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# The FUTURE of WORK

## Implications for Equity and Growth in Europe

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### EXECUTIVE SUMMARY



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## Executive Summary

The reduction of middle-class jobs in European countries over the past 40 years has contributed to increased income inequality and political polarization. European policymakers are looking for ways to ensure new technologies do not exacerbate these trends and help promote more equitable growth. The core questions now being asked are: What are the most effective strategies to promote technology adoption among small businesses and avoid market concentration? And what kind of reforms are necessary to ensure that education equips students and ongoing learners with the skills required in a dynamic and technology-driven job market characterized by continuous change?

This report examines the relationship between technology, economic growth, and equity. By analyzing the impact of technological progress on firm-level productivity, market concentration, and outcomes for workers with different education levels, we can gain insight into technology's effects on European Union labor markets. The report addresses two main distributional challenges: (i) the increase in market concentration, where a few large and innovative “superstar” firms hoard the benefits of technological progress, and (ii) the exacerbation of income differences between highly educated and less-educated workers. These two challenges and the public policies aiming to address them will shape the future relationship between technological progress, economic growth, and income distribution in Europe.

## Key Findings

The report demonstrates that while innovation and technological advances have enhanced productivity in Europe, they have also led to a rise in income inequality. Such technological advances promote market concentration, decreasing the share of total national income that goes to labor. In addition, individuals with university degrees benefit more from technology adoption in labor markets, while less-educated workers are more vulnerable to being displaced. These dynamics are illustrated through three key findings of the report.

### ***Small firms in the EU are slow to adopt new technologies***

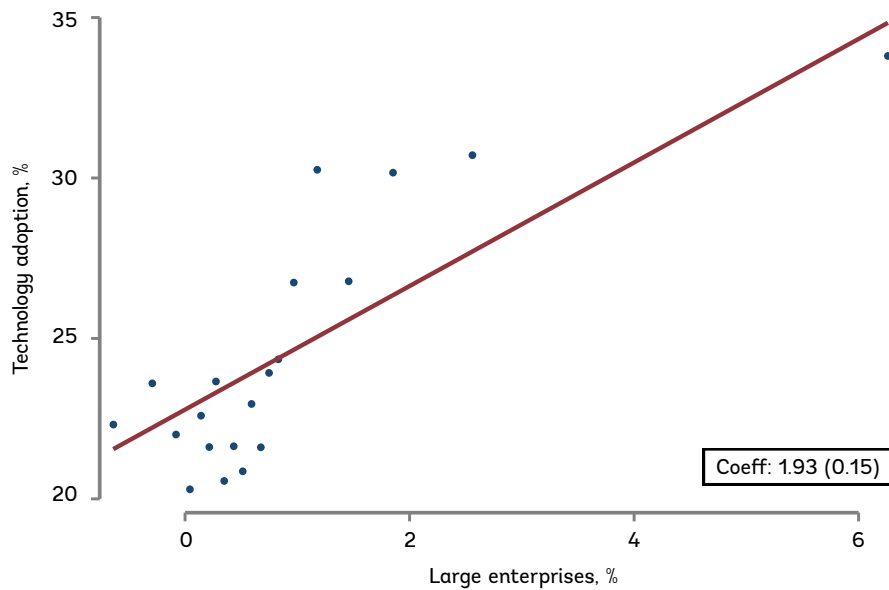
According to a recent European Investment Bank (EIB) survey, larger companies in the US and EU are more likely to adopt new technologies than small companies. Although adoption rates between large firms on both sides of the North Atlantic are similar, small and micro firms in the US adopt more technology than their counterparts in the EU. In the US, four out of every ten small firms adopt new technology, whereas in the EU, the ratio is three out of ten.

Combining several firm surveys covering 32 European countries between 2014 and 2022, the report shows that larger, more productive firms and those with better managers are more likely to adopt new technologies. Additionally, countries and regions with higher levels of human capital, greater access to financial resources, and business-friendly regulatory frameworks promote the adoption of new technologies.

### ***In the EU, technology has increased productivity, the demand for university graduates, and market concentration.***

The report highlights the impact of technology on output, productivity, tasks performed, and workforce by comparing Italian companies that adopted new technologies with those that didn't. While technology adoption increased total sales and employment, the total value of sales grew faster than employment, demonstrating increased productivity, measured as sales per worker. The study also reveals that companies that integrate technology into their operations increase the number of non-routine cognitive tasks performed by employees while decreasing the number of routine manual tasks. This change in tasks is achieved by hiring more workers with university degrees.

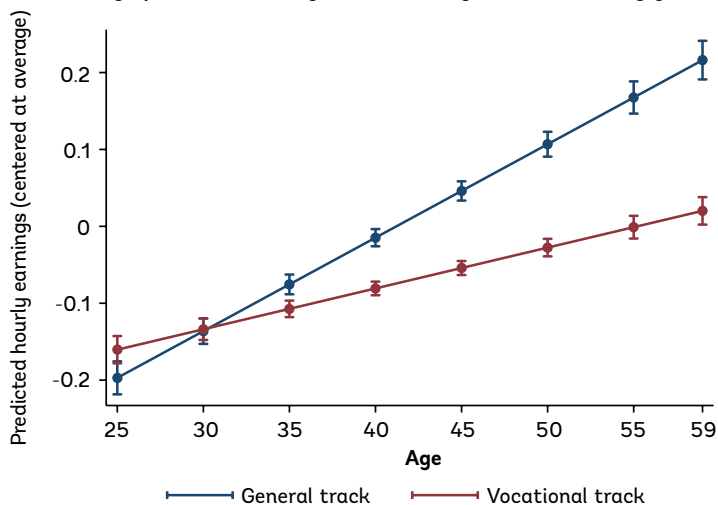
Italian firms that are larger and more productive are more likely to adopt new technology. This leads to further productivity gains and expansion of total sales, creating a positive relationship between technology and market concentration. As shown below, countries and sectors with a larger market share occupied by large enterprises usually have higher levels of technology adoption. This positive relationship between technology adoption and market concentration results in a decrease in the share of total income going to labor.

**FIGURE 1. Sectoral concentration and technology adoption.**

Source: authors' estimations using PIAAC data.

***Vocational education graduates do not have the skills to benefit from technological change.***

Our study, based on the EU Labor Force Survey (EU-LFS) for the EU27, shows that graduates with upper-secondary vocational education and training (VET) are more likely to find employment compared to their peers with a general secondary education degree. However, this advantage fades away within five to seven years of entering the workforce, a result explained by a labor market characterized by constant changes in the demand for skills. Furthermore, the analysis indicates that VET graduates generally have flatter wage-income profiles than non-VET secondary graduates. The earnings of the latter surpass those of the former by age 30, as shown below.

**FIGURE 2. Age profile of earnings of VET and general secondary graduates**

Source: authors' estimations using PIAAC data.

VET graduates are still engaged in routine and manual tasks and are at a high risk of being automatized. Part of the explanation for the lack of complementarity between the tasks performed by VET graduates and those demanded by new technologies is the low foundational skills—numeracy, literacy, and socio-emotional skills—among students with a technical diploma.

## Recommendations for Policymakers

### ***Promote technology adoption***

EU member states can promote technology adoption in small businesses through managerial training, regulatory simplification, access to finance, and human capital development, focusing on lagging regions. Estonia emerged as one of the most technologically advanced societies in the world by expanding technology adoption while streamlining information technology into education and government services to promote growth and inclusion.

### ***Better adapt technology to meet society's needs***

EU member states have tax policies that unknowingly provide subsidies for capital and investment, resulting in a rise in the usage of machines and automation. Modifying tax incentives can encourage investment in labor-intensive industries and the creation of high-quality jobs. In addition, EU institutions should invest in research and innovation to bring technological advancements that integrate labor into production processes.

### ***Equip youth with the skills to adapt and reinvent themselves***

As technology advances, job turnover is expected to increase, and job tenures will become shorter. This poses a significant challenge for VET systems to prepare students with relevant professional skills that will remain useful in a fast-changing job market. Instead of focusing on specific job skills, European education systems should provide all graduates with foundational skills that can be applied to any career path they choose. By providing this core set of skills, current students (future workers) can keep learning throughout their lives and adapt to changing labor market demands. Finland, for example, is a country where vocational education graduates do not suffer from the employment and earnings disadvantages they face in other EU countries, and this is explained by a comprehensive basic education system that is effective in providing students with foundational skills, emphasizes professional skills only in the very last years of upper secondary education, and does not preclude vocational education graduates from pursuing university studies.

By adopting such policies, governments can help ease the tradeoff between efficiency and equity. Such action can help ensure a future where innovation is inclusive and where all share the benefits of technological progress.