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# TECHNOLOGICAL CHANGE AND THE DANISH LABOUR MARKET

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# Outline

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- 1) Past trends
- 2) The Danish labour-market model (flexicurity)
- 3) Automation of job tasks in Denmark
- 4) Policy

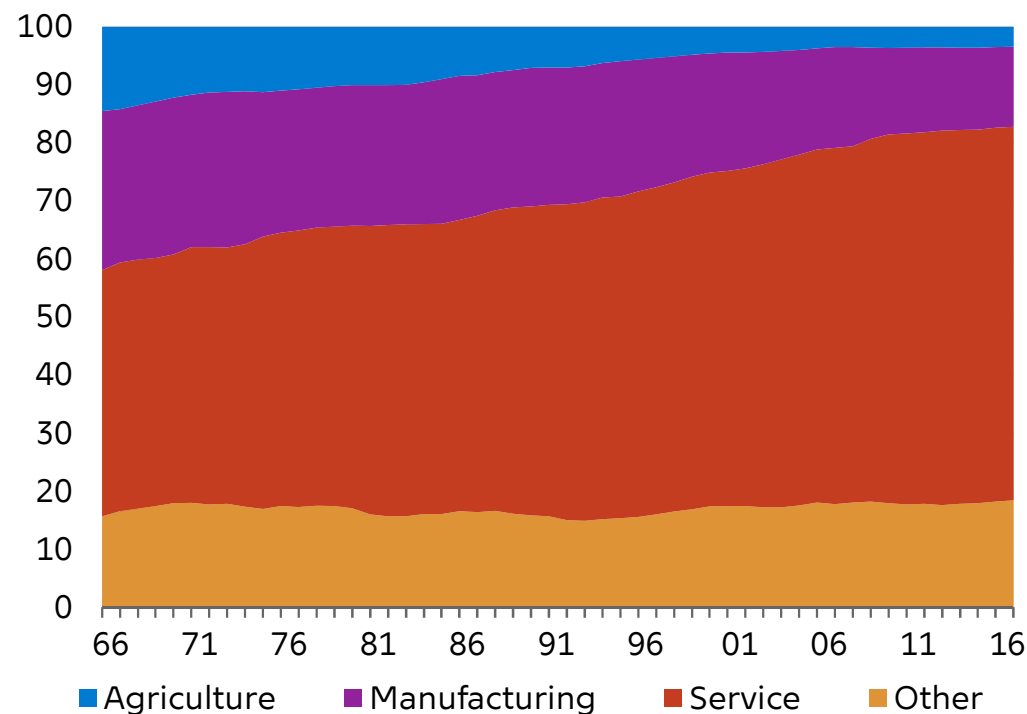
# Past trends



# Past examples, Danish textile manufacturing

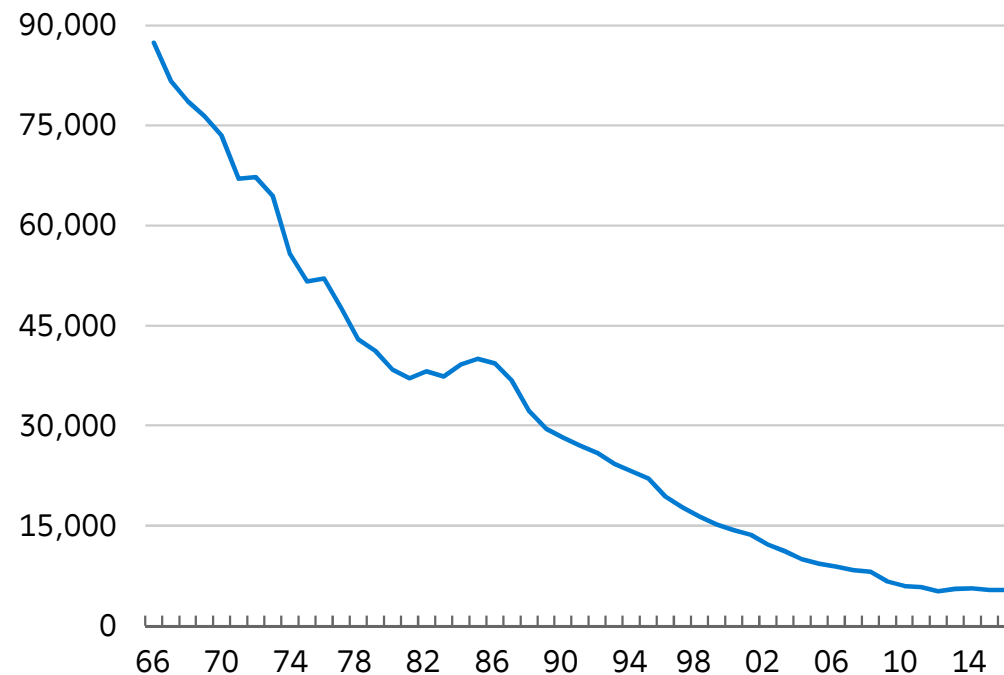
## Sectoral shifts in private employment

Share of private sector employment, per cent



## Case study: Danish textile manufacturing

Employment in manufacture of textiles and leather, no.

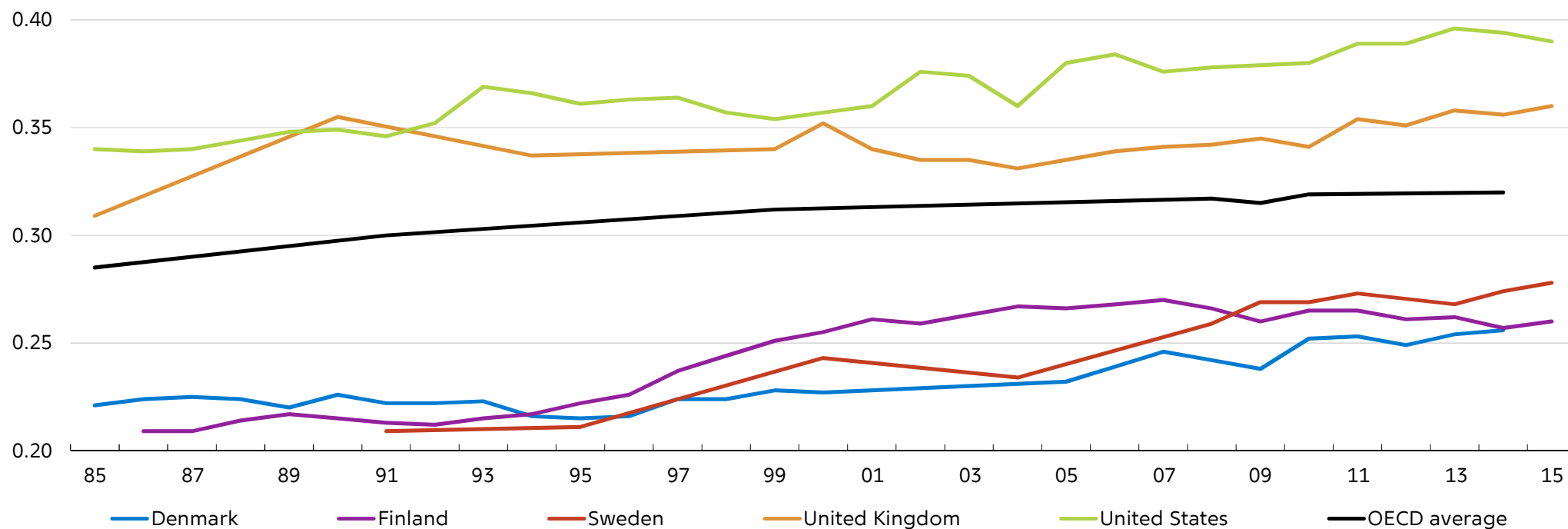


Source: Statistics Denmark and own calculations.

# Transition costs

## Inequality of disposable income

Gini coefficient



Note: There are several breaks and changes in methodology over the the period shown. Disposable income has been adjusted for household size.  
Source: OECD.

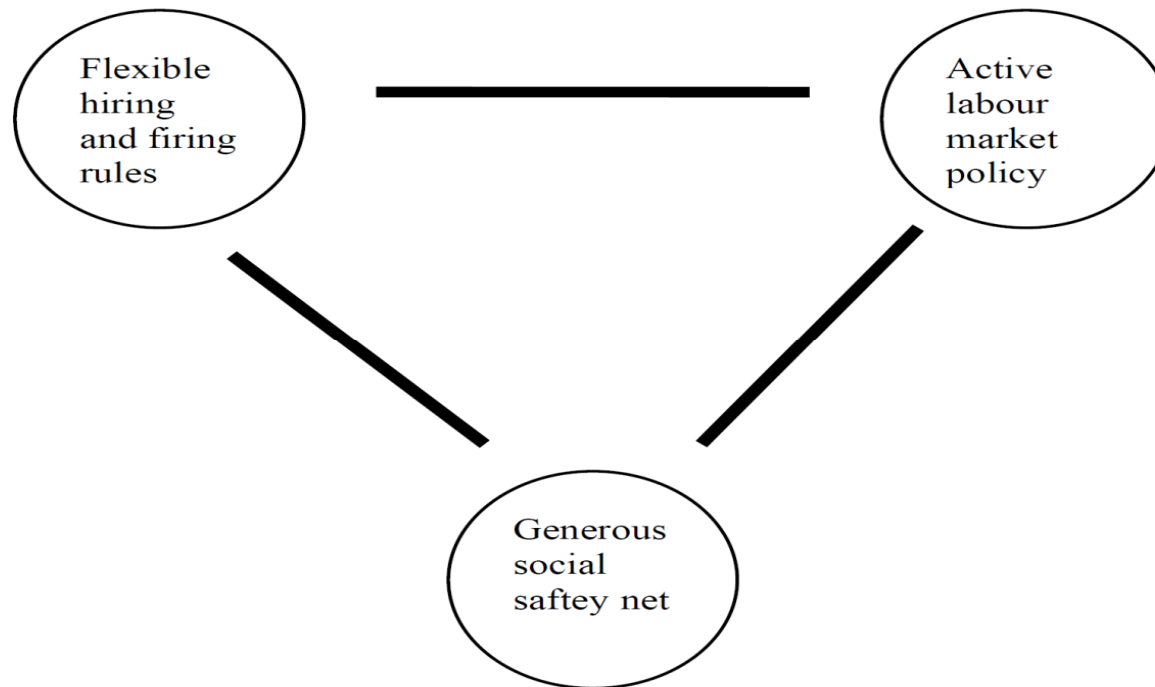
# The Danish labour-market model (flexicurity)



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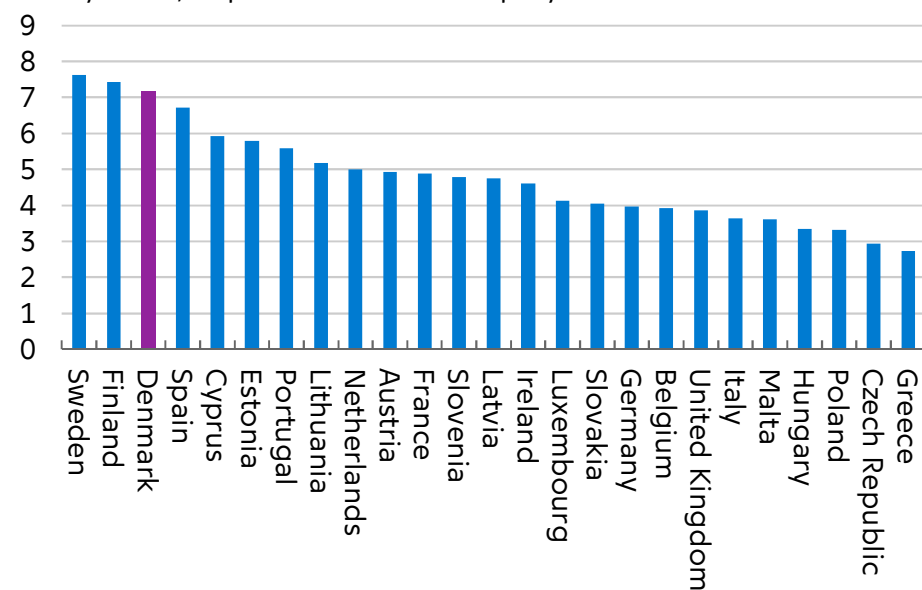




# The Danish labour-market model (flexicurity)

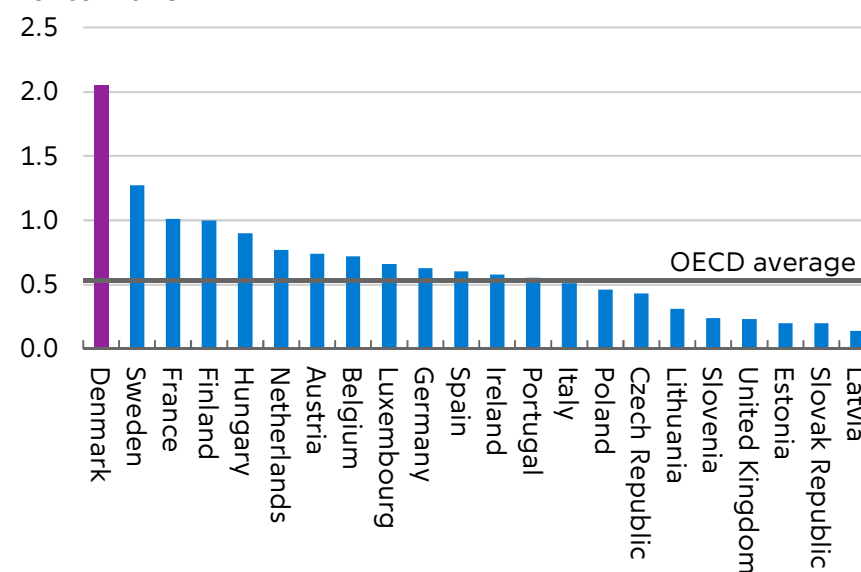
## Labour turnover

Newly hired, in per cent of total employment



## Expenditures on active labour-market policies

Per cent of GDP



Note: Left-hand chart: Annual average of quarterly observations from 2017. Newly hired refers to employees hired within the last three months.

Right-hand chart: Note: Data from 2015, except for Estonia (2014) and United Kingdom (2011).

Source: Eurostat (left) and OECD (right).

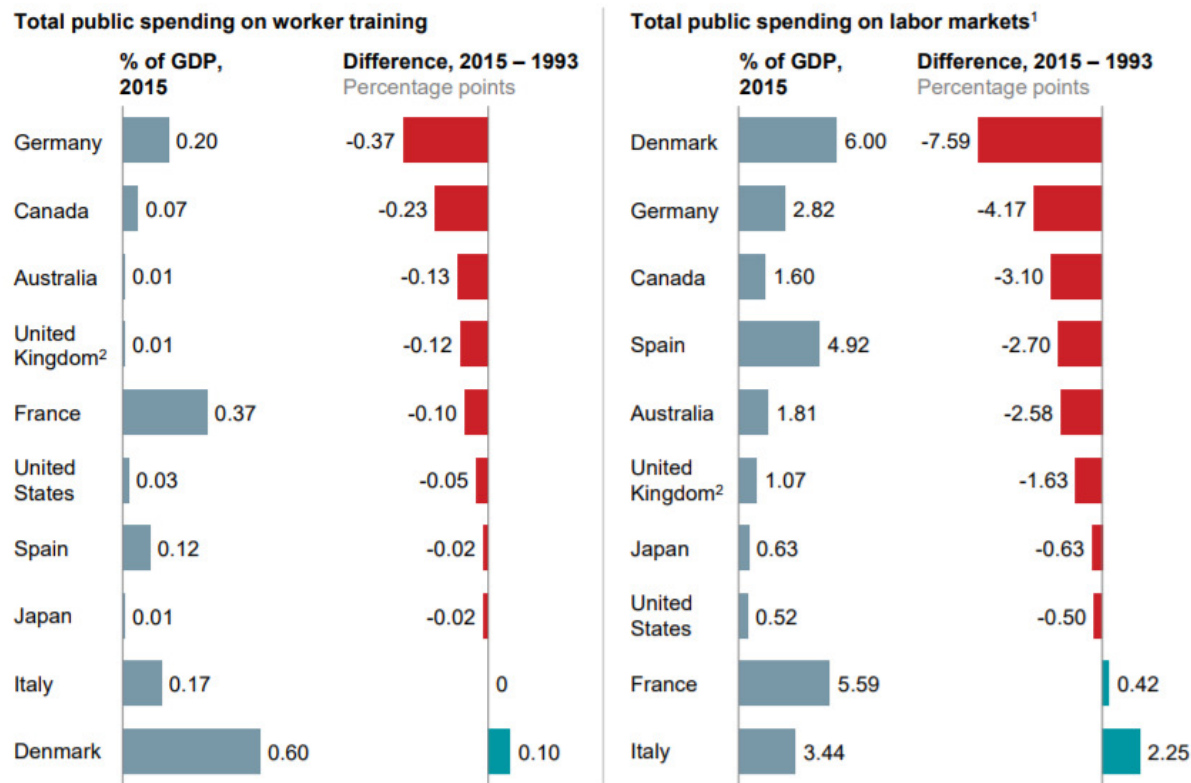


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# Most OECD countries have been spending less on worker training over the past 25 years



<sup>1</sup> Public spending on employment incentives; startup incentives; direct job creation; out-of-work income maintenance and support; early retirement; public employment services and administration; and sheltered and supported employment and rehabilitation (excluding worker training).

<sup>2</sup> 2011 data used for United Kingdom.

NOTE: Countries where 1993 data was not available omitted. Not to scale.

SOURCE: OECD; *Labour market policy expenditure and the structure of unemployment*, Eurostat, 2013; McKinsey Global Institute analysis

Source: McKinsey Global Institute.

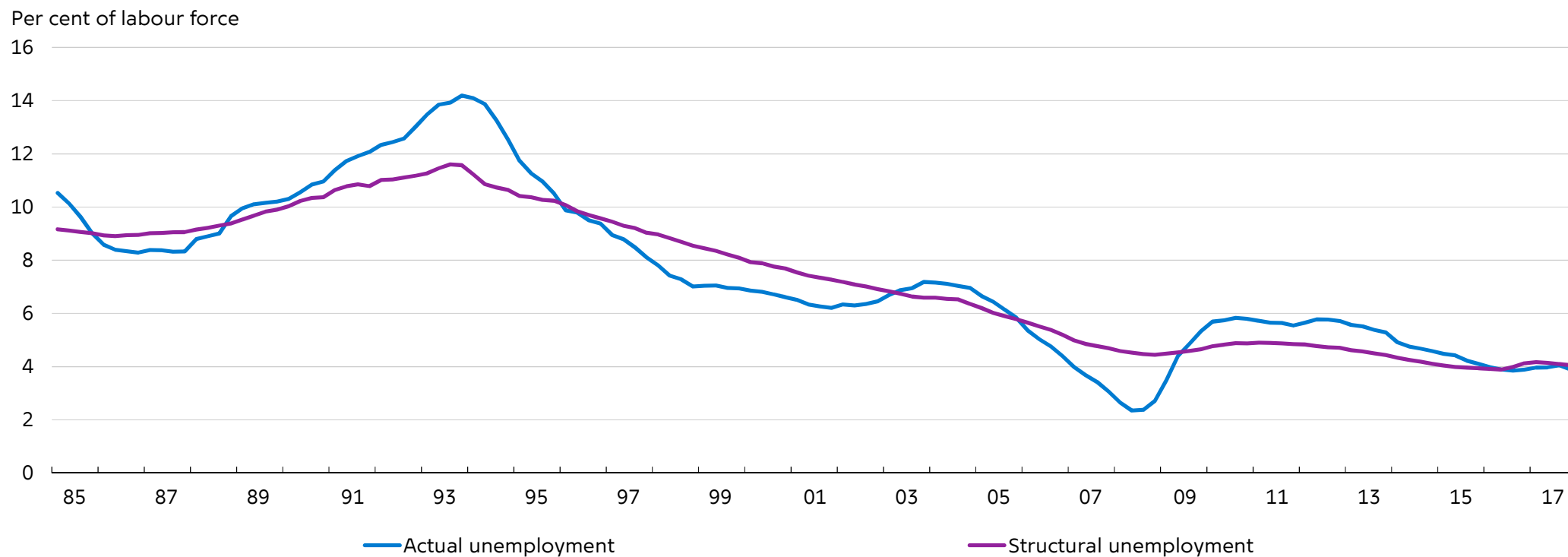


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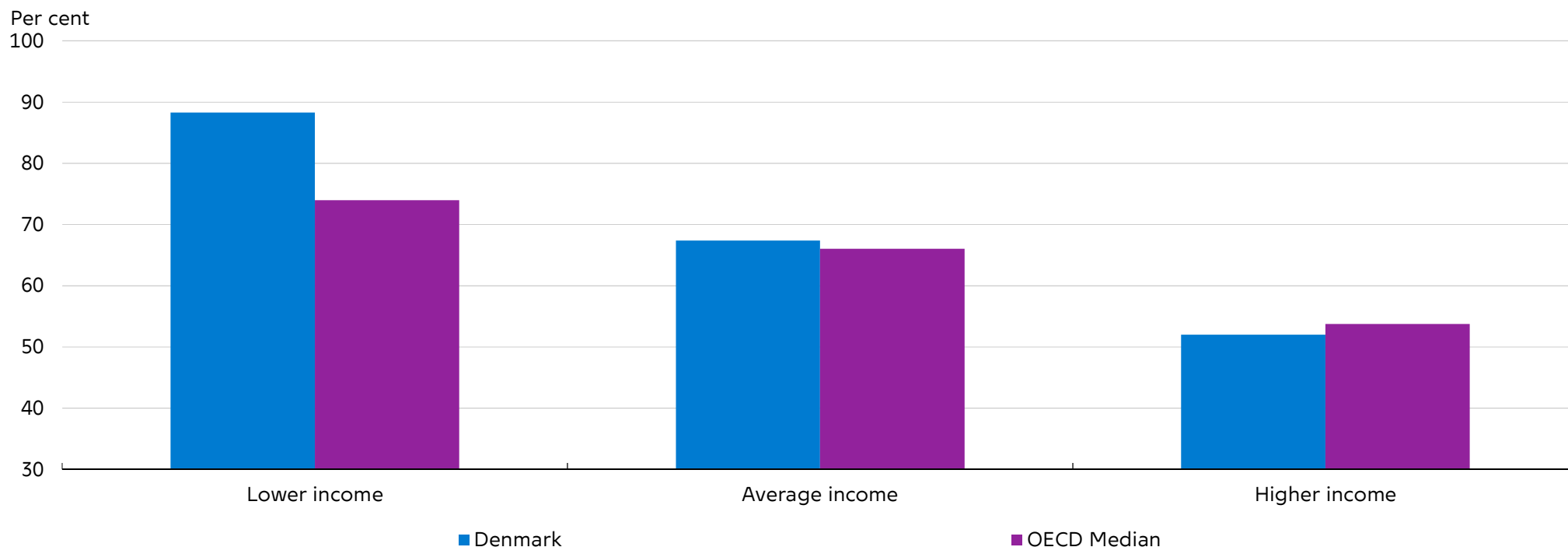
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# Actual and structural unemployment in Denmark



Note: Structural unemployment as estimated by Danmarks Nationalbank.  
Source: Danmarks Nationalbank and Statistics Denmark.

# Danish net replacement rates more dependent on income than the OECD median



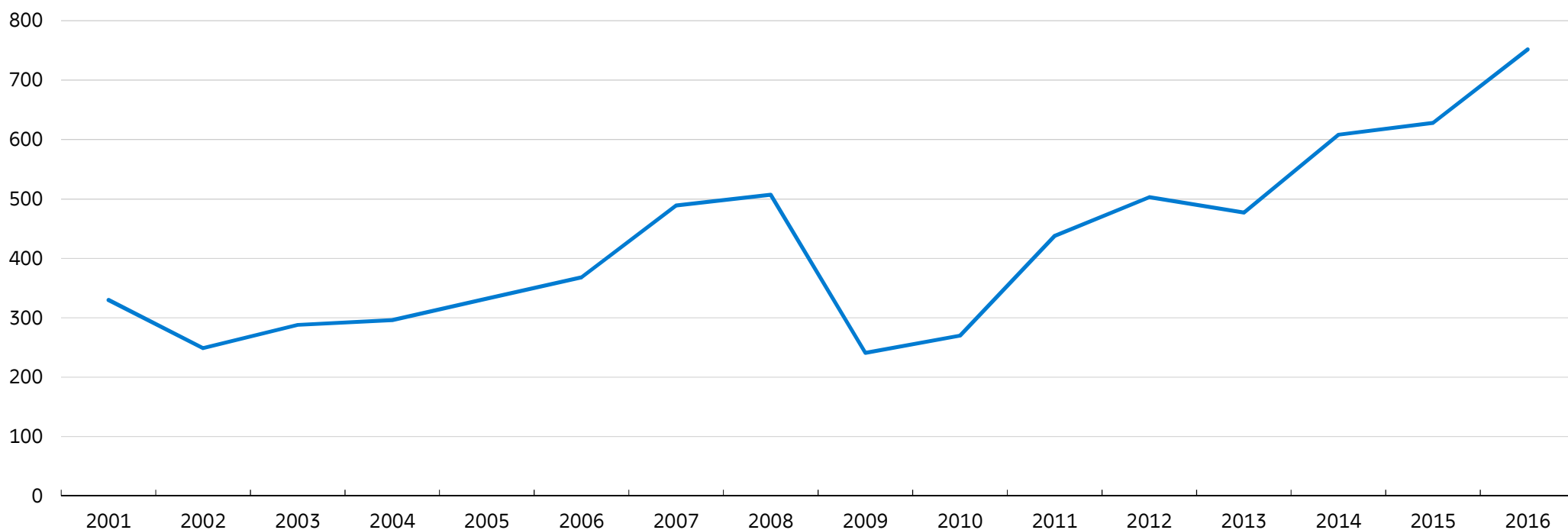
Note: Data for 2015. Net replacement rates in case of unemployment for insured unemployed workers. Low-income workers earn less than 67 per cent of that of an average worker, while high-income workers earn more than 150 per cent of that of an average worker.

Source: OECD.

# Automation of job tasks in Denmark

# Newly installed industrial robots in Denmark on the rise

Number of newly installed industrial robots



Source: Danish Industrial Robot Association.



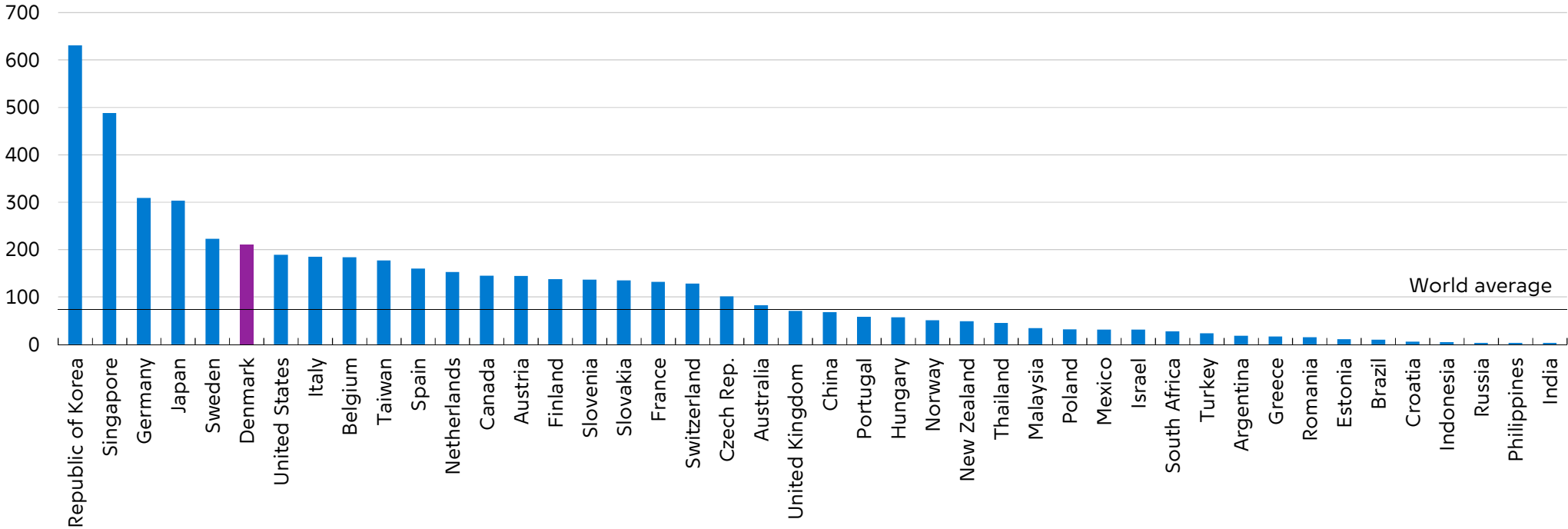
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# Robot density is relatively high in the Danish manufacturing industry

Number of installed industrial robots per 10,000 employees in the manufacturing industry

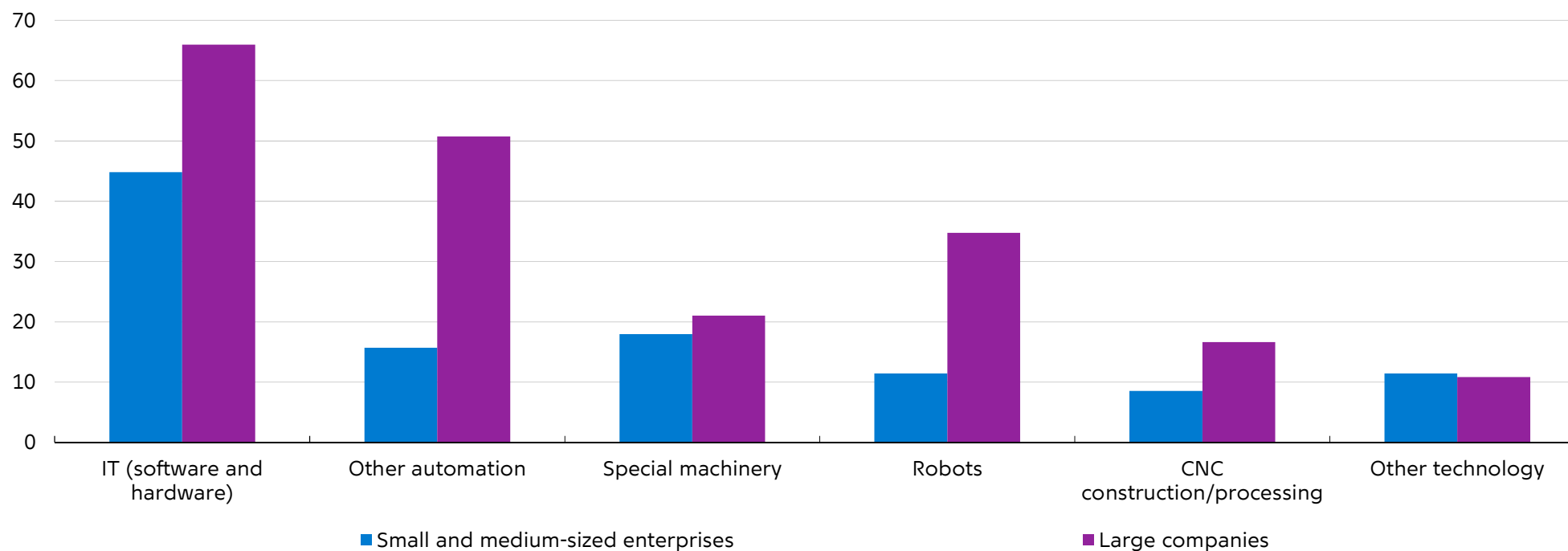


Note: Data from 2016.  
Source: International Federation of Robotics.

# Danish firms plan to invest in IT in 2018

## Share of Danish firms planning to invest in...

Per cent



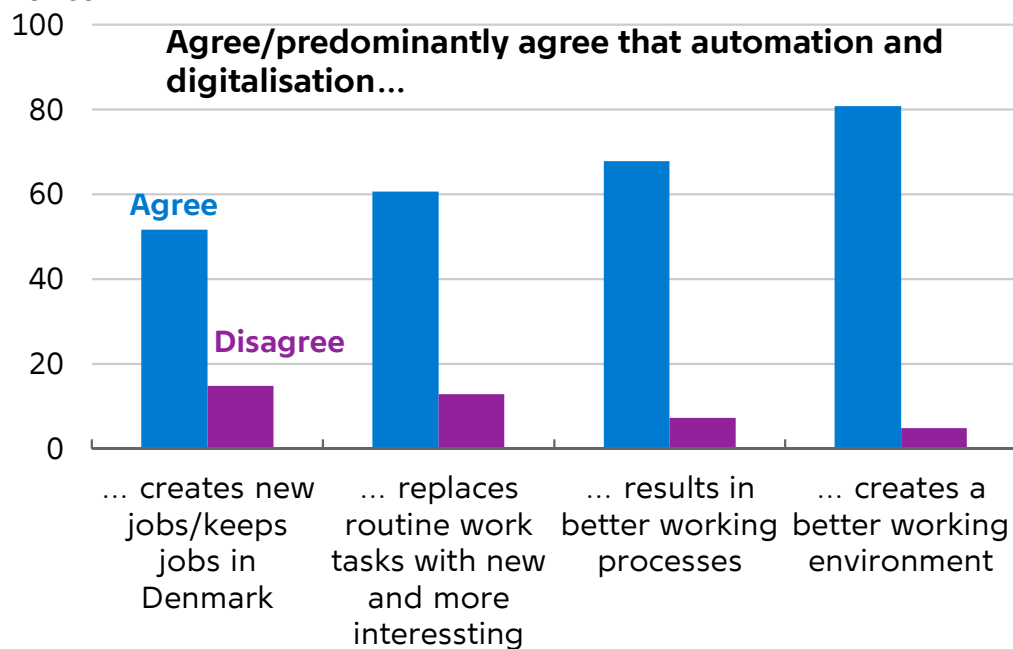
Source: The Confederation of Danish Industry, DI.



# Danish workers do not fear automation

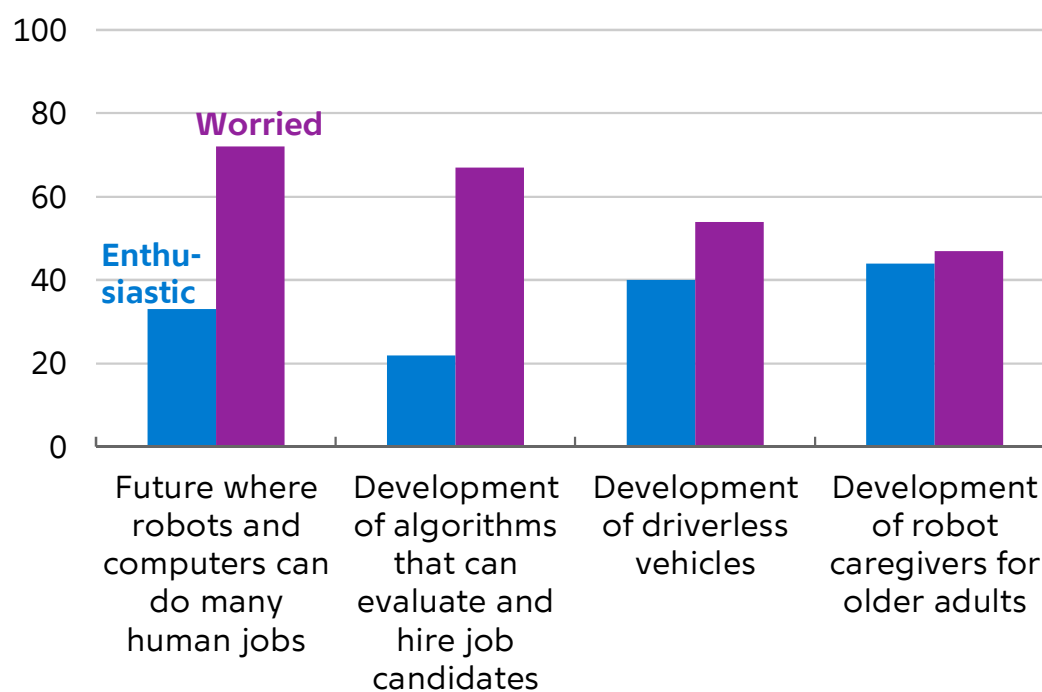
## Denmark

Per cent



## USA

Per cent of US adults



Source: The Danish Confederation of Trade Unions, LO (left) and PEW Research Center (right).



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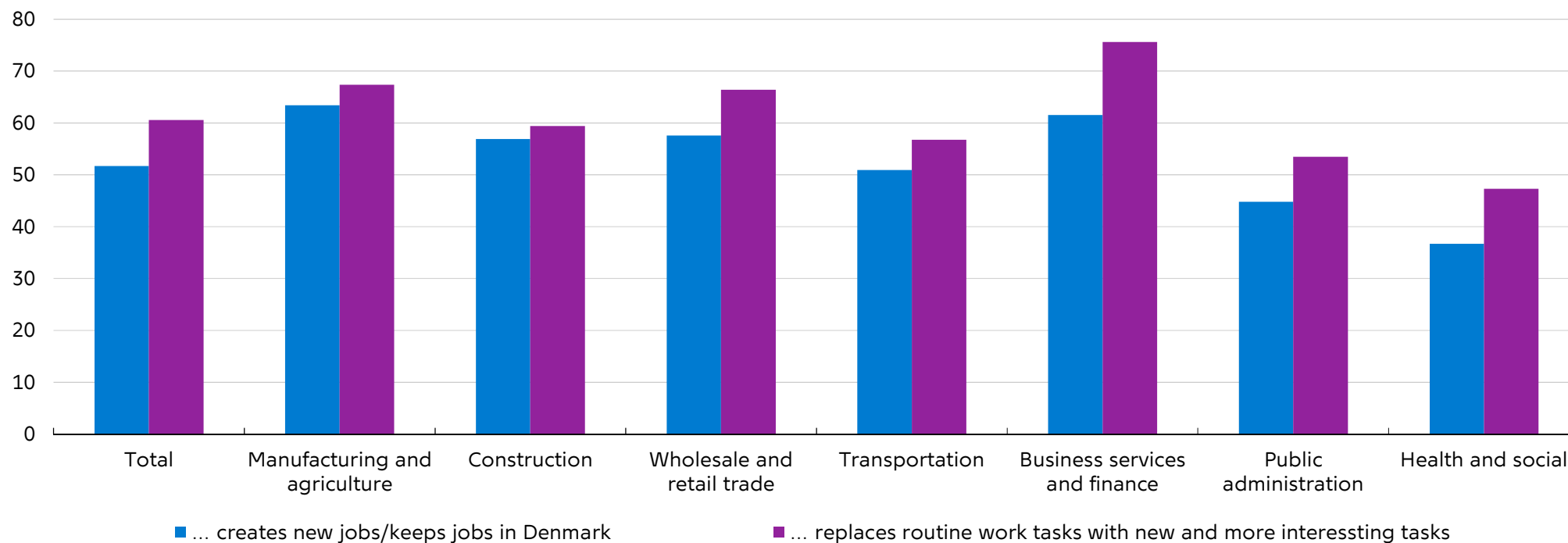
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## ...and optimism is shared across industries

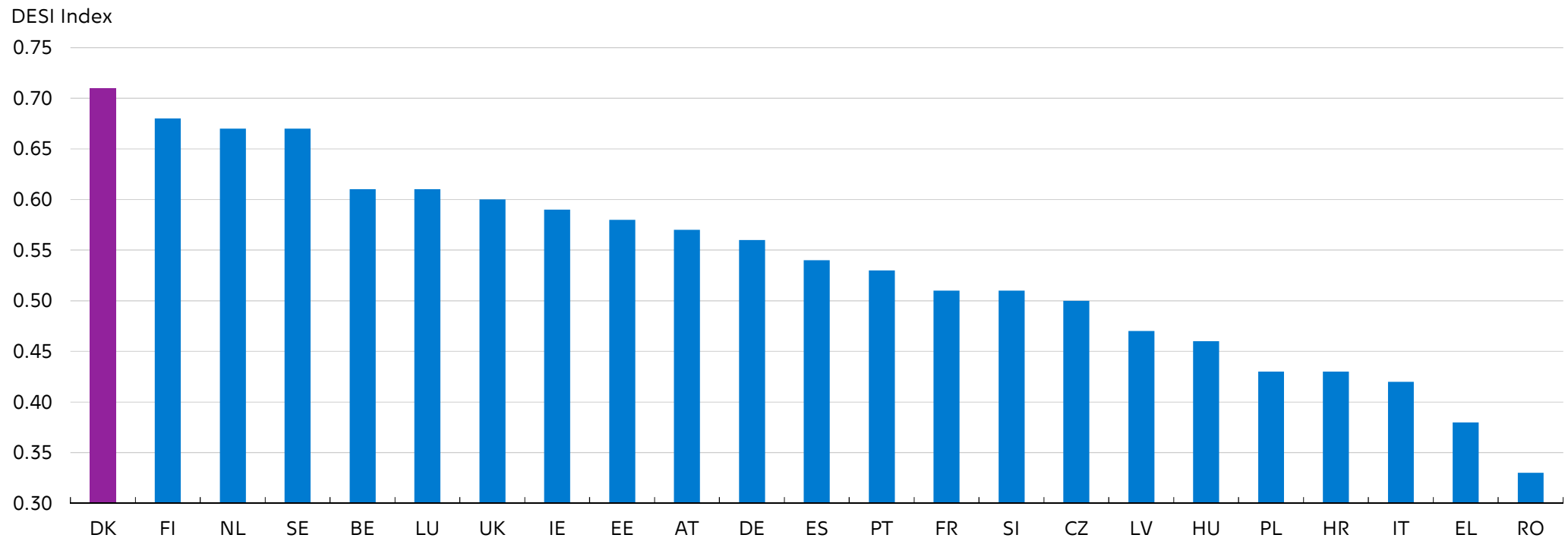
To which extent do you agree in the following statements concerning automation and digitalisation? Agree/predominantly agree that it...

Per cent



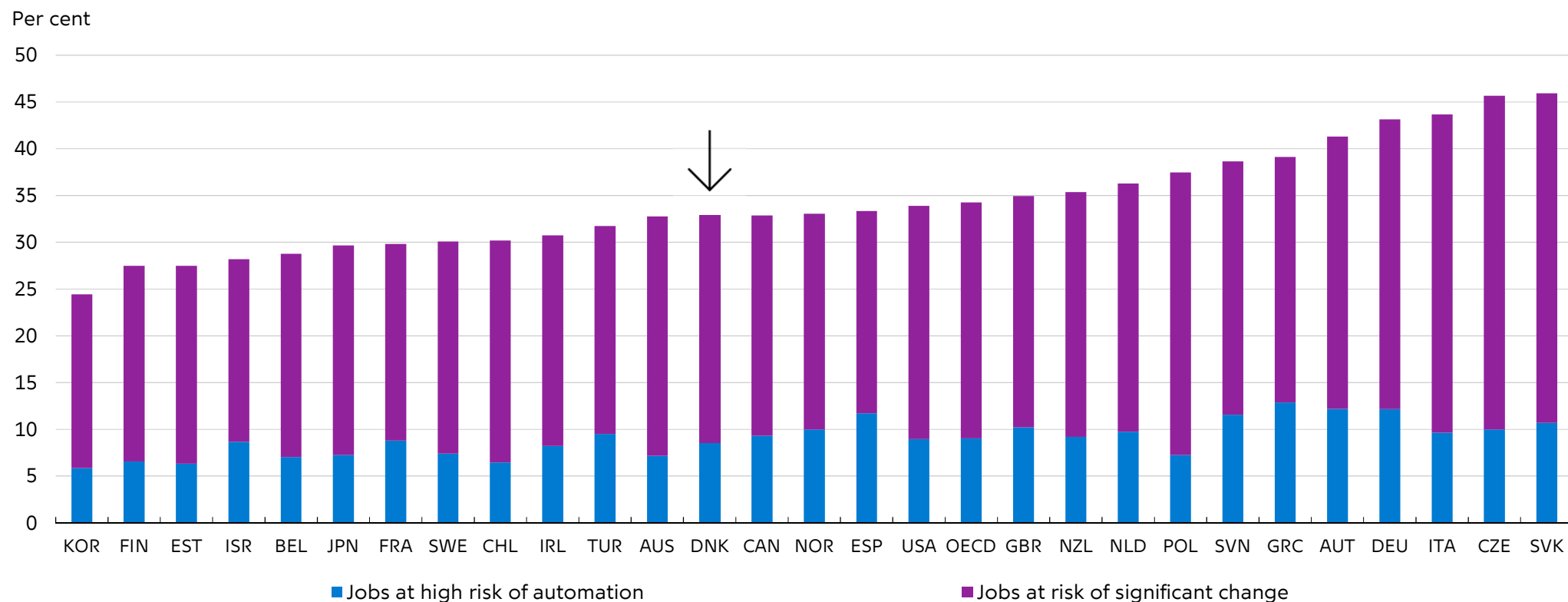
Source: The Danish Confederation of Trade Unions, LO.

## ...which may reflect that Denmark is a highly digitalised country



Note: DESI is an abbreviation of The Digital Economy and Society Index.  
Source: European Commission.

# OECD: 34 per cent of jobs at high or significant risk of automation



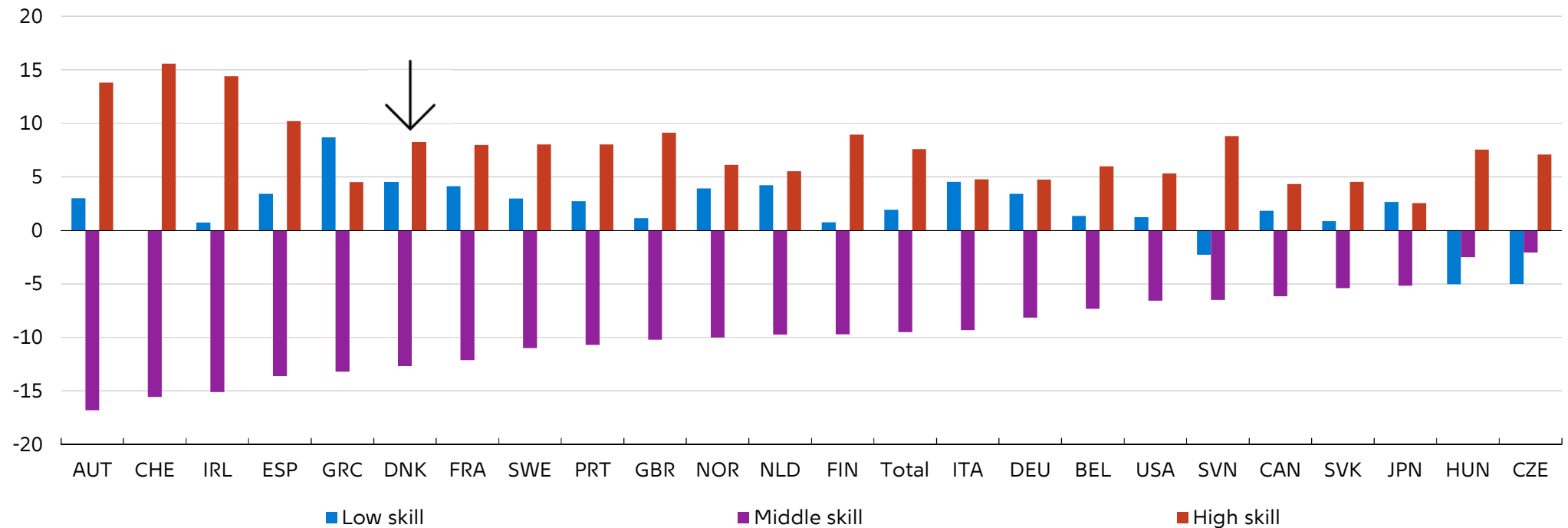
Note: Jobs are at high risk of automation if the likelihood of their job being automated is at least 70 per cent. Jobs at risk of significant change are those with the likelihood of their job being automated estimated at between 50 and 70 per cent..

Source: OECD Employment Outlook 2017, chapter 3, box 3.3.

# During the last 20 years, the share of middle-skilled jobs have decreased

## Change in share of total employment, 1995 to 2015

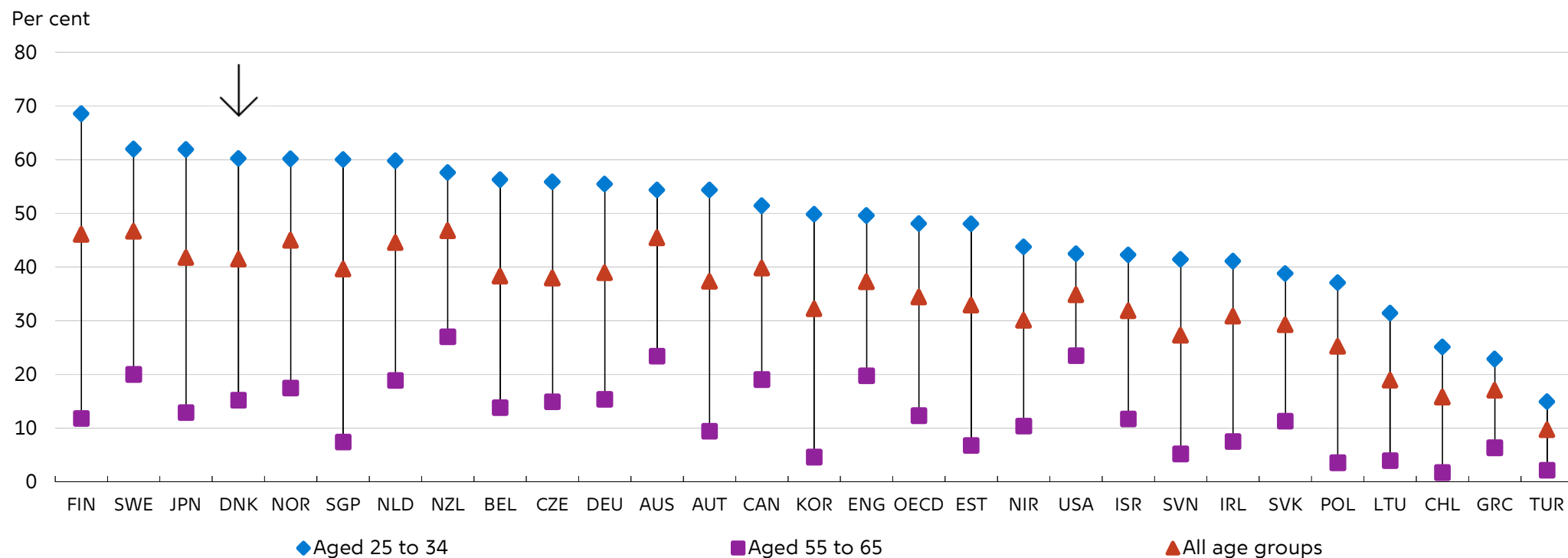
Percentage points



Source: OECD Employment Outlook 2017, chapter 3..

# Are all workers prepared for the new world of work?

## Share of 25-34 and 55-64 year-olds performing at Level 2 or 3 in problem solving in technology-rich environments



Note: Individuals in Level 2 or Level 3 have more advanced ICT and cognitive skills to evaluate problems and solutions than those in Level 1 or below.  
Source: OECD Employment Outlook 2017, chapter 3.

# Policy

# Challenges

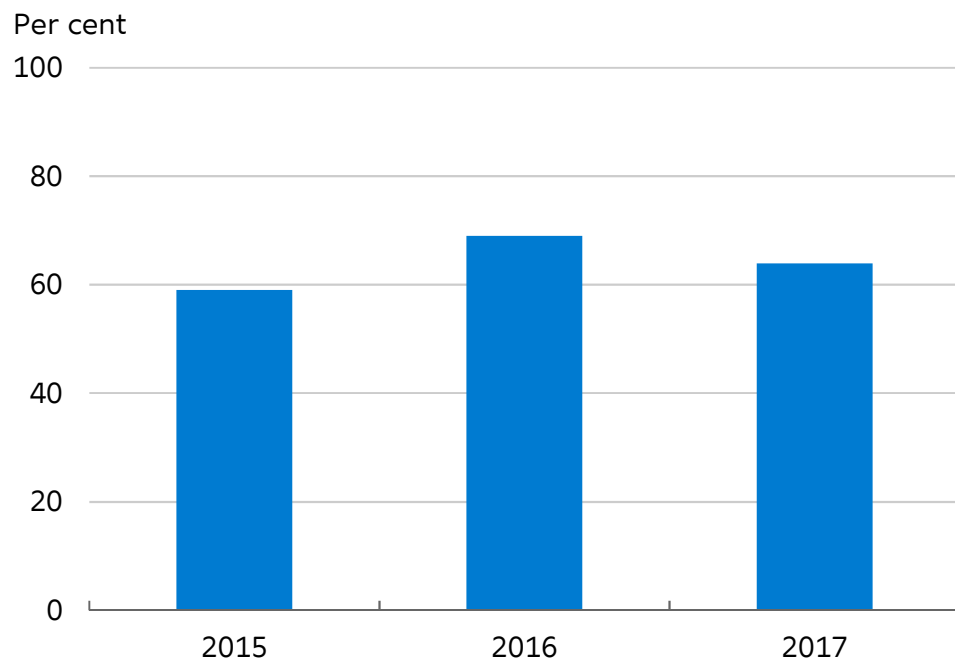
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- Legal issues
- Moral and ethical issues
- Distributional consequences
- Cyber robustness



# Cyber robustness

**64 per cent of Danish firms were hit by a cyber attack in 2017**



## FINANCIAL TIMES

AUGUST 16, 2017

**Moller-Maersk  
puts cost of cyber  
attack at up to \$300m**

# Policy

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- Framework conditions
  - Flexible labour-market structures
  - Education and life-long learning, also for the low-skilled
  - Social security
- 
- The Danish labour-market model (flexicurity): Balance between flexibility and security must be continuously monitored

# The Danish labour-market model: Protecting workers, not jobs

*»We insist on seeking collective solutions to common challenges. This is why Danish trade unions work with employers and the Danish government to manage disruption. We need to ensure that everybody is prepared for the future.«*

Lizette Risgaard, President of The Danish Confederation of Trade Unions (LO), in Financial Times, 21 March, 2018

On unemployment insurance benefits:

*»You might be able to increase the labour supply at the margin. But doing so would start a process where we change our labour-market model. This would be very costly for us.«*

Karsten Dybvad, CEO of The Confederation of Danish Industry (DI)

Own translation of Karsten Dybvad quote.