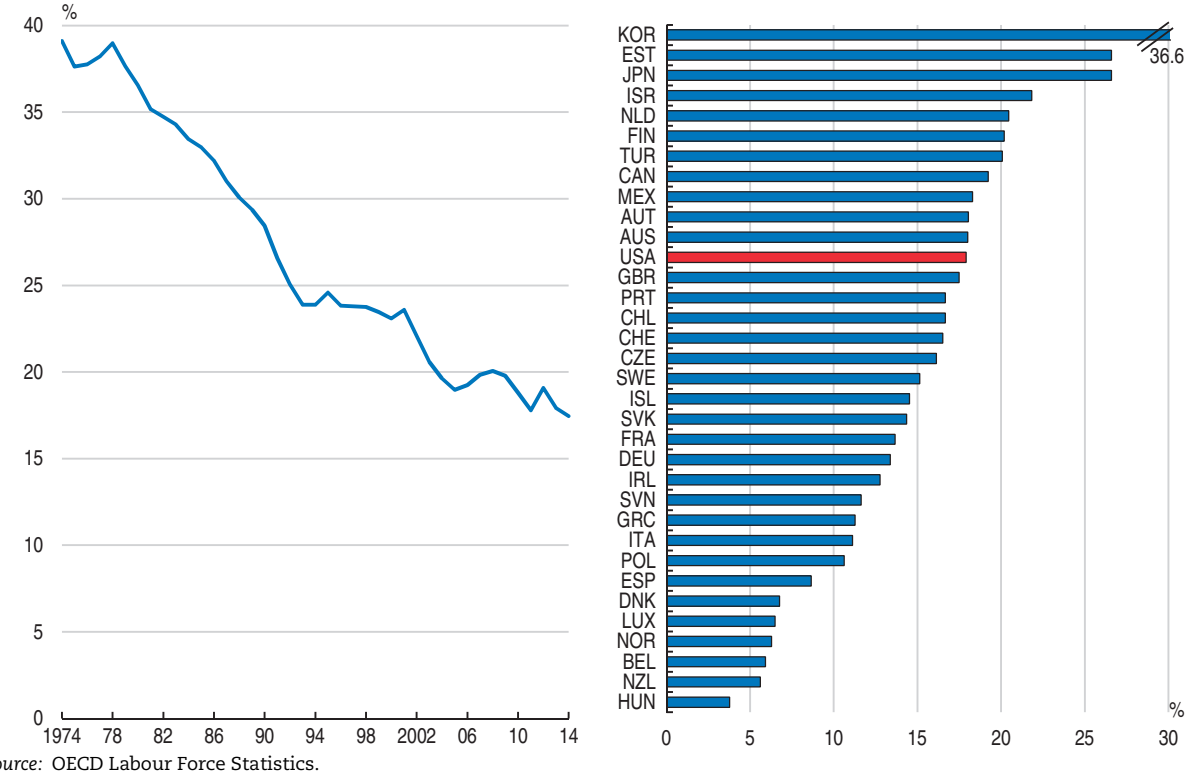
Table 2.1. **Probabilities of female labour force participation are boosted by more supportive family-friendly policies at the state level**

Labour force participation of prime-age women (25-54 years old)		
	Average Marginal Effect coefficient	Std. err.
Paid leave legislation		
Top ranked states	0.007*	0.004
Bottom ranked states	0.003	0.002
Cost of infant care as % of women's median earnings		
Low cost ranked states	0.026***	0.004
High cost ranked states	0.010***	0.003
% of Children under 5 years enrolled in nursery school or preschool		
Top ranked states	0.016***	0.004
Bottom ranked states	-0.014***	0.003
Preschool quality standards (out of 10)		
Top ranked states	-0.002	0.003
Bottom ranked states	-0.006**	0.002

Note: Results show average marginal effects. Additional individual, household and state level characteristics were included in the model such as: age, race, education attainment, marital status, presence, age and number of own children, household size, presence of members of 65+ years old, household head occupation and income, unearned income, state male unemployment, poverty rate and per cent of population 25-54 years old. * p<0.10 ** p<0.05 *** p<0.01.
Source: American Community Survey 2014 and IWPR (2015).

Figure 2.13. **The gender wage gap has declined over time, but remains comparatively high**

% difference in gross earnings of full-time dependent employees



Source: OECD Labour Force Statistics.

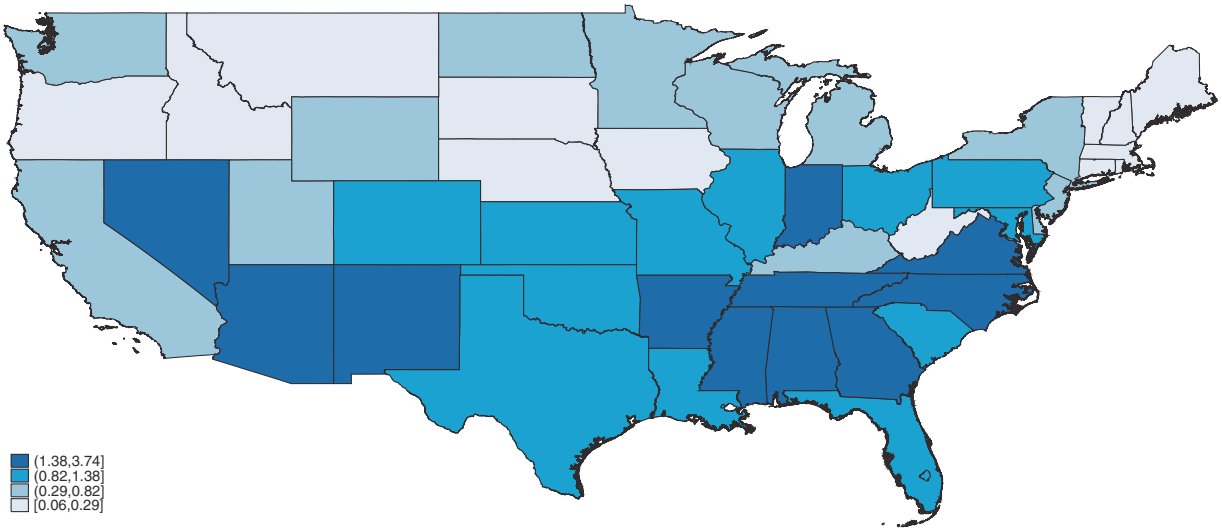
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Employment discrimination on the basis of gender is outlawed by the *Equal Pay Act* – which requires employers to offer equal pay for "substantially equal" work – the Title VII of the *Civil Rights Act* – which prohibits discrimination against women in hiring, layoffs and promotion decisions – and the *Lily Ledbetter Fair Pay Act* of 2009, which extended the time period for filing complaints of employment discrimination concerning compensation. Evidence from legal cases suggests that discrimination claims have not changed significantly over time, with slightly fewer charges made under the *Equal Pay Act* since the early 2000s. Nonetheless, discrimination on the basis of gender appears to be more frequently reported in some states than others (Figure 2.14).

What remains of the gender wage gap may well arise from factors distinct from overt discrimination. The gap may be the result of sorting, as women and men make systematically different employment choices. Such sorting can arise, for example, if firms offer higher compensation in exchange for considerations that may be more unattractive to women – such as long or inflexible hours –, thereby leading a greater proportion of women to select jobs in lower paid sectors and occupations for non-pecuniary reasons. The higher share of female employment in sectors that are typically lower paying tends to support that this type of sorting is an important feature of the labour market (Figure 2.15). Recent research examining the early labour market outcomes of STEM graduate students finds that female graduates tend to find employment in government or academic jobs rather than higher paying industry jobs (Buffington *et al.*, 2016). Part of the remaining wage gap is related to the field of study and accounting for children also appearing to play a role. Sorting effects also seem prevalent in other dimensions as well. Using evidence from Portuguese firms, Card *et al*, 2015 show that men tend to sort toward the more productive firms within a given industry that pay higher wages and also tend to receive larger wage increases when they move between firms. Even within higher-paying firms, men tend to receive a higher firm wage premium than women – in part because they are better able to

Figure 2.14. **Sex discrimination cases vary across the country**

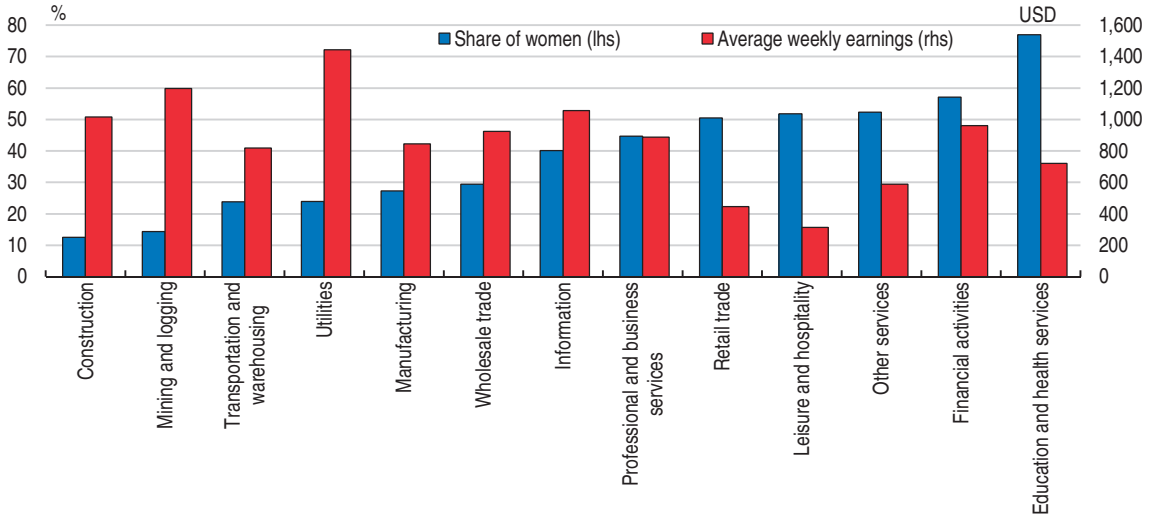
Share of sex discrimination cases relative to share of population



Note: Darker-shaded States have a higher number of sex discrimination cases per capita. Map generated using publically available files from the National Weather Service.
Source: U.S. Equal Employment Opportunity Commission, Census Bureau.

Figure 2.15. **Women tend to work in lower paying sectors**

February 2016



Source: BLS.

StatLink http://dx.doi.org/10.1787/888933380989

bargain for higher wages. In light of such effects, Goldin (2015) notes that further progress in closing gender wage gaps is likely to require broader changes in job and remuneration structures, particularly if job flexibility comes at the cost of reduced hourly compensation. Finally, the gender wage gap may arise due to unconscious bias. For example, managers may partly base hiring and remuneration decisions on stereotypes or preferences.

Disability insurance as a barrier to employment

While disability incidence tends to grow as a population ages, the labour force participation rate for prime-aged persons with (self-reported) disabilities has fallen from 25% at the beginning of the 2000s to just 16% in 2014 (Yin and Shaewitz, 2015). This decline in participation partly derives from the financial crisis, which coincided with a surge in new disability claims (Figure 2.16, Panel A). As new claims are adjudicated, individuals tend to withdraw from the labour force in the belief that this will enhance their case. An initial decision usually takes approximately 120 days, but many unsuccessful claimants appeal the decision, often leading to much longer delays that lengthen with the case backlog. For unsuccessful claimants, the often-substantial period out of the labour force can make it more difficult to regain employment, and may contribute to the incidence of relative poverty for self-reported disabled persons – at around 45% – having been amongst the highest in the OECD (OECD, 2010).

The previous *OECD Economic Survey* recommended encouraging greater labour market participation for disabled persons by maintaining attachment during the adjudication process. International experience suggests that early intervention programmes that help work-capable individuals staying in or returning quickly to work can be effective in avoiding outcomes where unsuccessful claimants permanently exit the labour force (Box 2.6). The 2014 *Workforce Innovation and Opportunity Act* encouraged states to enact policies to boost employment for disabled persons, and a number of states – such as Alaska and Maine – have acted to support disabled employment, including offers for public employment.

Box 2.6. **Disability policies in OECD countries**

Helping disability benefit claimants who may have their claims rejected can help foster labour market attachment. A real danger is that after being out of work for some time, people can face considerable difficulties getting back into the labour market. Ultimately they may reapply for disability benefits again at a later stage. Countries have reacted to mounting disability rolls in a number of ways, some of which have importance at the early part of the claims process (OECD, 2010).

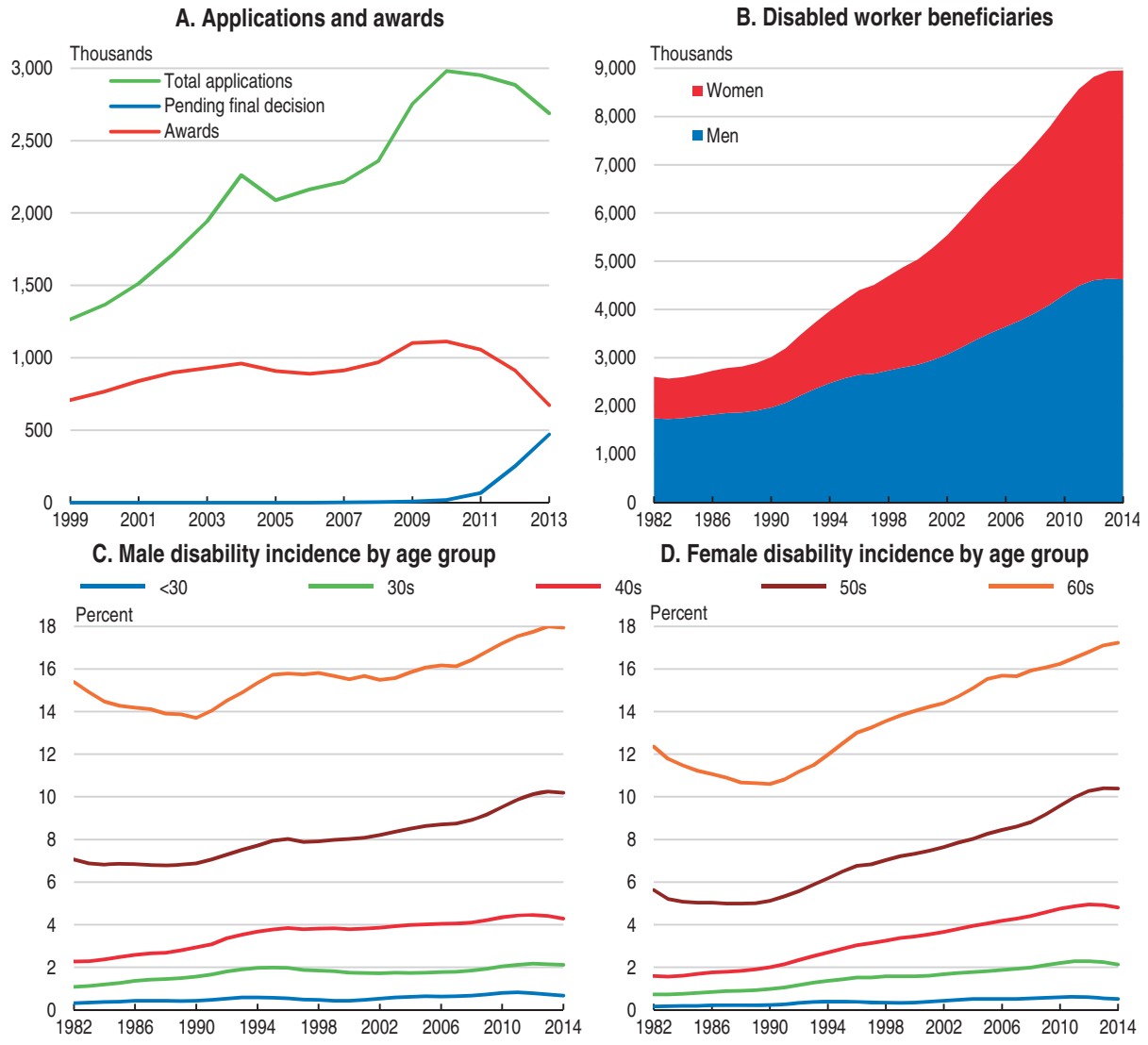
A number of countries have moved away from assessing a person's disability (which can vary considerably depending on the assessor) towards a framework that considers a person's remaining work capacity (e.g. Denmark and the Netherlands). This change focusses attention on rehabilitating people if they can work rather than supporting them to stay out of the labour market. In New Zealand, a case manager will base decisions on the medical report, the client's abilities and the client's work aspirations, moving the decision away from the medical assessor. Most counties have also moved away from the disability assessment based on the usual occupation of the worker. In Sweden, the authorities have introduced a "rehabilitation chain", which explores successively wider groups of jobs to see whether there are alternative job opportunities.

A number of countries have prioritised early vocational rehabilitation (Austria and Hungary). In Switzerland, job adaptation, placements and socio-professional rehabilitation measures are part of early interventions (instead of granting benefits). In the Netherlands, vocational programmes have been greatly expanded, with employers encouraged to find new roles for employees with disabilities. Indeed countries often support the placement in jobs of disabled people who retain work capacity.

Across the OECD there has been a substantial increase in claims for disability benefit due to mental ill health. As people with mental ill-health are at a higher risk of job loss and as periods of unemployment and non-employment can worsen people's mental health it is important to keep employment opportunities open and enable quick transitions to new employment (OECD, 2015a). Putting in place systems within the public employment service, such as parts of Belgium, can allow mental health issues to be addressed quickly as they surface. An alternative approach in Sweden is to co-ordinate all the different agencies that can be involved to ensure early rehabilitation, which has been found to be effective in improving employment outcomes.

The disability insurance programme is for qualifying workers who are unable to work for at least a year (and not partially disabled workers). The increase in disability rolls reflects demographics and more workers becoming eligible for disability benefits, notably following increased labour force participation more women became eligible (Figure 2.16, Panel B). While ageing explains a large share of the increase in disability rolls, the incidence of disability has been rising for prime age workers as well (Figure 2.16, Panels C and D). Current disability insurance provides little incentive to re-enter the labour market for those whose health condition has improved and who would like to work, as earnings above a limit (the Substantial Gainful Amount" limit, which is around $1 000 per month) will lead to the disability benefit being withdrawn. People qualifying for disability benefits also qualify for Medicare. Currently, there are some programmes aimed at helping transition individuals back into the workforce, such as retraining, continuing cash benefits for a period of time, and extending Medicare benefits for 102 months after resuming work.

Figure 2.16. **Disability rolls have risen substantialy**



Note: The incidence is based on the SSA's estimate of the number of disability insured workers for the same age bracket.
Source: Social Security Administration: Annual Statistical Supplement.

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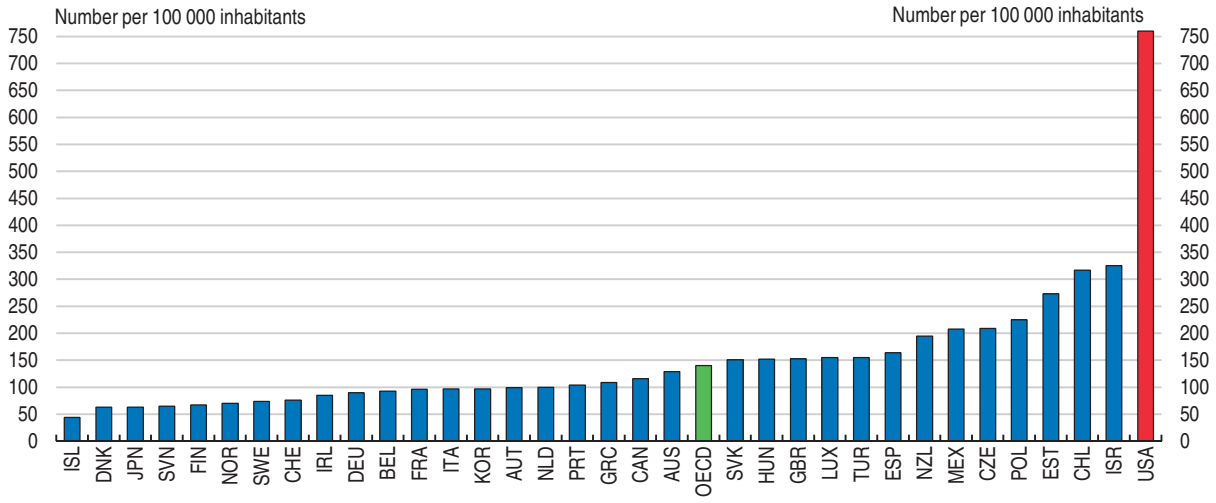
These efforts should be carefully evaluated and if needed the incentives strengthened to get off disability rolls for people who want to work and are again capable of doing so.

Opportunity for those with criminal records

Labour market attachment is also low for those with criminal records. By some estimates, nearly 30% of the adult population have been arrested and a record of this arrest will show up on background checks even for individuals who are not subsequently charged (Solomon, 2012). Although growth in the US prison population has recently abated, the prison population has nonetheless ballooned since the early 1980s, leaving the United States with the highest incarceration rate in the OECD by a considerable margin. In 2009, 754 persons for every 100 000 in population were incarcerated, more than five times the average incarceration rate for the OECD (Figure 2.17). This prison population is

Figure 2.17. **The prison population is high**

Number per 100 000 inhabitants, 2009 or latest year available



Source: OECD Factbook 2010: Economic, Environmental and Social Statistics.

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overwhelmingly composed of ethnic minorities (around two-thirds), with imprisonment rates for black males (2 724 per 100 000 black population) six times that of white males (465 per 100 000) at the end of 2014 (Carson, 2014). The administration is working to reduce incarceration and efforts in Congress are underway to reform the criminal justice system to reduce incarceration through the reduction of overly long sentences. The administration is also working to help reintegrate individuals who have been incarcerated into the labour market though improving access to employment, job training, housing and healthcare.

These actions are needed, as possessing a criminal record reduces employment prospects. Screening questions on application forms can make it harder for those with a criminal record to find employment, which can compound disadvantages certain groups already face in the labour market, stemming from factors including poorer quality schools, residential segregation and discrimination (Bertrand and Mullainathan, 2004). Estimates suggest that call-back rates following an employment application are 50% lower for applicants with criminal records (Pager, 2003). Reduced employment prospects for young black males, who are greatly overrepresented in the prison population, partly explain their lower employment rates. Not surprisingly, criminal records also contribute to diminished income mobility: Only one-quarter of individuals with criminal records move out of the bottom income quintile within 20 years, whereas two-thirds of those without criminal records manage the same transition (Western and Pettit, 2010).

Widening opportunities for persons with criminal records to gain employment would improve individual and social outcomes. To help counter such discrimination, 23 states and the District of Columbia have introduced a "ban the box" initiative, which removes pre-screening questions from application forms but does not prevent employers from subsequently checking a candidate's record. A number of major firms and, in November 2015, the federal government have removed pre-screening questions during their recruitment processes. The initiative is still relatively new outside of Hawaii, which first introduced it in 1998, and its impacts are still being studied. However, available evidence suggest that it has improved employment outcomes and reduced recidivism for those with

criminal records (D'Alessio *et al.*, 2014). Evidence also suggests that implementing ban the box could increase employment in high-crime areas by up to 4% and raise employment of black males by 3% (Shoag and Veuger, 2016). However, the law also appears to have an unintended side effect, as some employers appear to have responded by putting greater weight on work experience and higher education as screening qualifications. This unintended side effect may have reduced employment of women by up to 0.4% (Shoag and Veuger, 2016). Rolling out this initiative nationwide would give those with criminal records a fairer opportunity to obtain employment, but the programme design may need tinkering to ensure that it does not unfairly discriminate against women.

Infrastructure and opportunity

Effective infrastructure provision is important not only because of its links to productivity growth (Chapter 1), but because it can enhance employment opportunities and affect wellbeing more generally through its implications on urban sprawl, congestion, and the environment.

Investing in infrastructure for opportunity

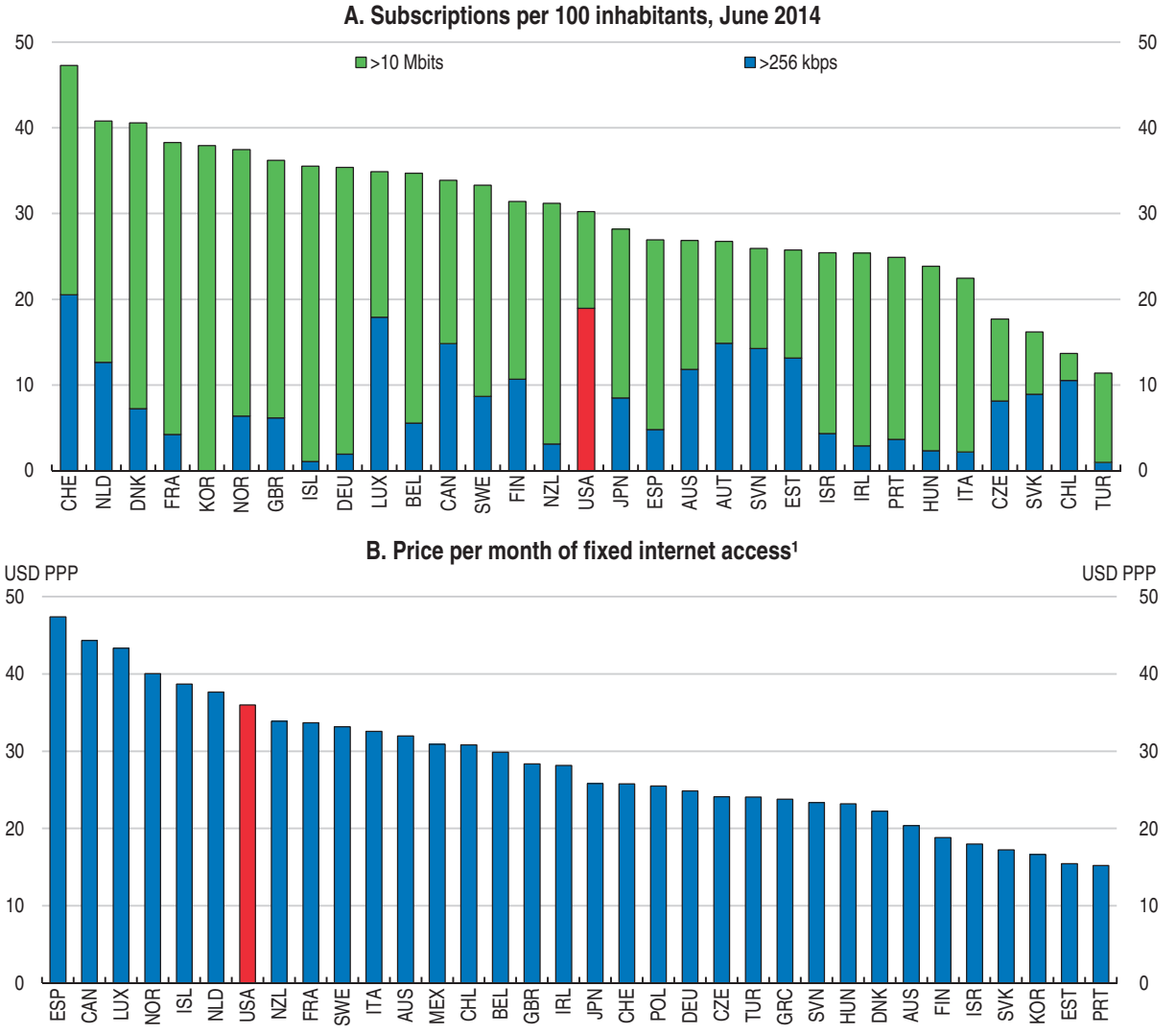
Telecommunications and broadband access

The ubiquity of information and communication technology in daily life makes broadband access an important element of providing opportunity. The CEA (2016) found that internet access enables a households' job search process and facilitates labour market participation, allowing applicants to search a wider set of job openings with much lower transaction costs. Expanding the pool of employers and applicants, in turn, should help improve matching between demand and supply of skills. Internet access also helps reduce the time needed to find employment, which potentially reduces scarring effects from unemployment, and can have other notable benefits for well-being, such as providing access to medical information and educational materials. Access to broadband facilitates telemedicine, which is particularly valuable in rural areas because it enables medical specialists to make diagnoses without direct access to a patient.

Access to fixed broadband telecommunication services in the United States – as measured by subscription rates – is around the OECD average, but offerings lag behind other countries in terms of the number of providers at higher download speeds and cost (Figure 2.18). In addition, access to high-speed broadband varies widely across the United States, with rural areas and wide swathes of the South having poorer access. In response to these shortcomings, the Federal Communications Commission has established a Connect America Fund to address provision in areas that are currently under-supplied. This under-supply partly owes to lack of competition between internet providers, which is partly due to a historical legacy of dominant cable companies being the sole provider of higher speed wired Internet access in many areas. In some cases, State governments have imposed restrictions on municipalities that prevent them from creating their own broadband networks.

Cross-country analyses suggest that having strong broadband competition can enhance the mix of services offered (Ofcom, 2016). There are many ways to support greater competition in the fixed line broadband sector, with new entrants creating or augmenting existing networks in some markets. For instance, there are many examples of municipal broadband systems that compete with established cable companies, including the

Figure 2.18. **Fixed (wired) broadband penetration is around average and relatively slow and expensive**



Note: Panel A. Japan, data are OECD estimates with the tiers lower than 100 Mbits unseparated that may also include auxiliary portion of the top tier. For Korea 10% are for below 50Mbits / 90.0% are above 50 Mbits.

1. Fixed Broadband basket high 2: 50GB/month. 1.5/2 Mbits and above.

Source: OECD Digital Economy Outlook 2015, OECD and Teligen/Strategy Analytics.

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Chattanooga municipal Electricity Power Board which placed fiber cables alongside its electrical power cables, enabling it to offer high-speed broadband services to the city (Mölleryd, 2015). An initiative by Google Fiber has also led to the introduction of fibre networks in a number of cities, thereby spurring competition that has helped raise quality and lower prices. Recent efforts to sustain competition in the wireless broadband market are also beginning to pay dividends, with carriers dropping prices for mobile phone plans and boosting quality where there is competition. Capacity development has also enabled the emergence of a wholesale market, and recent innovations allow mobile phone users to tap into the best signal rather than being tied to a single operator (which can be important in areas not well served by wireless coverage). Competition authorities should build upon recent successes in the wireless broadband industry by acting to preserve competitive

forces in fixed broadband as they develop. The FCC in 2015 pre-empted state-level prohibitions on municipalities creating their own networks to help boost competition.

Zoning and land use restrictions

Zoning and land use restrictions can blunt productivity and employment growth. While difficult to measure, indirect indicators and anecdotal evidence suggest the importance of zoning is rising over time (Furman, 2015). Areas with high productivity growth already tend to have higher housing costs, which zoning intensifies, thereby amplifying pressures for lower-skilled persons to migrate outward (Ganong and Shoag, 2015). This sorting toward higher skilled persons is a source of labour market mismatch, artificially restricting the flow of labour to where it is most highly valued and thereby contributing to income inequality. Evidence also shows that segregation of housing by income acts as a drag on inter-generational income mobility (Chetty and Hendren, 2015). More productive cities also tend to have superior amenities, and Diamond (2016) estimates that accounting for differences in the consumption of city amenities across income groups might boost the implicit wage gap by another 30%. Some estimates suggest that easing regulations that restrict population density in the most productive cities could boost real GDP by as much as 10% in the long run (Hseih and Moretti, 2015).

Making city growth more inclusive and sustainable

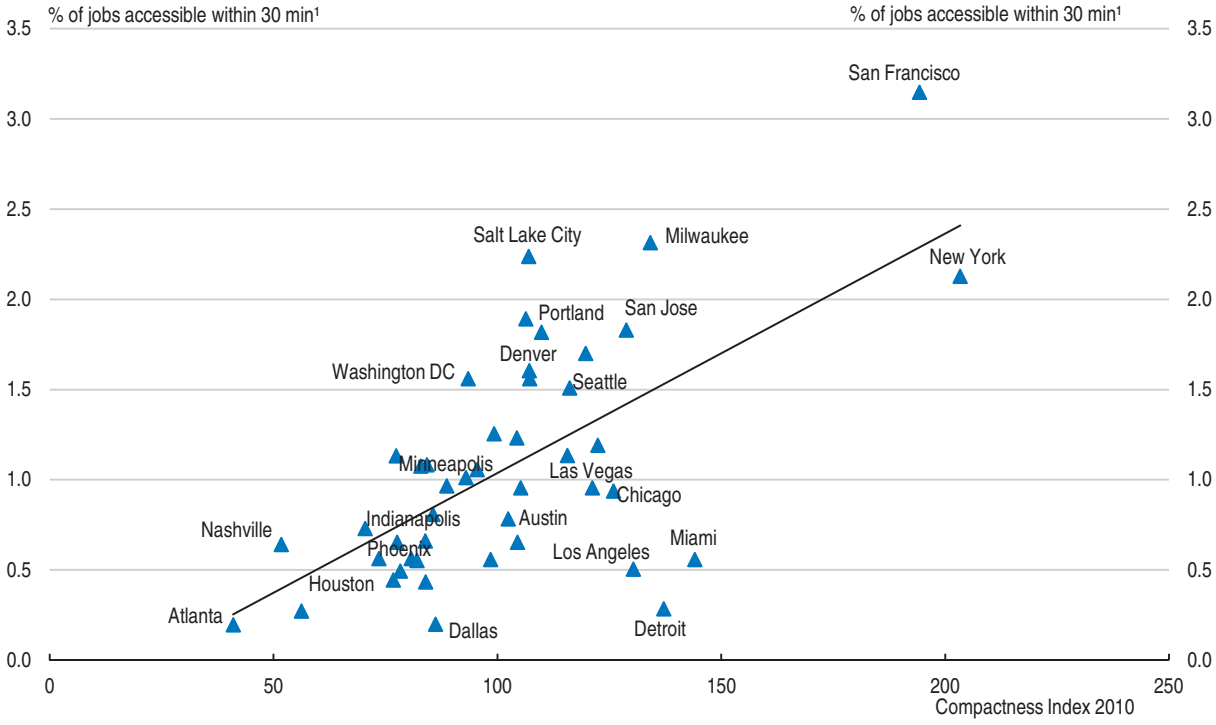
Urban sprawl and social and environmental externalities

Urban sprawl is readily apparent in many US metropolitan areas, and this sprawl tends to negatively impact the quality of life for residents. Empirical work that compares different measures of quality of life across major metropolitan areas over time has found that diminished sprawl is associated with better outcomes (Hamidi and Ewing, 2014). Sprawl can be exacerbated by fiscal incentives that promote low density development at the urban fringes, such as higher property tax rates for multi-family dwellings than for single-family, various tax provisions that encourage home ownership, and the tendency to defray costs of connecting to existing urban infrastructure amongst all residents. Higher transportation fuel taxes and more developed use of user fees could help promote a more efficient use of existing infrastructure, thereby helping to reduce sprawl.

Providing access to jobs, services, and amenities becomes increasingly difficult as city density diminishes. Although US cities have taken a wide range of measures to improve access ranging from urban rail systems to frequent bus services in the urban core, sprawl still seems to be associated with far fewer opportunities as measured by the share of easily accessible jobs (Figure 2.19). These barriers to opportunity are often experienced disproportionately by lower-income households. The failure of cities to realise their full economic potential through smarter development has negative consequences for long run growth and well-being (Glaeser and Joshi-Ghani, 2014).

In cities where mass transit is not readily available, residents are dependent on private motorised vehicles. Automobiles are used most heavily in low-density cities where it is especially costly to provide city-wide public transportation networks as an alternative mode of transport. Although increasing congestion provides a disincentive for households to structure their lives around lengthy commutes in private vehicles, data suggest that these private disincentives have been insufficient to tackle the problem. Cities with employment and population growth exceeding the national average have also experienced some of the

Figure 2.19. **Jobs are less accessible in sprawling cities**



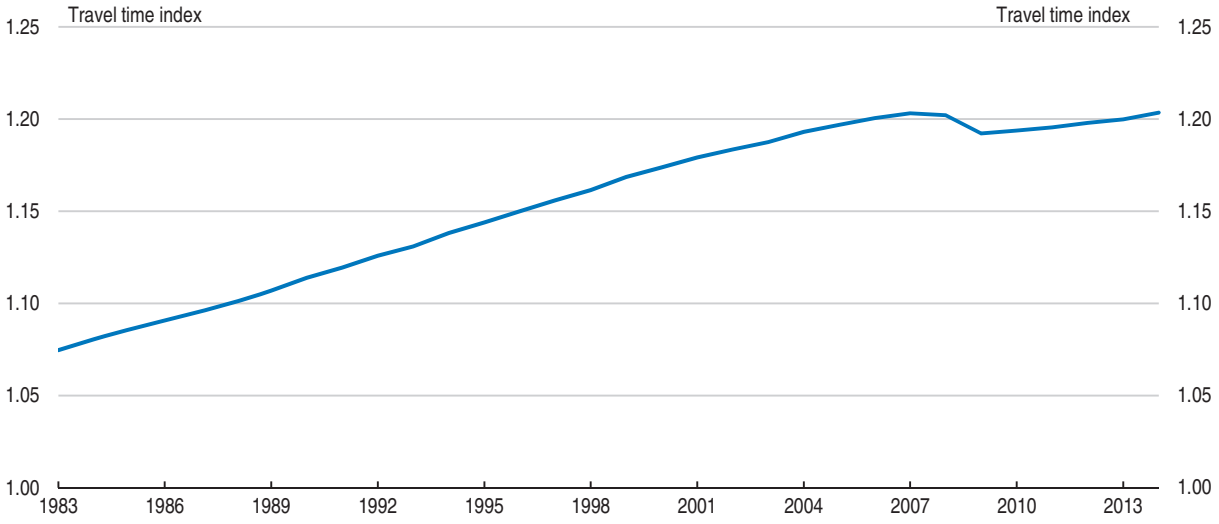
1. Share accessible by walking or public transit adjusted for MSA population size.
Source: Owen and Levison (2014) and Hamidi and Ewing (2014).

StatLink http://dx.doi.org/10.1787/888933381023

biggest increases in traffic congestion (Schrank *et al.*, 2015), with the upward march in peak-hour commuting times only abating somewhat with the onset of the great recession (Figure 2.20). Various problems that inhibit local governments from investing in more effective transport infrastructure and mass transit (Chapter 1), negatively impact subjective measures of well-being (Kahneman and Krueger, 2016) in a number of dimensions, including longer commute times, rising local air pollution, and higher greenhouse gas emissions.

Policies for transport and spatial planning are highly complementary and therefore need to be well co-ordinated. Decisions regarding transportation infrastructure provision not only influence the locational choices of households and firms by affecting accessibility, but can reduce the need for lengthy commutes if designed around an urban development plan with mixed land use and integrated transport options. In many cities across OECD countries, a growing number of policymakers recognise these principles. However, in the vast majority of US cities decisions regarding land use and transport are made on a decentralised basis by authorities in multiple jurisdictions, with little or no co-ordination. Consequently, many cities have acquired a spatial structure that is incompatible with integrated transit, which is prohibitively costly to adjust after the fact. Integrated urban development plans that from the beginning account for future transport infrastructure requirements could ultimately reduce the costs of infrastructure provision. With these gains in mind, the Department of Housing and Urban Development, the Department of Transportation and the Environmental Protection Agency have jointly launched a *Partnership for Sustainable Communities* initiative which aims to promote integrated urban

Figure 2.20. **Rush hour commuting has become slower**



Note: The travel time index measures the difference in commuting times between peak and non-peak periods. The figure reports yearly fixed effects for the travel time index from a balanced panel regression with 101 metropolitan areas.
Source: Texas Transportation Institute.

StatLink http://dx.doi.org/10.1787/888933381038

planning that overcomes co-ordination difficulties between different decision makers at the metropolitan level.

The challenges posed by water supply

Long-run infrastructure projections generally suggest that OECD countries will require large investments in water supply and treatment as existing, often already quite old infrastructure needs upgrading or replacement (OECD, 2006). At present, US spending on water infrastructure amounts to around $140 billion annually (CBO, 2015). The cost of replacing and upgrading existing water and wastewater infrastructure has become extremely expensive, particularly within cities. The Environmental Protection Agency has estimated that $384 billion will be needed over 20 years to maintain and improve water infrastructure, much of which will be needed for transmission and distribution networks (EPA, 2013). Other estimates of the funding needs are significantly higher (AWWA, 2012). The *Clean Water Act* (1972) also requires governments to invest in water systems to maintain health safety. Across the United States, 50 000 water systems were in year-round service in 2011, many of which operated with ageing infrastructure approaching the end of its life cycle.

Recent experiences of Flint, Michigan underscore how important adequate water infrastructure can be for basic well-being and public health. Most water systems are operated by municipal corporations, often serving relatively few people. These small corporations frequently lack the institutional capacity to raise funding when major capital maintenance and investments are necessary . With state and local budgets under strain, funding normal maintenance costs has become a challenge and major capital expenditures even more difficult. The *Water Resources and Reform Development Act* of 2014 helps address these funding difficulties by providing low-interest federal loans of up to 49% of project costs for large drinking water, wastewater, storm water and water reuse facilities. In December 2015, a prohibition was also lifted which prevented communities from using

tax-exempt bonds to fund remaining project costs, making it easier for many communities to match these federal loan grants.

Problems facing water management systems extend beyond transmission and distribution networks, as groundwater depletion and water stress have become ever more serious issues for large swathes of the country. The pace of groundwater depletion appears to have accelerated since the turn of the century (USGS, 2013), and difficulties in coordinating groundwater withdrawals across catchment areas and between multiple water users have arisen in many areas (Box 2.7). Depletion of aquifers not only risks the loss of an important source of drinking water, but desertification and saltwater intrusion in coastal areas that could destroy farmland.

Box 2.7. **Water abstraction and governance**

In the South Central Valley in California, water supply comes from local rain and more importantly from precipitation from neighbouring mountains. Dams retain nearly all river inflows when or before they reach the valley for distribution through an extensive set of canals. These flows vary substantially by year and season, with water pumped out of the distribution system by farms, on net, in dry years and then recharged in wet years. However, on average, farmers are using more water than is supplied, leading to a falling water table. The effects have been extreme during the 2012-15 drought, partly because the drought was severe and partly because agricultural water use is increasing.

Pumping groundwater is largely unregulated in California, as state law allows landholders to pump any amount below their property, unlike some other states such as Kansas and Texas where pumping is more regulated. Although the water table cannot continue falling indefinitely, farmers do not appear to be taking this into account, in fact planting more (thirsty) almond trees in the middle of the recent drought. The current water management regime contributes other negative externalities as well: Fertilizer-related nutrients in run-off and salt water penetration induced by reversed water flows from pumping have deteriorated water quality near the mouths of the San Joaquin and Sacramento rivers, which flow into San Francisco Bay.

Ensuring sustainability is complicated by changing property rights as well as the fact that active groundwater management in California has largely been voluntary (Moran and Cravens, 2015). In 2014 California adopted the *Sustainable Groundwater Management Act* (SGMA), which mandates local water authorities to adopt sustainability plans by 2020 (or by 2022 in less severely stressed areas) with a view to achieving sustainability by 2040. The major advance relative to previous programmes is that the SGMA gives the state power to intervene and impose a sustainability plan if the local agency does not plan or if its plan is inadequate. Local water authorities (known as a Groundwater Sustainability Agency, GSA) that would be responsible for setting up and implementing the plans do not yet exist in most places. The Act invites potential agencies to propose themselves as GSAs, with competing or overlapping claims to jurisdiction sorted out by negotiation or arbitration. Another uncertainty of the Act is what will constitute sustainability, with future litigation about the definition of "significant and unreasonable" and other specific measures quite likely.

Box 2.7. **Water abstraction and governance** *(cont.)*

Another potential problem with the legislation is that it does not grant GSAs authority to issue permits to construct, modify or abandon groundwater wells; rather this authority remains the jurisdiction of local government agencies. Close coordination between GSAs and permitting agencies will therefore be essential in order to ensure that groundwater sustainability goals are consistent with the permitting and land use actions of the local government agencies. Potential co-ordination problems will be compounded by the system of entitlements for water use in California, which does not define clear water property rights but in practice often gives strong precedence to prior use of water that will be a strong disincentive for users to relinquish rights even temporarily lest this lead to a permanent loss of entitlement.

The Climate Action Plan of 2013 established a National Drought Resilience Partnership that works to identify drought risks and work with localities to plan drought responses. Furthermore, it supports market innovation to improve water conservation.

Recommendations

Main recommendations

- Use federal funding for targeted programmes to reduce disparities in student opportunities and encourage States to be ambitious in lifting educational attainment.
- Develop reskilling programmes with established effectiveness in helping people back to work.
- Require paid parental leave and improve access to quality childcare to help reduce gender wage gaps and improve career prospects
- Expand the Earned Income Tax Credit and raise the minimum wage. Make tax expenditures less regressive.
- Continue to roll out the Affordable Care Act.
- Reduce pre-screening for employment on criminal records.
- Boost investment in, and maintenance of infrastructure; in particular, promote mass transit. Use federal programmes to encourage co-ordination across State and local jurisdictions.

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