

# Europe Technology Gap

BY JAN MISCHKE AND JURICA NOVAK

*How the European  
economy could  
be left behind.*

**E**urope seems to change most decisively as a result of crises. The European Union was created in the aftermath of World War II. The 2008 global financial crisis and the eurozone crisis that followed led to more financial cooperation among European countries. The Covid-19 pandemic triggered greater fiscal coordination through the Next Generation EU recovery fund. Now the war in Ukraine is upending Europe's energy strategy and sparking a new conversation about defense.

In this context, policymakers must not forget another slow-motion crisis: the significant lag in European companies' technological prowess, relative to other leading economies. As technology spreads into every sector and reshapes competitive dynamics, innovation and tech leadership is as pivotal to the European Union's strategic autonomy as energy supplies or defense are, especially amid increasing geopolitical turbulence.

Lagging technology largely explains why major European firms are underperforming their U.S. counterparts. According to new research by the McKinsey Global Institute, between 2014 and 2019, large European companies' revenues increased 40 percent more slowly than those of their U.S. peers. They invested 8 percent less (measured by capital expenditure relative to the stock of invested capital), and they spent 40 percent less on research and development. Information and communications technology and pharmaceuticals accounted for 80 percent of the investment gap, 75 percent of the research and development difference, and 60 percent of the disparity in revenue growth.

Europe has long been aware of its technological shortcomings and has recently launched a flurry of initiatives aimed at putting the region on a higher-performing path. These include the European Union's €95.5 billion (\$100

---

*Jan Mischke is a partner at the McKinsey Global Institute. Jurica Novak is a managing partner of McKinsey & Company's Central European Office.*



COPYRIGHT: PROJECT SYNDICATE, 2022

billion) Horizon Europe program, the Smart Specialization initiative, and the Important Projects of Common European Interest framework. Similarly, the United Kingdom is investing £800 million (\$1 billion) over four years in a new Advanced Research and Invention Agency.

These moves are welcome, but may not be enough. Today, European companies lack the scale and speed of counterparts in the United States and China. Our new analysis examined ten “transversal technologies”—such as artificial intelligence, cloud, and biotech—that spread horizontally across sectors. Our analysis found that Europe leads the United States and/or China in only two.

Consider cleantech. Europe has more ambitious targets for reducing carbon dioxide emissions than other regions, 38 percent more cleantech patents than the United States (and more than double the number in China), and more cleantech installed per capita using mature technologies. But China leads in nearly all areas of cleantech production, often with a market share of more than 50 percent. The United States leads in future breakthrough technologies, including nuclear fusion; carbon capture, usage, and storage; smart grids; next-generation batteries; and long-duration energy storage.

Such technological lags limit European firms’ ability to compete and grow, with adverse effects on Europe’s economic health. We estimate that €2–€4 trillion per year of corporate value added could be at stake by 2040—value that could generate investment, employment, wages, and public goods and services.

To put that figure in perspective, it is equivalent to 30–70 percent of Europe’s forecast GDP growth between 2019 and

---

*Lagging technology largely explains  
why major European firms are  
underperforming their U.S. counterparts.*

---

2040, or one percentage point of growth a year. It is also six times the gross amount needed for Europe to achieve net-zero emissions by 2050. And it represents about 90 percent of all current European social expenditure—enough to finance a monthly universal income of €500 for each European citizen.

The challenge is urgent. The World Economic Forum estimates that 70 percent of new economic value created over the next decade will be digitally enabled. Moreover, today’s frontier technologies are associated with network

---

*European companies lack the scale  
and speed of counterparts  
in the United States and China.*

---

effects and winner-takes-most dynamics that make it difficult for laggards to catch up with leaders.

Unless Europe improves its position in transversal technologies, its firms could falter even in sectors where they have traditionally excelled. While Europe is a leading global automotive manufacturer, for example, U.S. manufacturers account for close to 70 percent of all kilometers covered by Level 4 autonomous vehicles, our analysis shows. Likewise, European companies account for 95 percent of luxury brands globally, but have only a modest presence in wearable devices, whereas Apple, Huawei, Samsung, and Xiaomi have a combined market share of almost 65 percent.

European companies need to be able to scale up and act faster in a technologically disrupted world where size and agility matter. That will require tackling a range of handicaps that negatively affect European firms’ performance. Four stand out: fragmentation and lack of scale; a dearth of established technology ecosystems; less developed risk-capital funding; and a regulatory environment that could be more supportive of disruption and innovation.

Public policymakers and regulators can do much to help level the playing field for European firms. In the case of transversal technologies, where scale matters, Europe could, for example, increase and pool its resources, develop a regional corporate rule book for high-growth firms, and facilitate and encourage cross-border consolidation. European countries might also amplify private scale-up capital and consider pooling more public procurement and research and development support, even if that means giving up some national sovereignty. To enable greater operating speed, Europe could consider rebalancing from its precautionary principle and developing fast-track regulatory approval and decision-making processes.

Europe is rightly proud of its record on sustainability and inclusion. The region’s current socioeconomic model has served it well thus far. But as technological disruption spreads, policymakers must re-evaluate past trade-offs. Europe now needs to harness the cooperative momentum triggered by the war in Ukraine and embrace the cutting-edge technologies that are crucial to its future competitiveness and prosperity. ◆