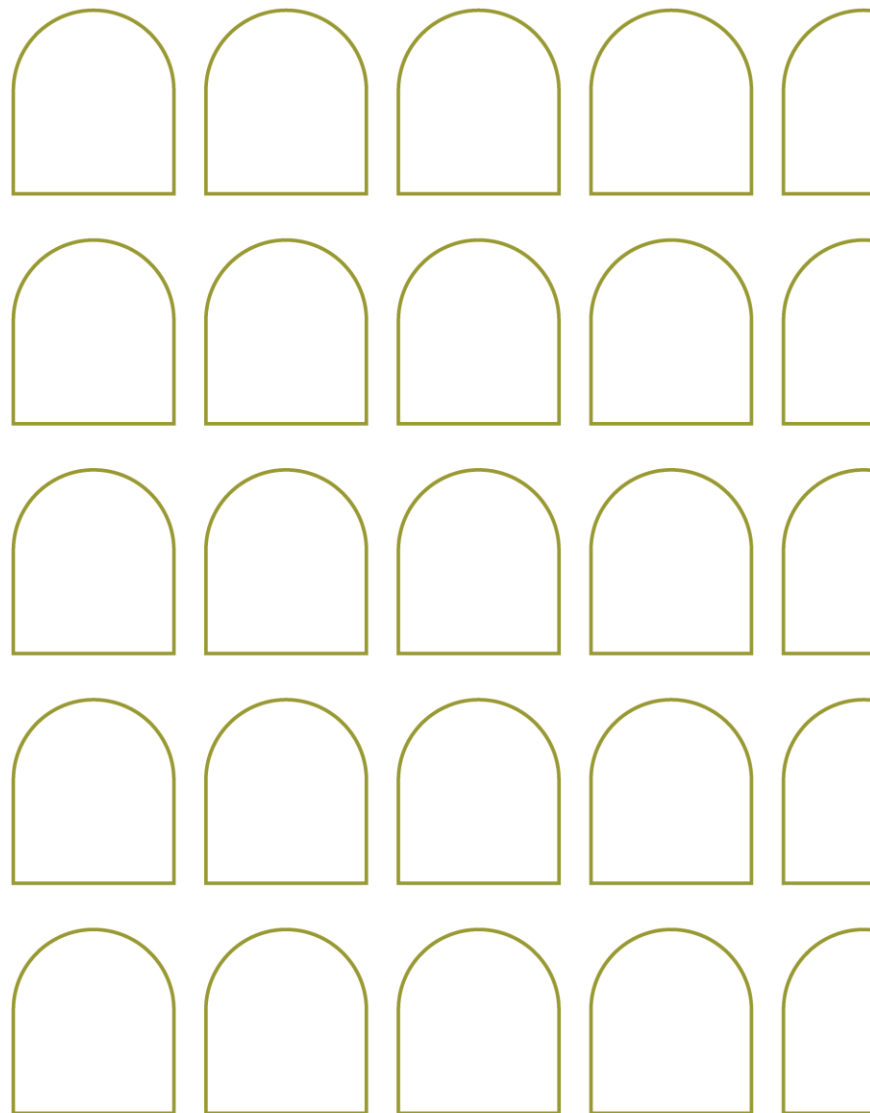


Executive Summary: Strengthening EU digital competitiveness

Stoking the engine



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Executive Summary: Strengthening EU digital competitiveness

Stoking the engine

J. Scott Marcus,¹ Maria Alessandra Rossi^{2 3 4}

Concerns over declining EU competitiveness in the digital world in comparison to that of our global rivals have been widespread for many years. The EU has substantial research capabilities and skills, and has produced some technology leaders; however, we trail in important respects, and we have conspicuously failed to incubate global champions comparable to a Google (Alphabet), an Apple, an Amazon, a Facebook (Meta), a Microsoft, an Alibaba, or a TikTok (Bytedance).

The reader might well ask, “Why not?” Many answers are known, many mitigations have been attempted, but individually and collectively they have not brought the desired results. What we seek to do in our report is to dig deep into well-known EU shortfalls such as weak capital markets, lack of access to skills, incomplete integration of the EU Single Market, regulatory burdens, and inadequate female labour force participation (FLFP). We review mitigation measures that have been attempted to date, reflect on why they have not yet achieved the desired results, and offer possible proposed solutions that have not been adequately reflected in EU and Member State policy to date.

It is opportune to undertake this research at this time. In June 2024, the EU will complete one five-year mandate for the European Parliament and the Commission and will embark on the next. Two prominent Europeans, Enrico Letta and Mario Draghi, are producing blue ribbon reports to take stock and to consider forward-looking approaches to strengthen the EU’S competitiveness in the digital world, and we draw on the Letta Report in this study. We hope that our report will be of use to Mario Draghi, to all European policymakers, and to all European stakeholders.

This Executive Summary to our report opens with salient recommendations for EU policymakers, continues with a discussion of *production* versus *use* of digital technology, and closes by explaining the challenges that motivate the recommendations: poor access to finance, insufficient access to skills, a still fragmented EU Single Market, onerous and

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inconsistent insolvency rules, the need for improvements in technological infrastructure, and burdensome EU laws and regulations.

Recommendations to stoke the engine of EU digital innovation

Our recommendations relate to access (1) to finance; (2) to access to skills; (3) to strengthening the Single Market; (4) to insolvency rules; (5) to technological infrastructure; and (6) to creating and implementing better laws, and thereby reducing the degree to which EU-27 firms are needlessly subjected to legal, regulatory and taxation burdens.

Access to finance

- Measures are needed to **increase the financial literacy of the EU public** such that they understand that a mixed personal investment portfolio that includes some high-risk high return investments can be appropriate.
- Creation of a **trusted EU structure for investment instruments** might potentially make it easier for households with limited financial sophistication to achieve more balanced household investment portfolios.
- Legal and regulatory changes are needed to enable and **encourage pension funds and insurance to include investments in pre-IPO risk capital and in IPOs** as a modest part of their portfolios. Additional actions may be needed to ensure that overhead costs associated with making these investments do not get in the way.

Access to skills

- **Increase the quantity and diversity of technically skilled human capital.** In the short term, adopt measures that increase the attractiveness of Europe to foreign talent and facilitate talent mobility across the EU, in order not only to address skill shortages, but also to exploit the benefits of cultural and educational diversity for innovation. Over a longer timeframe, focus on increasing the participation of female workers to both research and the ICT labour force.
- **Overhaul EU-level education policies** to align them with four principles: (1) focus on EU-level comparative policy advantage in managing uncertainty and stabilizing expectations; (2) structured dialogue with private stakeholders, to align education and training to technological evolution and increase the returns to individual investment; (3) scale, to exploit meaningful knowledge network effects across society and specifically across the workforce; and (4) comprehensiveness, to enable the power of complementarities across different types of knowledge, including ‘21st Century skills’.
- Step up availability of public funds for experimental development to redress the current imbalance and lack of continuity throughout the different R&D stages. Also, expand the set of public financing tools beyond call-driven solutions such as Horizon Europe to enable greater bottom-up experimentation with **productisation projects, especially from SMEs**. Finally, devote specific attention to devising ways of increasing productisation of open knowledge made available through EU research financing.

The Single Market

- Detailed study is warranted to **determine whether the many EU legislative measures** put in place over the past decade in order to reduce cross-border frictions with digital transactions **have truly been effective**. If they have not been effective, it will be necessary to determine why not.

Insolvency rules

- **Divergent and onerous Member State provisions on non-bank insolvency are a very serious impediment to innovation**, both because they tend to needlessly tie up entrepreneurs and resources for years, and because the lack of certainty as to whether any assets can be recovered in the event of a bankruptcy impedes cross-border investment in the EU. Regrettably, Member States are deeply resistant to harmonising and liberalising these rules because they are intertwined with property law, labour law and more. Small reforms such as those proposed by the Commission in 2022 should be feasible in the near or medium term, but the general overhaul that is needed might have to wait until some crisis makes it unavoidable.
- The **Simplified European Company structure that has been put forward in the Letta Report** as an adjunct to the proposed codification of EU business law **deserves serious consideration** as a possible long-term means of providing a simplified approach to non-bank insolvency in the EU for firms that choose it. It would be exceedingly challenging to put something like this in place, but the problem of non-bank insolvency is serious and long-standing, and no other solution has been found to be politically feasible.

Technological infrastructure

- Continued efforts to **ensure the reliability, robustness, resilience and diversity of the EU's supply chains** for both raw and manufactured elements that are important for EU productivity are fully in order. These measures should not, however, be permitted to drift into protectionism of EU industry at the expense of our trading partners.
- **Continued attention not only to deployment, but also to adoption and use of both fixed and mobile broadband is needed**. For the most part, the necessary measures are well understood, and the level of attention being paid on the part of the EU is sufficient, but the balance between supply side measures versus demand side measures could be better.
- Network operators in the EU argue that some **consolidation of the sector on an EU-wide basis would likely generate beneficial economies of scale**, and it is true that there are some network operators in the United States and China that dwarf most EU network operators. The appropriate response, however, is not a loosening of competition rules (except perhaps for some minor fine tuning), because current rules already permit the mergers that would tend to be beneficial. The real root problem is

that **network operators are not motivated to seek the cross-border mergers that would produce genuine benefits**. The solution is not obvious.

- Responsibility for spectrum management should continue to reflect a division of labour between the Commission and the Member States, but **the Commission's ability to enforce timely and coordinated implementation** of measures that have been agreed needs to be made **much faster and more effective**. The ability of Member States to **jack up spectrum auction prices** needs to be curtailed.
- The need to **progressively refine regulation of electronic communications** so as to improve harmonisation and to reduce regulatory burden is likely to be with us far into the future. Policy needs to frankly acknowledge this.

Creating and implementing less burdensome laws and regulations

- As much as possible, the co-legislators should **slow the pace of enactment of new laws** for a few years in order to give firms and the Member States time to catch up with implementation.
- The three co-legislators committed in 2016 to jointly implement the Better Regulation system. **Parliament and Council need to step up** to do their share in order to provide better checks and balances within the overall **Better Regulation system**.
- Any significant piece of EU legislation will differ substantially from the initial legislative proposal submitted by the Commission. Late in the process but prior to final enactment, **an addendum to the Impact Assessment should be prepared to summarise the differences between the law as proposed and the law as enacted**, including an update of the expected administrative costs and adaptation costs.
- The “one in one out” program is genuinely important and promising, but it needs to be seeking to **offset the administrative cost of a new program as enacted, not only the administrative cost of the program as initially proposed**. “One in one out” cannot hope to fully offset the adaptation costs of the program, which will usually be far greater than the administrative costs, but it should at least monitor the adaptation costs for comparison purposes. Economic gains from the program should ideally also be reflected.
- Much more attention is needed when the Impact Assessment is drafted to ensure that data will be collected for the new program that enables **subsequent Evaluation of whether the law is actually mitigating the problem for which it was created**.
- The process of **Evaluation of legislation ex post should not be done by the Commission**. Moving the function for instance to the Court of Auditors, together with assigning it adequate staff resources, could lead to more objective and impartial Evaluations. The schedule for Evaluations, as well as quality control measures, are likely to need some re-thinking in light of this proposed move.

The importance of both *production* and *use* of technology to the EU economy

It is sometimes asked whether the EU should concentrate on *production* of digital technology in the form of ICTs, or solely on their *use*. We would argue that both are important.

A lack of European digital champions is concerning because it reveals weaknesses in the *production of frontier digital innovation*. Standard economic concerns are relevant. Frontier innovation is a major contributor to productivity, and therefore to the improvement of living standards. For the EU to miss out on key digital innovations therefore means missing an important chance to improve our lives. Digital competitiveness, however, goes well beyond nurturing digital champions. Productivity also generates societal benefits in other ways through (digital) innovation. It improves through waves of less radical forms of innovation, that apply and adapt technologies through process innovations and incremental product innovations developed “on the job” – what we may call *productisation of technology*. Most importantly, productivity improves societal welfare through the diffusion of technology, in particular digital/ICT technology, throughout society, i.e. through the *use* of technology.

Europe can learn from American experience. Solow (1957) emphasised the importance of innovation as a key driver of US productivity. Gordon and Sayed proposed in 2020 that it is primarily differences in the ability to make adequate use of ICT technologies, in addition to differences in ICT investment, that explain the marked differences in productivity across the two sides of the Atlantic in the period of most remarkable US performance (1995-2005). In 2014, Jorgenson and his co-authors emphasised that the IT producing industries were the major driver of growth through the entire period 1973-2010. But the superior ability of US firms to productise technology is also a key factor in explaining the transatlantic productivity gap.

The EU digital productivity challenges that motivate our recommendations

Lack of access to finance

The European economy is roughly similar in scale to that of the USA and China, and Europeans save at similar overall levels; however, very little of this investment is available to innovative EU firms. There are multiple reasons for this. First, at retail level, Europeans put a higher proportion of their savings into low-risk investments. Second, capital markets in the EU are small, both for equity and for debt (e.g. bonds), compared to those of our global rivals. Venture capital and private equity are growing but are still tiny in comparison with our global competitors. Third, most European borrowing by firms is consequently in the form of bank loans rather than equity – this is not conducive to the provision of risk capital to innovative firms. Fourth, and relatedly, *Initial Public Offerings (IPOs)* in the EU raise far less money than in the USA.

As a result of these deficits, innovative high technology EU start-ups are cash-starved. The EU creates more of these start-ups per year than the USA, but they are unable to scale up.

The EU has not been asleep, but the solutions attempted to date are simply not of sufficient scale. They generate substantial percentage improvements on a tiny base. They do not remotely approach the magnitude of the problem.

We find that the America's success had a great deal to do with a little-noticed regulatory change in 1974 that permitted pension funds to make prudent investments in risky ventures – it unleashed a flood of pension money for the venture capital funds (Lerner & Nanda, 2020). There is no reason why the EU could not do the same – indeed, the UK did so last year, and France is also considering reforms. It must be remembered that EU-27 pension funds hold some €4 trillion euros in assets, and insurance funds another €9 trillion. Even a tiny re-balancing of these funds into higher risk, higher reward investment would not only provide the funds and their beneficiaries with a better balanced overall portfolio, but could potentially inject **many tens of billions of euros** into EU-27 venture capital funds and private equity. **This one reform alone could potentially be more than adequate to fully solve the serious, long-standing problem of inadequate capital for high technology start-ups.**

In parallel, steps to improve the financial literacy of Europeans could go a long way toward correcting the flawed balance between banks and capital markets. Survey results indicate that a large number of Europeans do not invest in equity because they simply do not know how to do so.

An EU-wide investment scheme, as proposed in (Letta, 2024), might also help Europeans with less financial sophistication to achieve a better balanced portfolio with higher returns and lower fees than the simple bank accounts that make up a large fraction of household investment today.

Lack of access to skills

Technological change might open up a range of new opportunities for Europe. Advancements in deep tech fields like artificial intelligence, quantum computing and synthetic biology, to name a few high-growth areas, could provide exogenous impetus to European competitiveness by potentially making firm scale – a notable structural weakness of the European economy – less relevant than before as compared to talent, and by creating many novel chances for cross-fertilisation among previously separate fields. Talent is key to effectively catching these opportunities. Unfortunately, it is also by no means in adequate supply in Europe. EIB survey data indicate that about 85% of both large and small EU-27 firms are concerned about lack of access to individuals with the skills that are needed today.

Basic digital skills are not homogeneously available throughout Europe and have only slightly increased in the past 10 years. Most importantly, new types of skills are needed to adopt technologies, to adapt them to different uses and industrial contexts, and to come up with innovative applications: STEM and advanced ICT skills, but also basic digital skills and so-called “21st Century skills” such as cognitive skills and interpersonal/social skills, whose role and importance are increasing with the shift towards jobs with non-routine abstract tasks. Our report highlights that some improvement can be seen in key indicators: material increases in

the share of R&D personnel and researchers, in the number of ICT specialists in the EU workforce and in firms' investment in the ICT skills of their personnel. The overall level of workplace skills remains, however, far from satisfactory.

In view of this situation, education and skills have recently become buzzwords in EU policy circles. Numerous policy initiatives have been undertaken, especially in the past few years, to make education needs (both digital and non-digital) more salient to EU citizens. Yet these initiatives appear to lack focus, and may potentially end up dispersing financial resources whose size and availability are difficult to quantify in the first place. The pressing needs for skills identified in our report suggest the opportunity for EU-level institutions to level up the Member States in line with the supporting role that the EU is assigned by the Treaties.

Europe also appears to have a weak profile as regards both the skills and the resources needed to productise technology. The structure and means of public support to R&D need a shift in focus in order to redress the current imbalance between basic/applied versus experimental research, and to remedy the lack of continuity in investment and public support throughout the different R&D stages.

We also note that not only the *quality* of labour is important to EU innovation, but also the *quantity*. Indeed, the contributions of labour and capital are fundamental to our understanding of the drivers of economic growth. The latest research suggests that improving workplace conditions for females would not only be in line with EU values, but could have a disproportionately positive effect on EU-27 productivity, including productivity in the technical sphere. “Macroeconomic data ... point to economic gains from raising [female labour force participation (FLFP)] that could be up to a fifth larger than estimates from headcount exercises which ignore the gender composition of the headcount. Women complement men in the production process, and there is thus value in gender diversity as such (as there is in diversity more generally in teams of workers). Hiring women can increase the productivity of women already in a company, by reducing within-firm discrimination. *Gender inclusion also seems to have favourable effects on the value of companies whose strategies depend on innovation, including high-tech manufacturing and knowledge-intensive services.* [emphasis added]” (Ostry, 2022); (Ostry, Alvarez, Espinoza, & Papageorgiou, 2018).

Incomplete integration of the EU Single Market

One of the greatest strengths of the EU is its Single Market, which seeks to secure the free movement within the EU of goods, services, people and capital. Unfortunately, despite decades of work to improve the integration of the EU, there are still many gaps. Dozens of new laws were enacted during the 2014 – 2019 legislative term under the Digital Single Market (DSM) strategy in an effort to facilitate cross-border e-commerce, and more digital legislation followed during the current legislative term. There surely have been gains, but surveys of businesses suggest that they perceive little improvement. Much work remains to be done.

Burdensome and inconsistent insolvency rules

Rules for non-bank insolvency vary greatly across the Member States and can be quite onerous. As a result, people and resources can be locked up, often for years, thus interfering

with serial entrepreneurship. Non-harmonised insolvency rules also tend to inhibit cross-border investment by creating uncertainty as to whether any assets can be recovered in the event that the target of an investment goes bankrupt.

To date, this problem has been politically intractable. A suggestion in (Letta, 2024) might possibly provide a long term mitigation by enabling firms who wish to do so to operate under codified European business law, including as regards possible insolvency – a *twenty-eighth regime*.

Onerous regulatory burdens

It is normal for firms to complain about the regulatory burden, but the complaints have become louder in recent years, and we think that there is justification. The number of new laws that have been introduced to promote digitalisation and green sustainability is simply enormous (Zenner, Marcus, & Sekut, 2023).

We join the many voices, both among stakeholders and also within the European institutions, who suggest that the next few years should reflect as much as possible a pause in new legislation, and a focus on correct implementation of the many laws that were just put in place.

We also recommend some significant re-tuning of the EU's *Better Regulation* process. The Better Regulation process ranks overall among the best in the world, but there are nonetheless long-standing and obvious problems that have been ignored. The process of Evaluation ex post is clearly in need of reform. The “one in one out” principle that was introduced in 2022 is promising, and has probably produced some regulatory simplification; however, it seems unlikely that the scale is sufficient, and the numbers produced to monitor the process are meaningless.

The need for improvements in digital technological infrastructure

Geopolitical tensions imply a risk to global value chains for technology components on which the EU depends. EU goals in addressing this should be supply chain resilience and diversity, and promotion of EU industry, but not protectionism. The measures recently put in place by the EU generally do so.

The deployment of broadband is an important contributor to the EU's technological advancement. The EU will not necessarily hit EU Digital Compass targets, but our progress may nonetheless be reasonably good relative to the actual needs of Europeans. The deployment of 5G base stations compares favourably to the USA and Japan, but very unfavourably to China.

Network operators in the EU argue that consolidation of the sector is essential. Many have argued that some consolidation on an EU-wide basis would likely generate beneficial economies of scale; however, current rules already permit the mergers that would tend to be beneficial.

Responsibility for spectrum management necessarily reflects a division of labour between the Commission and the Member States, but the Commission lacks the ability to enforce timely

and coordinated implementation of measures that have been agreed. The ability of Member States to jack up spectrum auction prices is an additional, serious problem.

Progressive refinement of regulation of electronic communications so as to improve harmonisation and to reduce regulatory burden will continue to be needed.