

## ITALY

How to estimate the growth potential of Italy? Which sectors will grow, which products, which regions? Using techniques lent from network science and machine

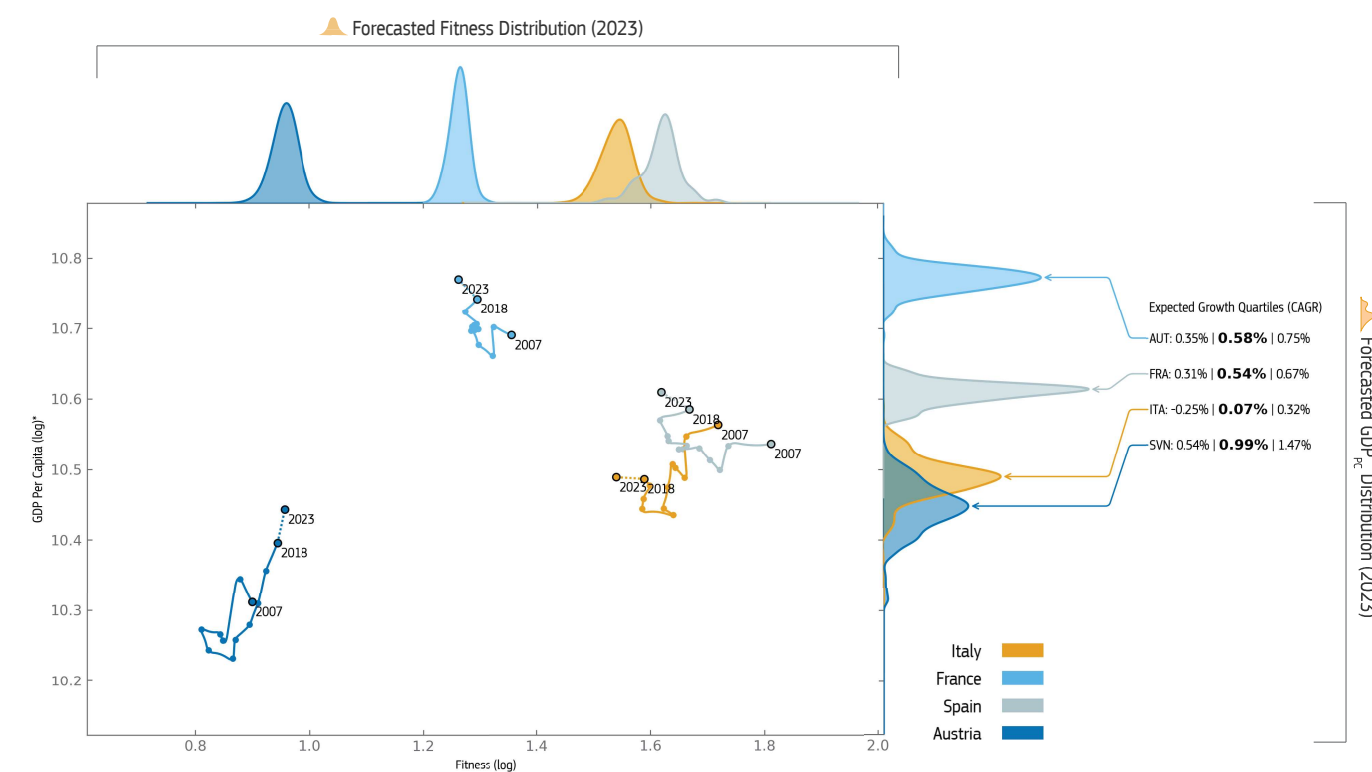
learning we will produce synthetic indicators apt to inform national and sub-national industrial policy.



## GROWTH POTENTIAL OF ITALY

Economic Fitness captures a country's ability to be competitive in a diverse and exclusive set of products, and is a proxy for industrial competitiveness and economic complexity. The interplay between Fitness and GDP per capita gives rise to rich dynamics. A quantitative analysis of the microscopic features of the country trajectories in the GDP-Fitness plane allows for a rigorous, statistically robust description of macroeconomic dynamics and to forecast medium term (5-years) GDP growth.

Italy shows slowly decreasing Fitness. GDP is expected to grow slower than EU27 trend, with a median Compound Annual Growth Rate (CAGR) of 0.07% for 2018-2023. The model predicts a CAGR larger than -0.25% with a 75% probability, and larger than 0.31% with a 25% probability. Among the comparators, Austria is expected to have the fastest GDP growth (median CAGR 2018-2023: 0.58%)

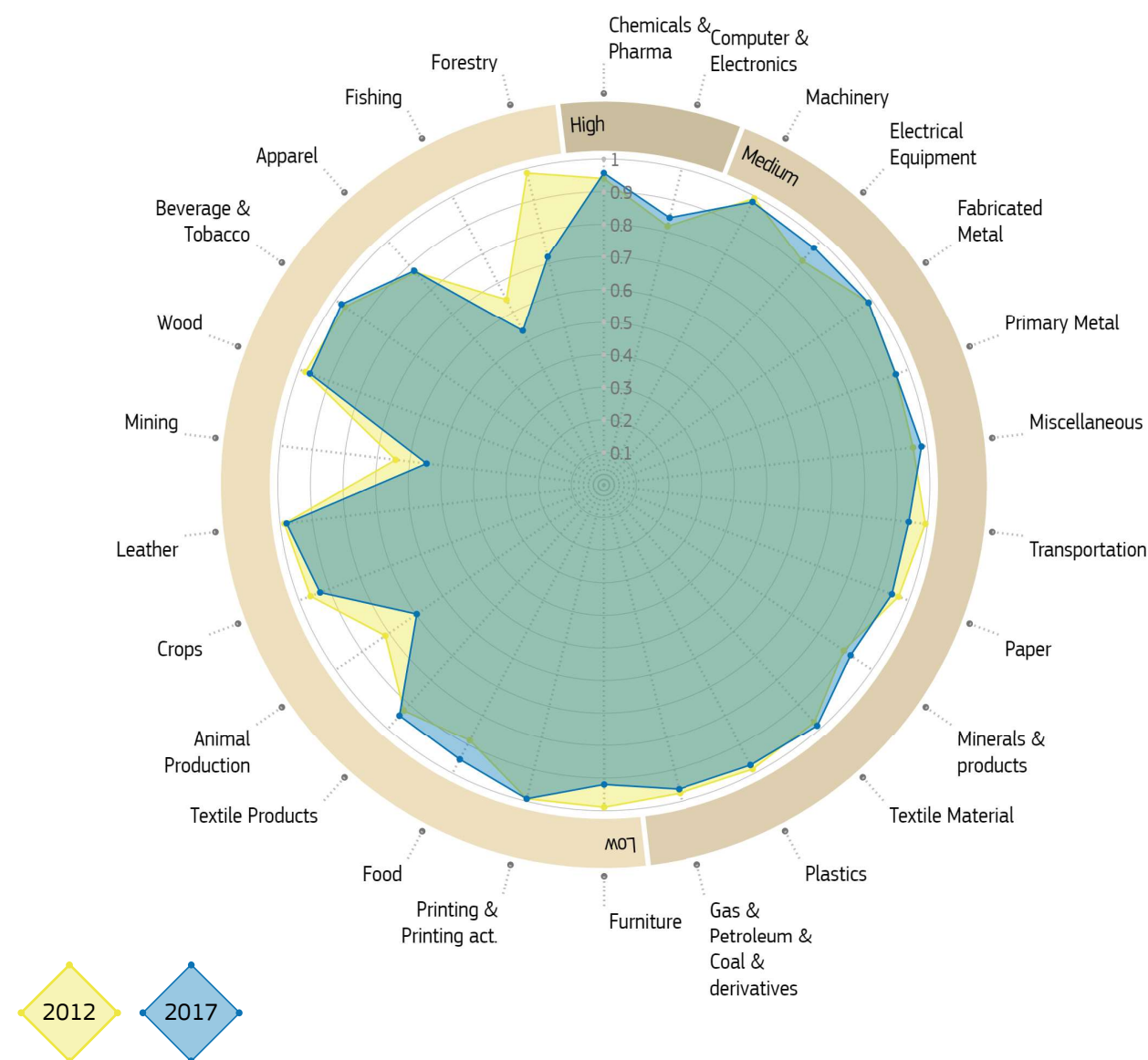


\*GDP Per Capita at Purchase Power Parity in 2017 Constant US\$

## SECTOR FITNESS

We group the ~5000 products in the Harmonized System into 26 sectors according to the NAICS classification. We can also organize those sectors into three complexity classes for higher aggregation. In the past years Italy has lost competitiveness across several low complexity sectors, such as Animal Production and

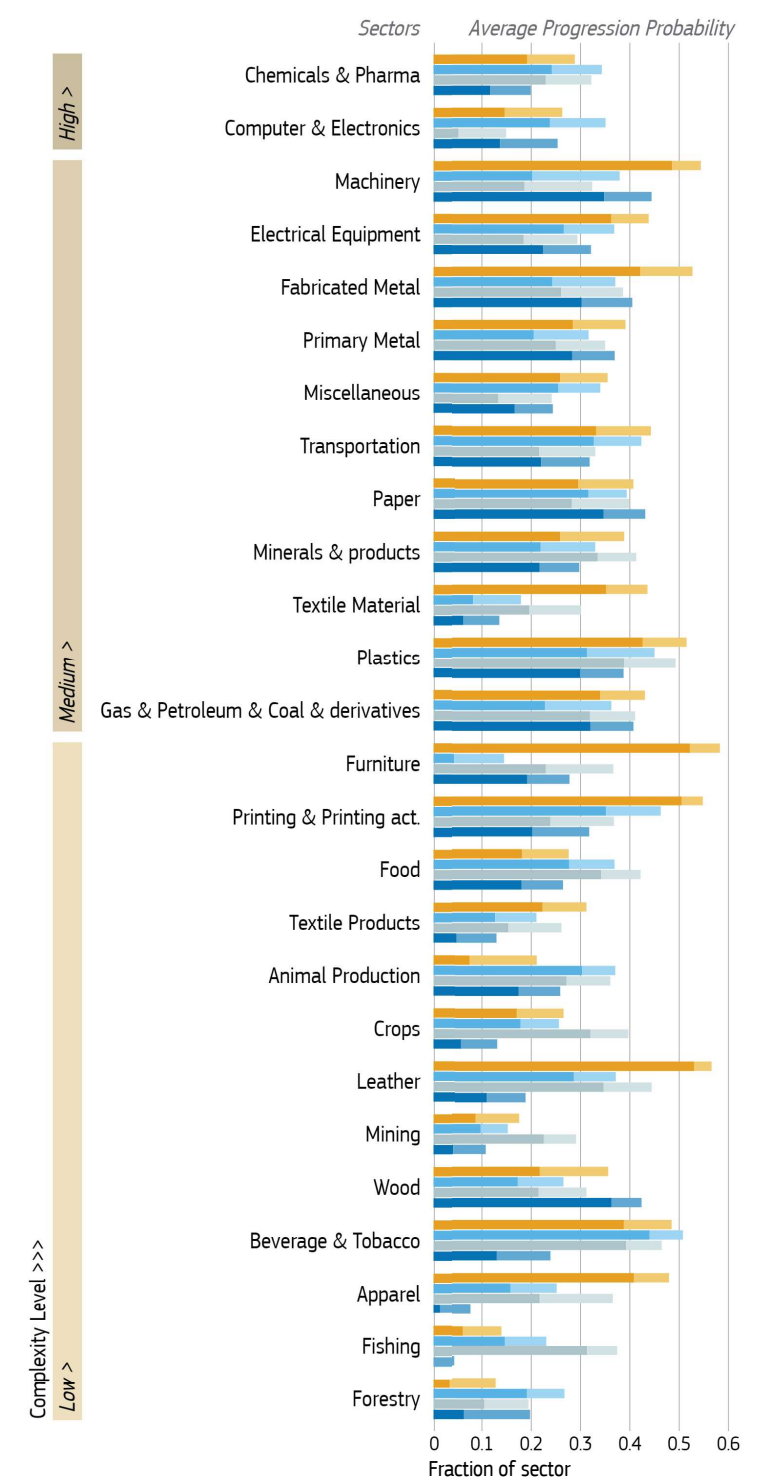
Furniture. However Italy managed to hold its high competitiveness in most medium and high complexity sectors. We observe a small increase in the Computer and Electronics sector that, as we see in the next section, is a sector for which an important development is expected in the next years.



## EXPECTED DIVERSIFICATION IN 2023

Learning from historical data on countries' trade, it is possible to give a probabilistic estimate of the composition of the export basket of a country 5 years from now: this is called Progression Probability. E.g. a score of 0.51 for Italy in 'Direction Finding Compasses' means that there is a 51% probability for Italy to become competitive in that product in the next 5 years. Here we show the expected diversification of Italy and the 3 comparators disaggregated in 26 NAICS sectors, expressed as the fraction of products of the sector in which the country is expected to be competitive in 5 years. The darker shade shows the products on which the country is already competitive, while the lighter shadow is the set of new products.

Italy is expected to maintain a diversification higher than its comparators in the next years across most sectors. An highlight is the Furniture sector where Italy has lost global competitiveness in the past years (see previous section) but where the advantage over the comparators remains significant. Of particular interest is the Computer and Electronics sector, for which about half of Italy's diversification in 5 years is expected to be constituted of new products, on which the country is currently not competitive.

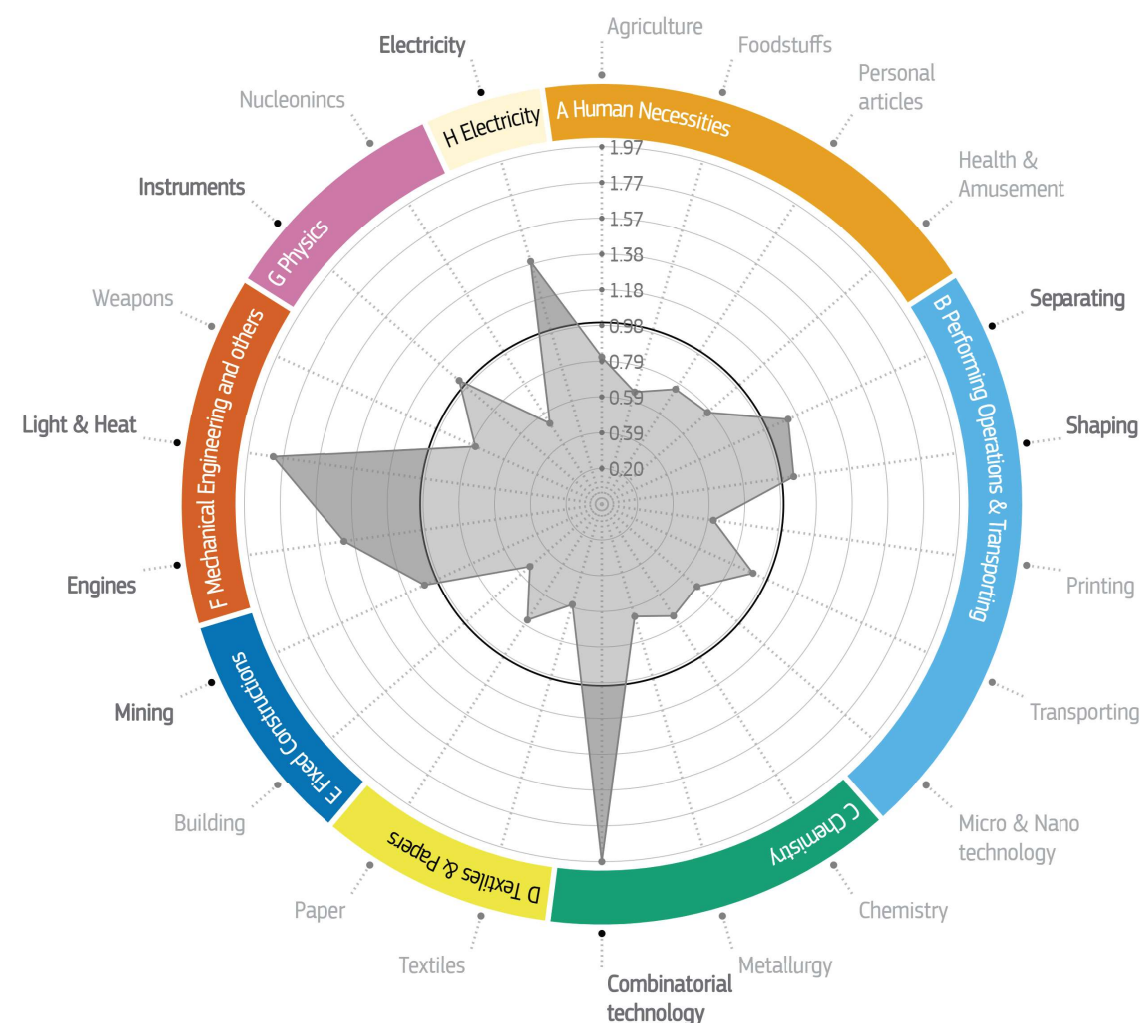


## TECHNOLOGY RADAR

By looking at which patenting fields co-occurs more than randomly in a country with the future successful export of a specific product it is possible to identify the technological fingerprints of products. For example, here are highlighted the technologies anticipating the export of Direction finding compasses (a market where Italy could gain competitive advantage in the next 5 years). The black circumference represents a threshold of co-occurrences expected at random (95% confidence

interval), the gray area the ratio between the actual co-occurrences in that field and the random case.

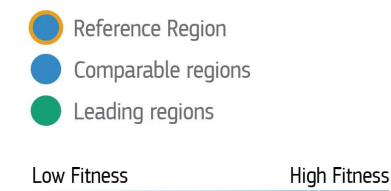
We observe more than random concurrences of future exports with several patenting subsections, in particular patents related to Separating, Shaping, Combinatorial technology, Mining, Engines, Light & Heat, Instruments and Electricity.



## PRODUCT SPECIFIC REGIONAL TECHNOLOGICAL FITNESS

The previous analysis identifies crucial technologies for the export of a product (in this case, Direction finding compasses). It is therefore possible to measure the technological capabilities of a regional innovation system to deal with the export of that specific product. This is done by looking at the regional focus in those technologies with an aggregated index of regional competitiveness, the Regional Technological Fitness. In the map, the capabilities of Italy regions are compared

with top regions in comparable countries and the EU leaders in that market. Lombardy is the region in Italy with the highest technological capabilities in those patent subgroups anticipating the export of Direction finding compasses.



- 1 [ITC4] Lombardia
- 2 [SIO4] Zahodna Slovenija
- 3 [ES51] Cataluña
- 4 [FRG0] Pays de la Loire
- 5 [AT22] Steiermark
- 6 [FRLO] Provence-Alpes-Côte d'Azur
- 7 [DE13] Freiburg
- 8 [DEA2] Köln
- 9 [DE12] Karlsruhe
- 10 [FR10] Ile-de-France

