

Industry 4.0 challenge: Learning from the Italian experience

EUROPEAN THINK TANK EXCHANGE
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Building 4.0 supply and demand

The digital transformation of national production systems poses two challenges:

1. Investing in the development of 4.0 technologies;
2. Investing in the technological upgrading of existing production processes.



European supply of 4.0 technologies

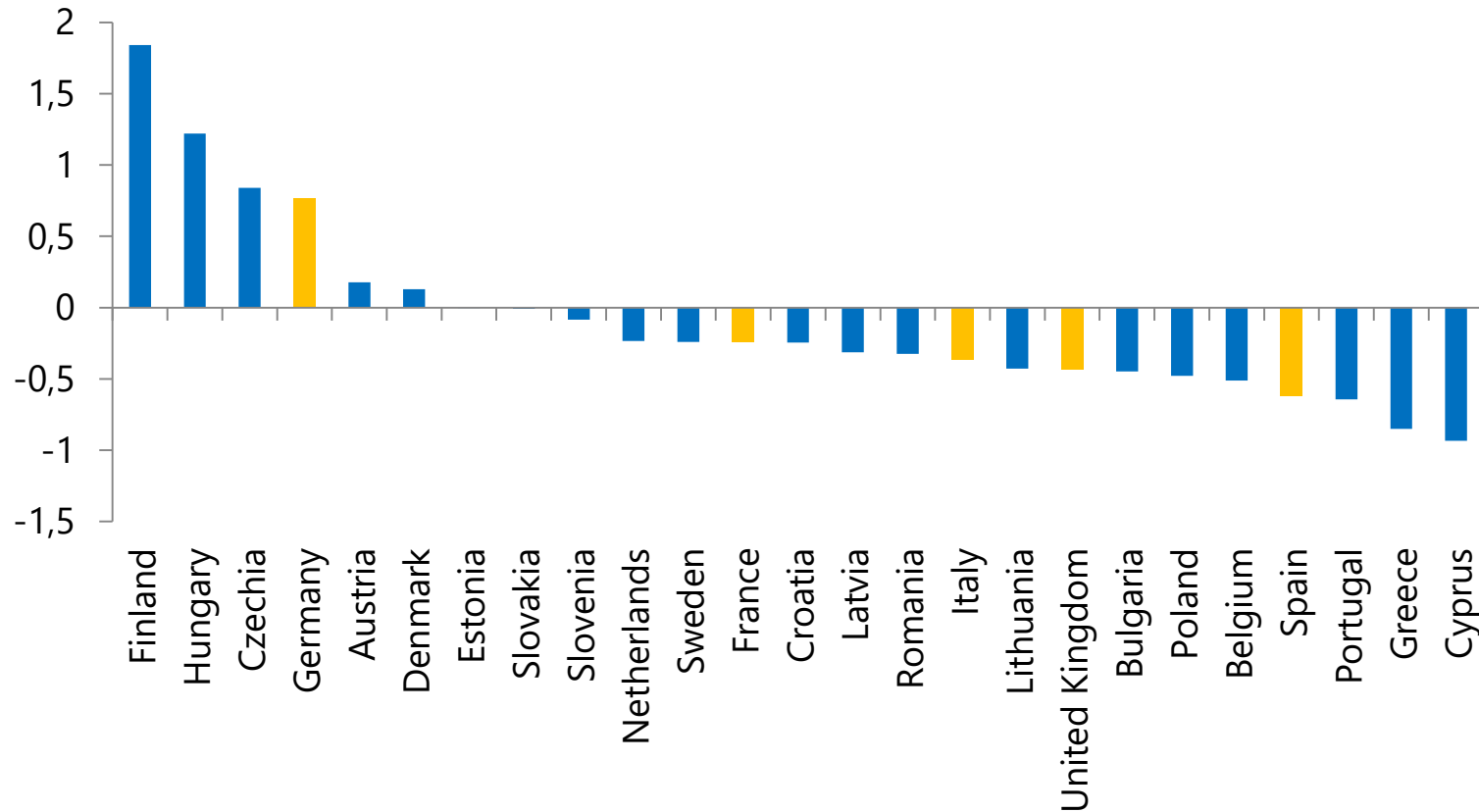
Many European countries can leverage on their current specialization to develop endogenous know-how related to 4.0 technologies.

- Manufacturing of high-tech goods;
- Manufacturing of machinery and equipment for industrial purposes;
- Information service activities.



Revealed comparative advantage in high-tech goods

(Balassa index of sectoral value added - 1, Benchmark: EU, 2016)

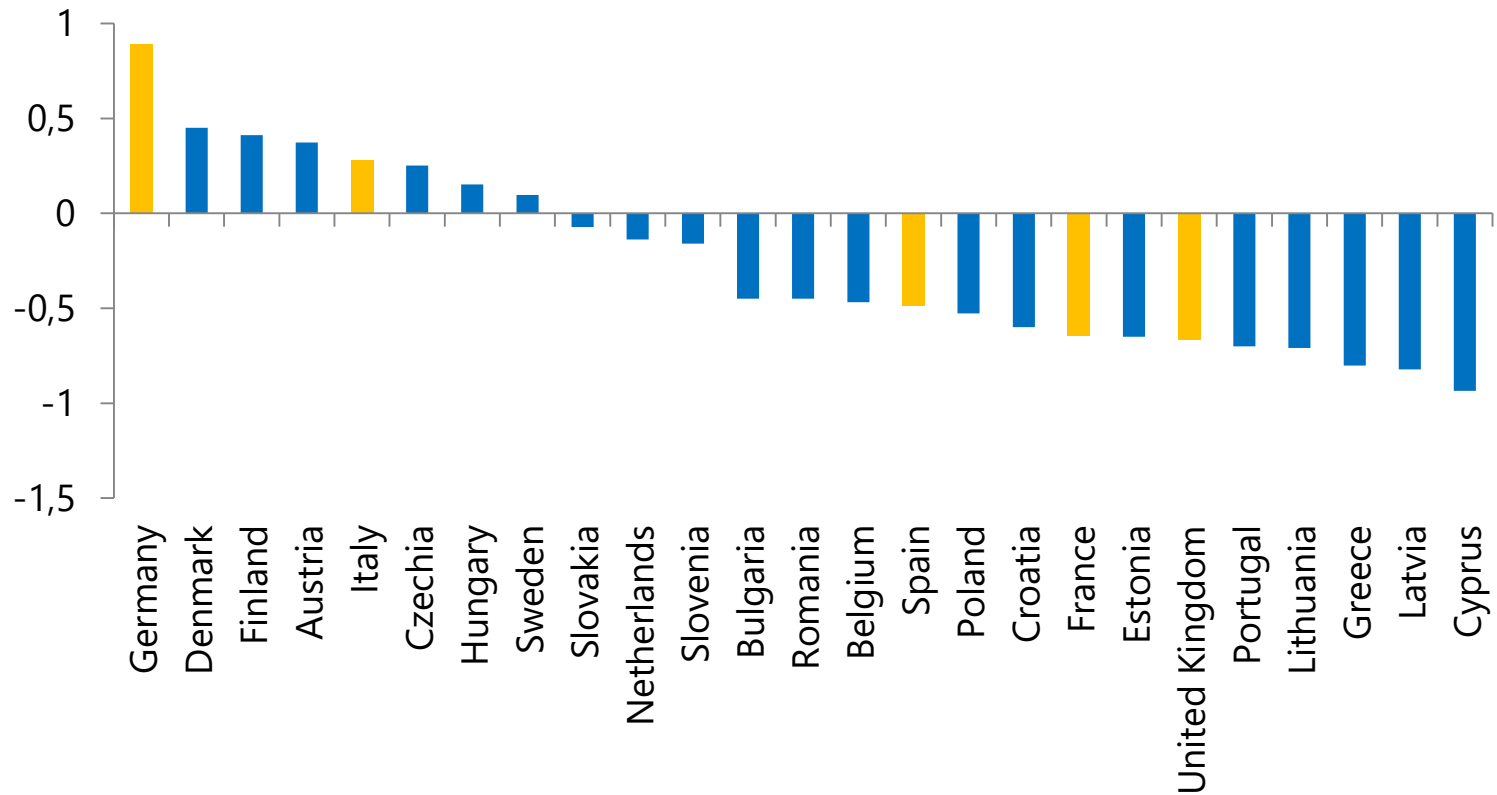


Source: CSC calculations on Eurostat data.



Revealed comparative advantage in industrial machinery

(Balassa index of sectoral value added - 1, Benchmark: EU, 2016)

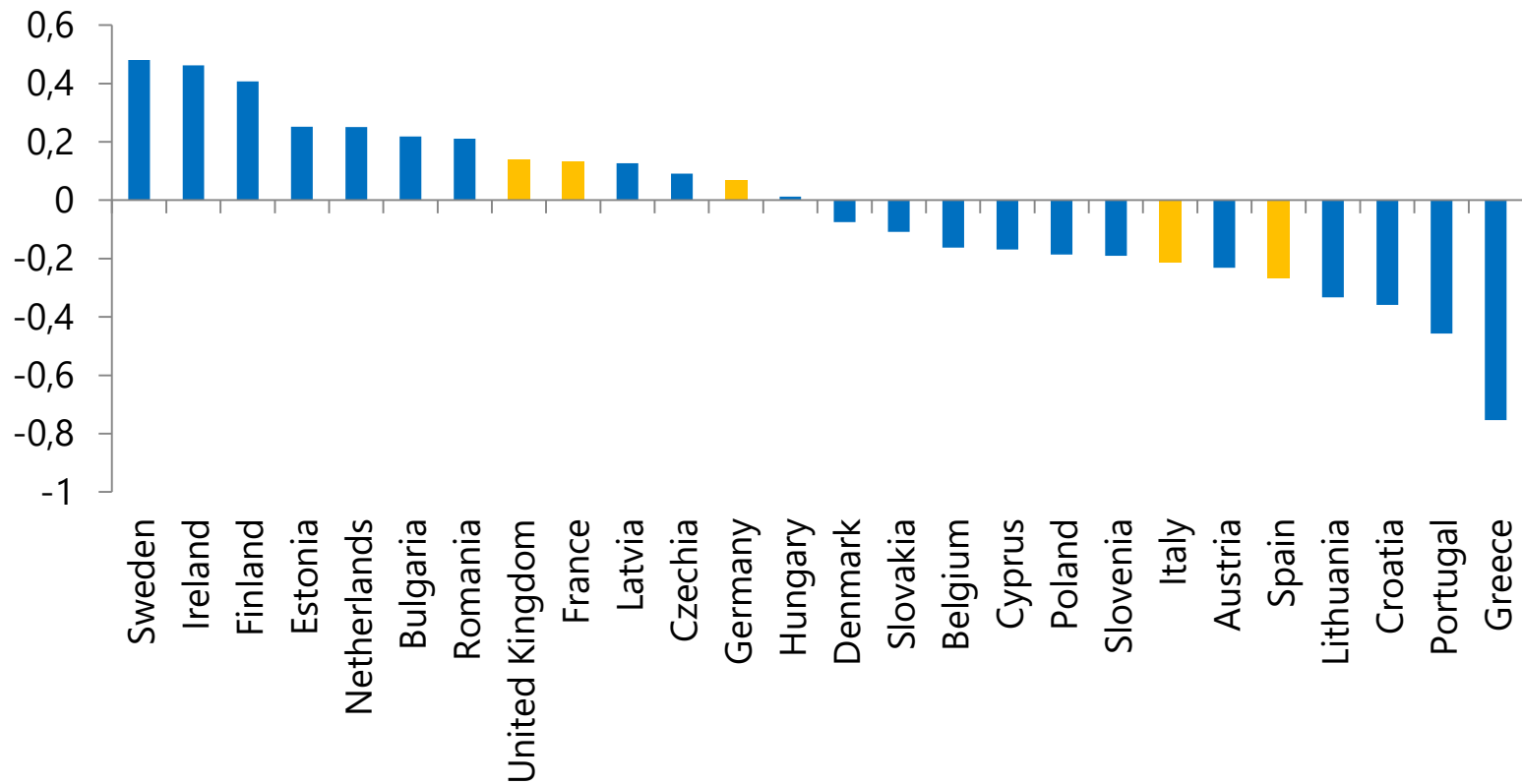


Source: CSC calculations on Eurostat data.



Revealed comparative advantage in information service act.

(Balassa index of sectoral value added - 1, Benchmark: EU, 2016)



Source: CSC calculations on Eurostat data.



Demand for 4.0 technologies

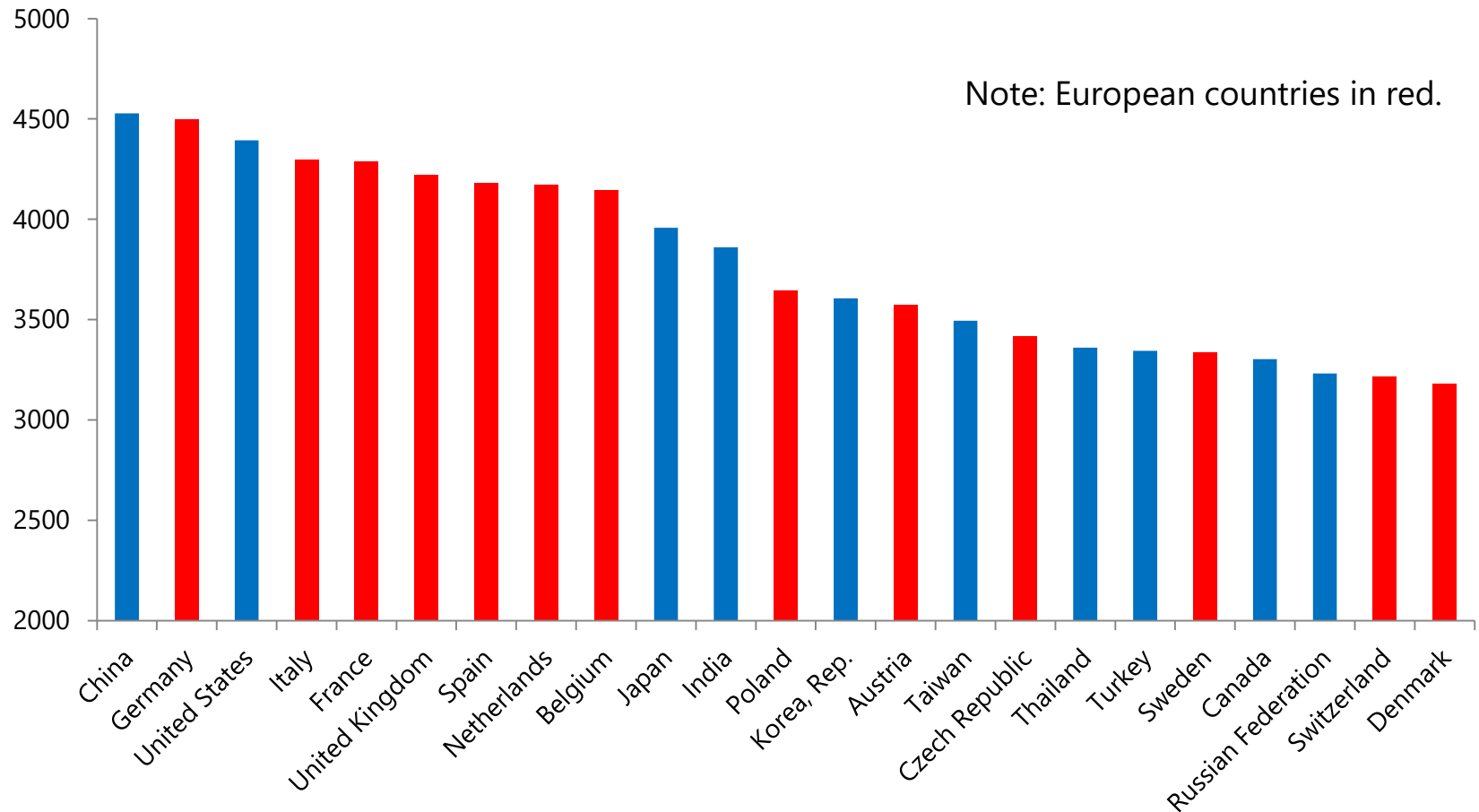
Market potential for 4.0 technologies greatly varies, depending on:

- the diversification of applications;
- the innovation propensity;
- absorptive capacity of firms.



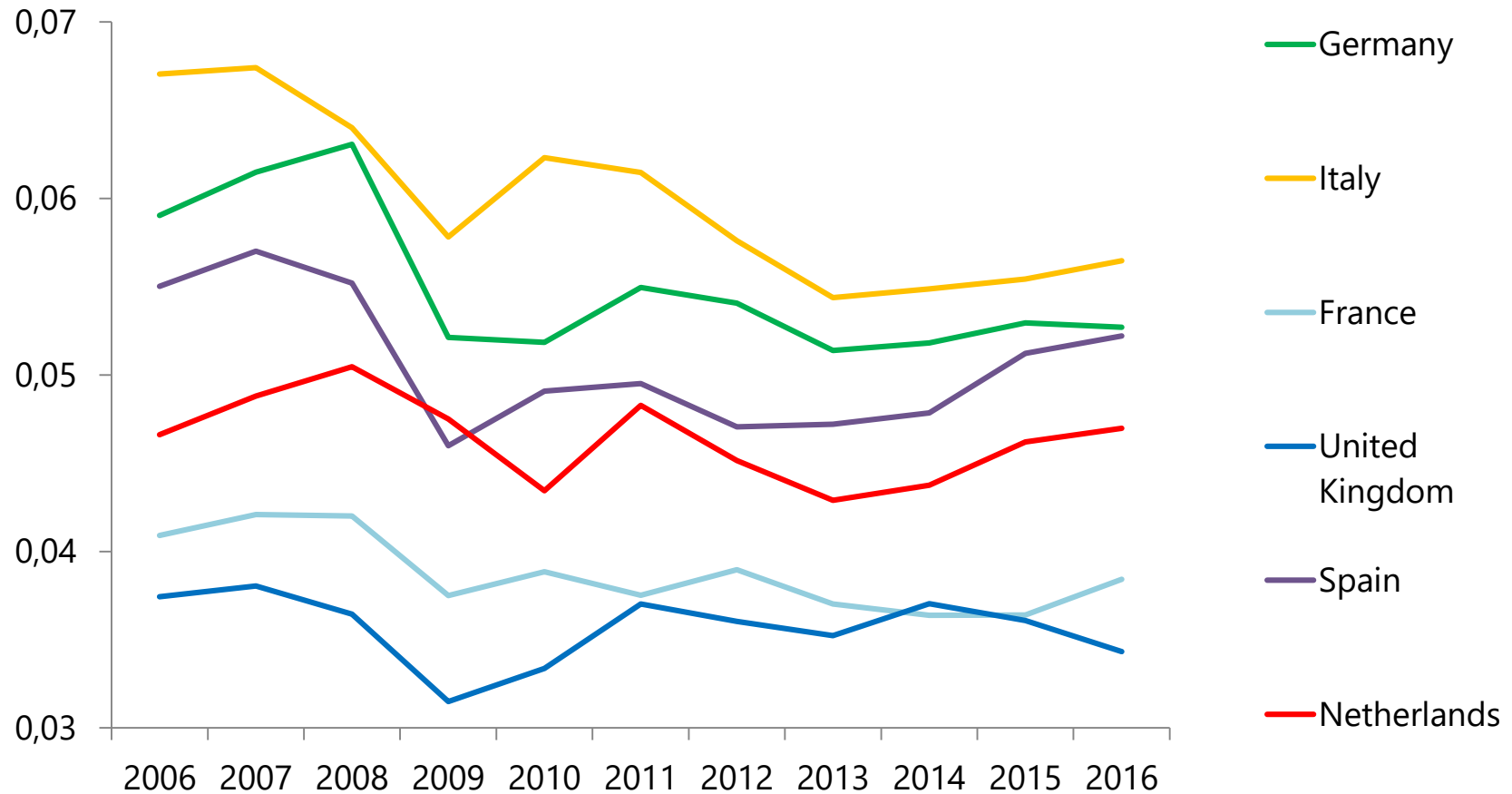
Highly diversified production in Europe

(Number of products exported, 2016)



Varying intensity of investment in machinery & equipment ...

(Gross fixed capital investment share of total VA, current prices)

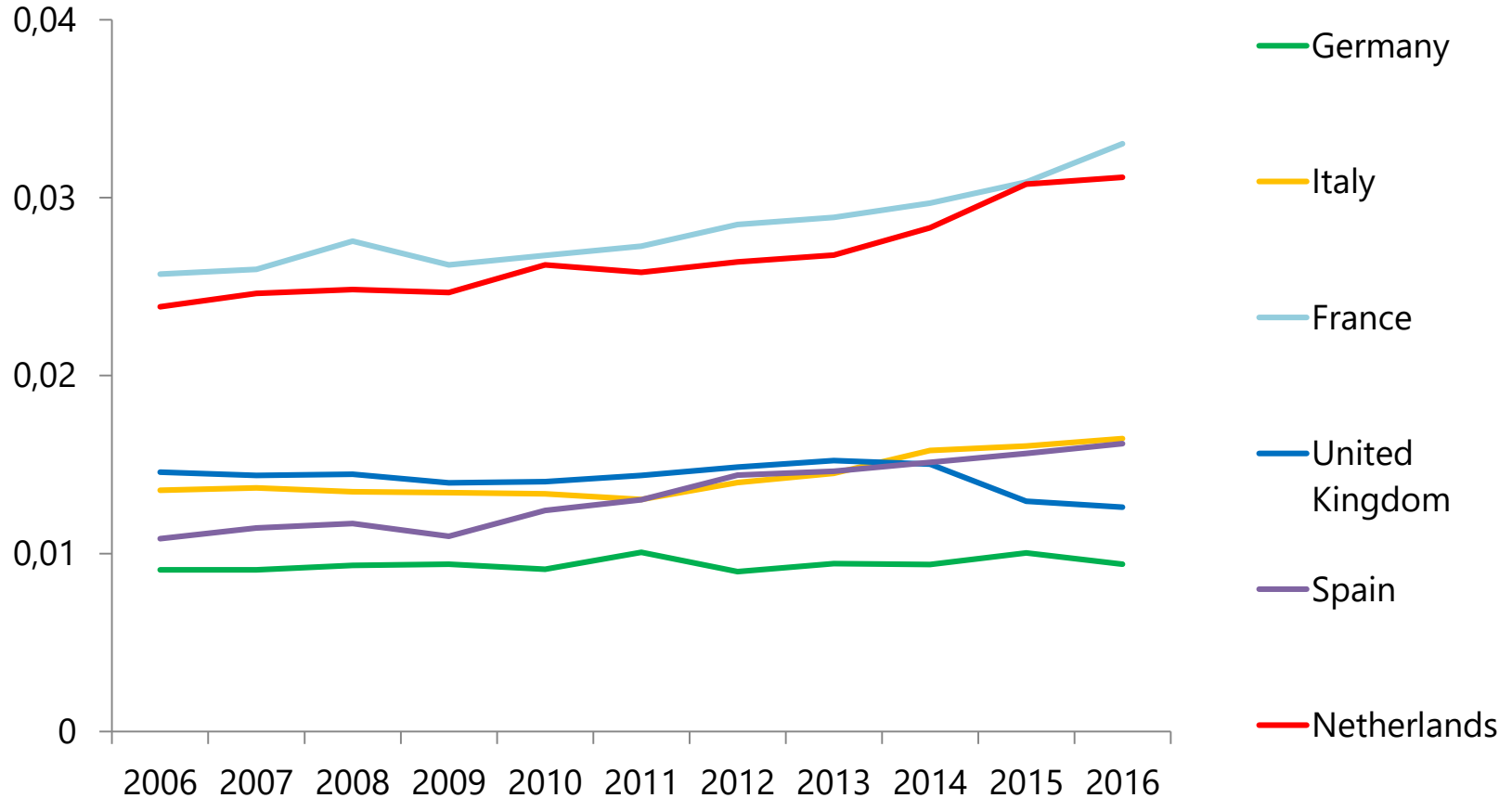


Source: CSC calculations on Eurostat data.



... and in software and database

(Gross fixed capital investment share of total VA, current prices)

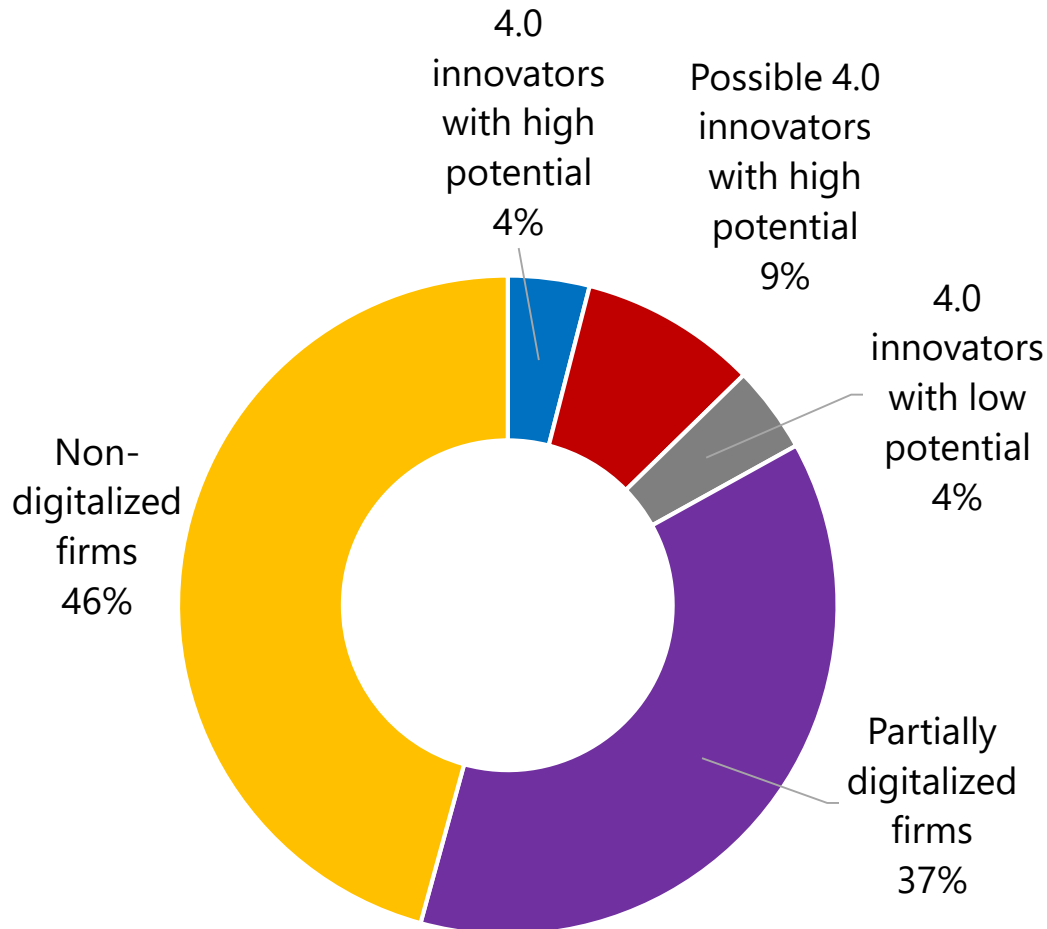


Source: CSC calculations on Eurostat data.



4.0 absorptive capacity of Italian manufacturing #1

(Digital maturity, firms with 10 employed workers or more, 2016)

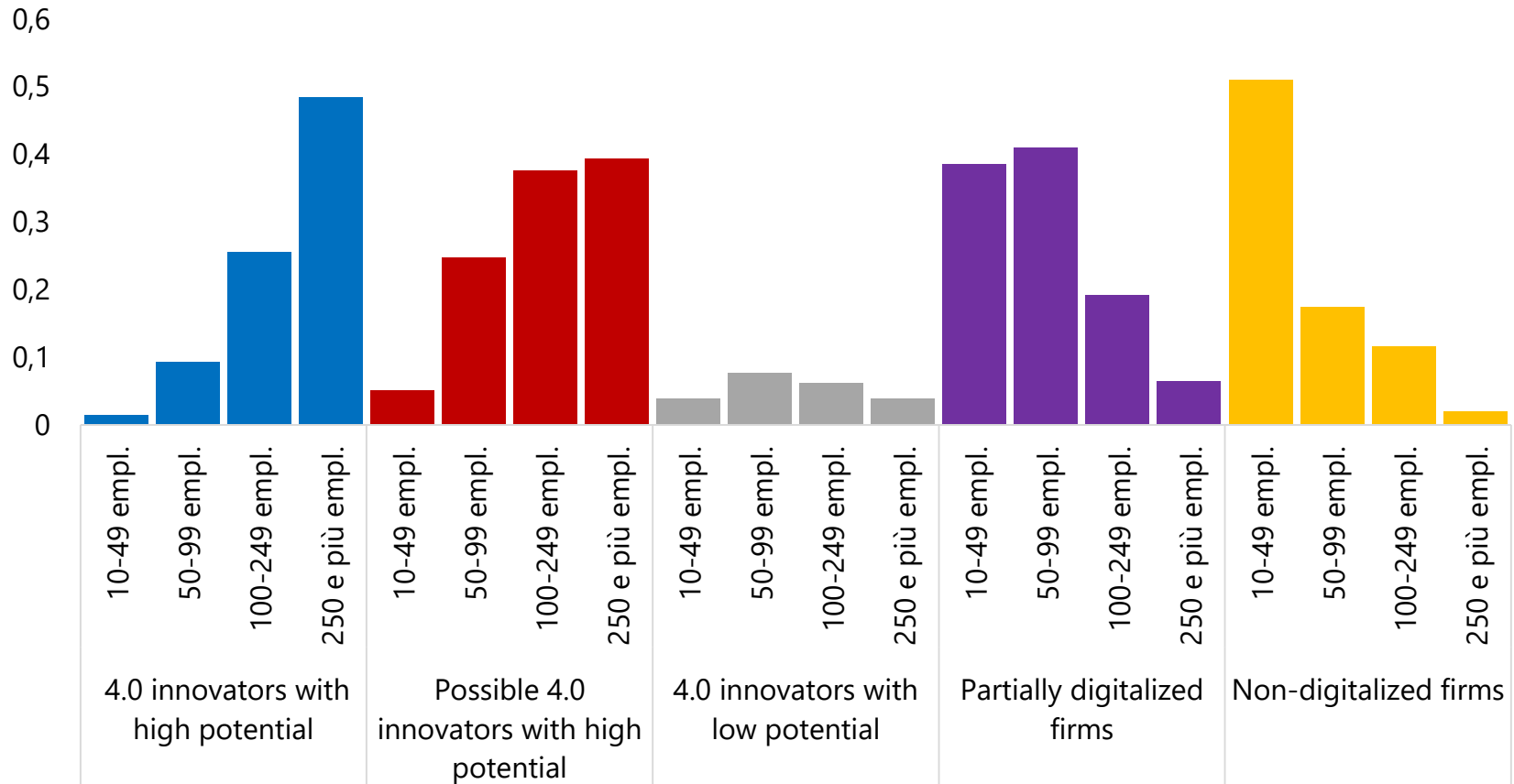


Source: CSC calculations on Istat data.



4.0 absorptive capacity of Italian manufacturing #2

(Digital maturity, firms with 10 employed workers or more, 2016)

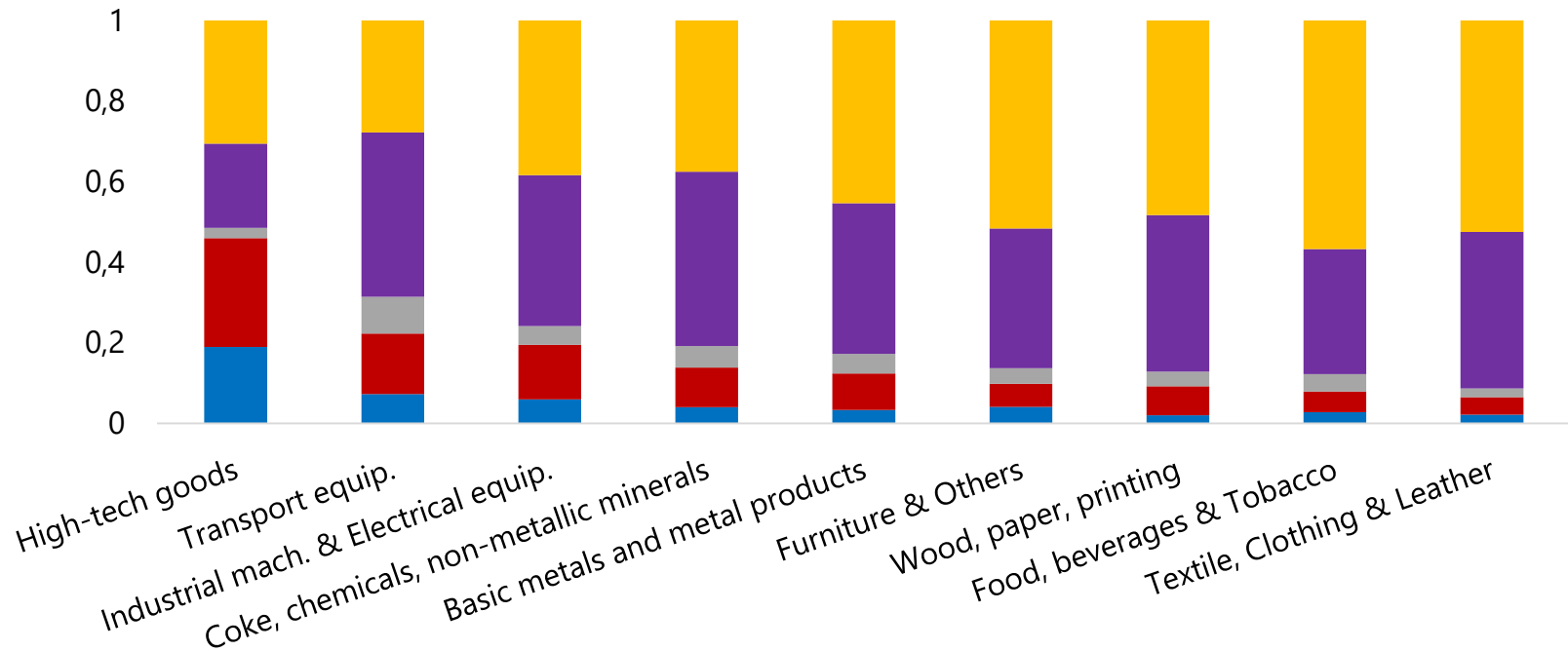


Source: CSC calculations on Istat data.



4.0 absorptive capacity of Italian manufacturing #3

(Digital maturity, firms with 10 employed workers or more, 2016)



- 4.0 innovators with high potential
- 4.0 innovators with low potential
- Non-digitalized firms

- Possible 4.0 innovators with high potential
- Partially digitalized firms

Source: CSC calculations on Istat data.



Industrial policy for digitalization

An effective industrial policy for digitalization should target both the supply of and the demand for 4.0 technologies.

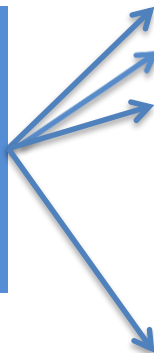
- Italy's Industry 4.0 National Plan (launched in 2017) is unique in the European landscape. It is based on:
 - integration of the existing Smart Specialization Strategy with direct support for investments in technological upgrading;
 - complementary actions tackling different constraints to digital transformation.



Italian Industry 4.0 National Plan in detail

Constraints and corresponding policy measure	In operation	
	2017	2018
Tackling the infrastructure constraint		
Ultra Wideband Strategic Plan (71% of coverage)	Yes	Yes
Tackling the financial constraint to investments		
Hyper- and super- depreciation of assets	Yes	Yes
Public Guarantee Fund	Yes	Yes
Discount on loan interest rates for buying investment goods	Yes	Yes
R&D tax credit	Yes	Yes
Grants for research and innovation projects	Yes	Yes
Tackling the absorptive capacity constraint		
R&D tax credit	Yes	Yes
Tax credit for 4.0 technology training costs	No	Yes
Competence center	No	In preparation
Strengthening Higher VET	No	Yes
Strengthening cooperation along the national VCs		
Italian Technology Cluster Intelligent Factories	Yes	Yes
Digital Innovation Hub	In preparation	In preparation
Competence center	No	In preparation

Stimulus
to demand



Lighthouse plants initiative

Thanks to the efforts of the Intelligent Factories cluster 4 lighthouse plants are going to be realized between 2018 and 2020, with the support of the Ministry of Education, University, Research .

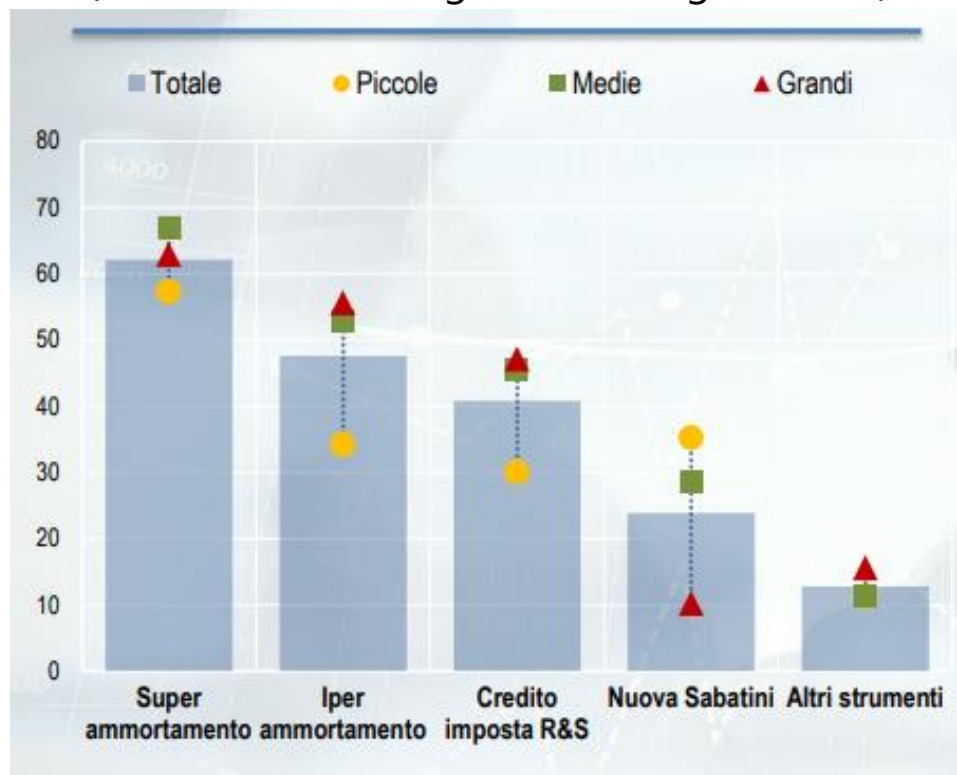
They will not be pilot projects but real production plants, useful for testing new technologies using an open innovation approach.



Has the Plan worked?

Still too early to draw conclusions (first hard data at the beginning of next year), but existing signs are encouraging.

Importance of fiscal incentives in 2017
(% of manufacturing firms having invested)



Source: MISE.

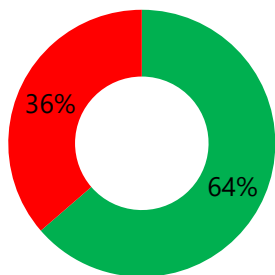


Has the Plan worked?

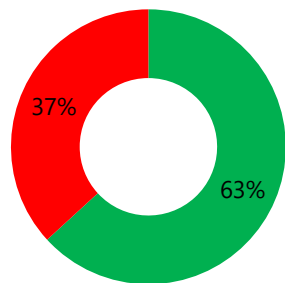
Lack of absorptive capacity remains the main policy concern.

Manufacturing firms judgment about the relevance of incentives for 4.0 investment decisions
(2017-2018 investment plan, firms with 10 employed workers or more)

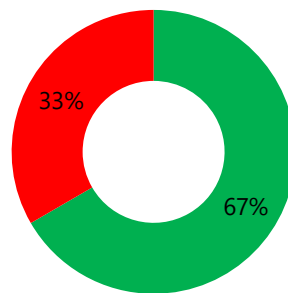
4.0 innovators with high potential



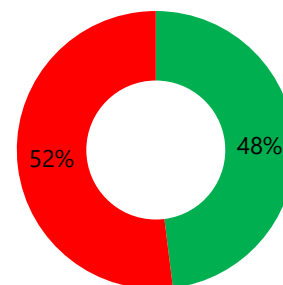
Possible 4.0 innovators with high potential



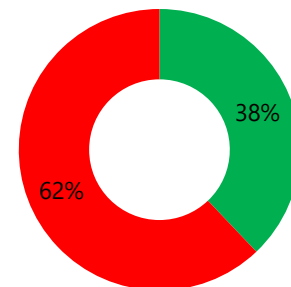
4.0 innovators with low potential



Partially digitalized firms



Non-digitalized firms



■ Incentives are relevant
■ Incentives are irrelevant

Source: CSC calculations based on Istat data.



Thank you!

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