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How to Ensure a Skills-Based Future for European Competitiveness

Competitiveness is a multifaceted concept that can be applied both at the firm and country level. In its essence, it refers to an ability to compete in (global) markets for goods or services. But competing for market share can only ever be a means to an end. For a firm, the end goal of being competitive is to ensure its survival or to earn higher profits. For countries, the end goal of competitiveness is to ensure prosperity and high living standards for its citizens.

Competitiveness must not be fully equated with productivity, even though they are linked. Productivity is an absolute or standalone measure – the more productive you are, the more output value you create with given inputs. Competitiveness is a relative measure, calculated in comparison to others, i.e. the more competitive you are vis-à-vis others, the better you are at attracting customers, gaining market share and generating monetary value.

Over time, the concept of competitiveness has grown to include sustainability as well, thereby expanding from a short-term ability to compete to a long-term ability to prosper. Indeed, it is now recognised that being competitive can undermine future competitiveness when it leads to the overuse of natural resources. Attracting market share now might decrease the availability of necessary resources for producing and attracting market share in the future.

Likewise, Mario Draghi (2024) argues in his recent report (aptly named “The Future of European Competitiveness”) that strengthening competitiveness should preserve so-

cial inclusion as well. This aligns with the idea that a country’s competitiveness is also about ensuring prosperity and high living standards for its citizens.

Bridging the firm-level perspective (of attracting market share and being profitable) with that of the macro-level (of creating prosperity for citizens) generates – on the surface – a peculiar discord: at the firm-level, labour is an input to competitiveness, while at the macro-level labour consists of the citizens who should benefit from competitiveness. This is a form of cognitive dissonance that must be resolved in order to inform coherent policymaking – something that Draghi attempts to address.

When presenting the report, Draghi emphasised that competitiveness can no longer be equated with measures such as unit labour cost, a metric often used to compare the EU with other countries, such as the US or China. While a lower unit labour cost suggests that a country can produce more cost-effectively, implying higher competitiveness in global markets, it leads to a narrow focus on minimising labour costs to sell at lower prices.

However, aiming for low labour costs is only one of several ways in which firms (or countries) can compete on the global market. A low-price strategy, or *operational excellence*, relies on reducing input costs, streamlining operations and reducing waste in time or materials. With this view, labour is an input to production and a cost that must be minimised. Such a firm strategy – when applied on the macro scale – seems hard to reconcile with inclusive and sustainable competitiveness.

Other competitive strategies put less focus on cost reduction (Treacy & Wiersema, 1993). A strategy of *product leadership*, for example, aims to attract customers not by offering the lowest price but by offering the best product, with the newest features and highest quality. Companies such as Apple and Tesla compete with this strategy, and their customers happily pay the extra price for their high-end products and complementary services.

Likewise, *customer intimacy* is a strategy that offers the most customised service and personalised experiences. Amazon and Zalando are known for their personalised recommendations, broad and diverse product offerings and premium services such as fast shipping and free returns. Similarly, Dutch e-commerce player Coolblue is not the cheapest in the electronics market but its buying guides,

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after-sales support and multichannel (online-offline) experiences have still ensured its rapid growth.

The idea of alternative competitiveness strategies that put higher value on human capital and innovation at the firm level can be translated at the macroeconomic level, aligning with Draghi's argument.

There are three main reasons why this should be the case. First, in many global markets, EU companies cannot compete on labour costs with low-wage countries. This is a competition that the EU will inevitably and always lose. Second, competing on the lowest price contradicts the very essence of a social market economy, which is central to the EU project. A key EU goal is to ensure that economic growth is widely shared and social justice is maintained. Very often, low prices are the result of low labour standards or poor working conditions. Finally, in a modern, advanced economy, sustainable growth is not driven by being the cheapest – it is driven by innovation. For innovation-driven growth, labour is not just a cost, it is human capital that generates returns and requires investment.

Taking this view, skills, which define labour and human capital, are a central asset for competitiveness. Put another way, expanding the notion of competitiveness to include a wider variety of firm-level competitive strategies (beyond low labour costs) offers concrete starting points to inform skills strategies and policies. This allows for specific skill categories to be identified that can support diverse competitive strategies as well as push innovation forward.

From a macroeconomic viewpoint, shifting away from a concept of competitiveness centred on costs – in particular labour cost – implies acknowledging that the concept of successful comparative advantage (e.g. associated with cheap labour) is more complex than the one described by traditional Ricardian models (Costinot & Donaldson, 2012). The likelihood of developing a comparative advantage in advanced sectors like aircraft manufacturing is not merely based on the availability of low-cost labour, as it might be in sectors like coffee production. Instead, factors such as existing industrial capabilities (e.g. producing cars) are crucial. Introducing economic complexity as a new paradigm implies that a particular good's successful production requires that various elements are in place (Balland et al., 2022).

While skills and human capital fit well in this approach, they are not standalone drivers of competitiveness. A highly skilled workforce, isolated from other enabling factors, will not automatically enhance productivity or drive new production strategies. Several complementary factors must exist, including institutional and infrastructural capacity, the availability of resources and local supply chains, and last but not

least cross-industry interactions. The concept of relatedness – which refers to the interconnections between different economic activities – is especially powerful in explaining economic diversification and technological upgrading.

Adopting this framework means that, when transitioning from the macro concept of competitiveness to the micro-level strategies of firms, a deep understanding of sectors and their interrelations is crucial for addressing the challenges raised above.

Sectors as the playing field for skills and innovation

An economic complexity approach can offer insights into how different regions in Europe specialise, while also guiding policymakers on where the potential for growth lies and what is needed to unlock it (Balland & Renda, 2023). By examining the existing capabilities within specific regions, it is possible to map out sectors that are primed for growth and innovation. This led to the introduction of the Smart Specialisation Strategy in 2010 as part of the Europe 2020 Strategy for Growth and Innovation (Balland et al., 2019). It has since become a cornerstone of the EU's cohesion policy.

The goal is to enable member states to focus on the development of industries in regions that already hold some capabilities and target resources effectively, guiding regions to concentrate on sectors where they can achieve the greatest competitive advantage by building on existing strengths. Once these trajectories are clear, the corresponding innovation strategies and resulting skills needs for each sector and region can be determined.

Industrial policy can play a crucial role in this context. In line with the economic complexity paradigm, the demand for specific skills is shaped not only by firms' competitive strategies but also by industrial policies at the local, national and EU levels, which, in turn, influence the sectors and activities that are prioritised.

Furthermore, the interaction between sectors and regions, as well as the connections between regions themselves, are key. For instance, if a region is identified as a hub for renewable energy technologies, it becomes essential to understand its relation to industries that provide supporting services, such as installing and maintaining energy solutions or access to raw materials. And of course, the availability of a workforce skilled in energy storage, grid management and sustainable engineering becomes crucial.

By steering industrial development, policy also shapes the demand for the relevant skills. Approaching development with these interconnected factors in mind, educa-

tion and training programmes can be designed to equip workers with the competencies necessary to drive innovation and growth. This alignment ensures that the labour market supports strategic industrial choices, rather than being influenced solely by external pressures.

This vision aligns with the EU's broader goals of social inclusion and regional cohesion. Prioritising innovation-driven models that emphasise product leadership and customer intimacy can spur the creation of high-skilled jobs in regions that need them the most. Ultimately, this approach has the potential to rejuvenate economies hit by deindustrialisation and foster sectors that are critical to the EU's competitiveness and strategic autonomy. As the green and digital transitions accelerate, demand for specialised skills is growing, particularly in fields like renewable energy and artificial intelligence (AI). A well-thought out, smart specialisation policy can help regions build on their unique strengths while addressing the evolving needs of the labour market, thus promoting competitiveness, ensuring an equitable distribution of the benefits of innovation and preparing the EU workforce to meet future challenges.

Skills for inclusive competitiveness

Draghi puts forward several policy proposals for bridging existing skills gaps, though his report remains high-level on the types of skills needed for inclusive competitiveness. The skills that he specifically highlights that should be reinforced are digital skills, green skills, specialist skills (including STEM), transversal/soft skills and managerial skills.

While some of the above skill categories are well defined (such as digital or STEM), others could stand to benefit from being more precisely conceptualised, especially the so-called transversal or soft skills. These are sometimes referred to as the skills that uniquely qualify humans, that cannot be automated and that make humans complementary to technology, such as in AI-complementary skills. While evidence suggests that personality traits, goals, motivations and preferences are all important determinants of economic success (Heckman & Kautz, 2012), there is currently very little agreement on the precise definition of "soft skills" (Marin-Zapata et al., 2022).

Considering which types of human activities could support competitive strategies like product leadership and customer intimacy allows us to zoom into these skills in more detail. Descending from firm-level strategies to worker-level skills requires a stopover at a middle-level analytical construct, namely the level of organisational structure.

Table 1

The link between competitive strategies, organisational structures and skills

Strategy	Structure		Skills needs (examples)
	Teams	Jobs	
Operational excellence (low cost, large volume)	Functional and hierarchical division of labour	Simple jobs	Higher-level skills mostly needed at the top of the hierarchy, not at the bottom
Product leadership (innovation, R&D)	Cross-functional product-oriented teams	Complex jobs	Technical skills, problem-solving, teamwork and collaboration
Customer intimacy (customisation, responsiveness)	Cross-functional market-oriented teams	Complex jobs	Communication, client service and information processing

Source: Authors' own elaboration.

Management science has come to understand that organisational success depends on aligning an organisation's structure with the strategic goals of the business – often referred to as "structure follows strategy" (Chandler, 1969). Organisational structure is the organisation's design, including its hierarchy, various departments and reporting relationships. It follows then that this structure shapes the activities, tasks and decisions that must be executed in a job, which in turn determines the types of skills needed. In short, as structure follows strategy, skills need to follow structure.

Table 1 summarises the link between competitive strategies, firm structures and skills needs. In the low-cost strategy, high-skilled managers and process engineers standardise work processes and meticulously design jobs that require little decision-making or skill. Think, for example, about the Fordist factories during the Scientific Management revolution. In these settings, skills needs are high at the top of the hierarchy but low at the bottom, putting downward pressure on wages and increasing inequality.

A product leadership strategy, however, requires cross-functional teams dedicated to specific products. The interdisciplinary collaboration within these teams facilitates the development of new products, new features, higher quality and new production methods, thereby advancing innovation. These teams are made up of complex positions that require not only technical skills but also problem-solving, teamwork and collaboration.

Similarly, a customer intimacy strategy requires cross-functional teams dedicated to specific market segments,

whether defined by region, demographic or behavioural patterns. Such teams make sure that specific market segments are serviced in a personalised, responsive and customer-centric way. Again, these complex jobs require skills like communication, client service and information-processing.

By working through this chain of thought from strategy to structure to skills, two implications emerge. First, one can be more specific about exactly which types of skill categories can support which types of competitive strategies. Second, the skills required for the latter two strategies are more supportive of shared prosperity and human flourishing than the skills required for a purely low-cost strategy.

This leads us to formulate three key questions, namely: How can EU companies and governments determine what their skills needs are, especially future ones? Who needs to upgrade their skills or acquire new skills? And, finally, how can all this be achieved?

Strengthening strategies for closing the skills gap

By expanding the notion of competitiveness beyond low labour costs, we have clarified that innovation is the linchpin between competitiveness and skills. We have also explained that economic complexity theory requires this innovation to be organised at the sectoral level through smart specialisation. The EU needs the skills that can support these competitive strategies in smartly specialised regions that build on innovation in product and service design.

The general categories of skills that support these innovation strategies are shown in Table 1. What remains is to identify *what* specific skills the EU labour market needs, *who* should be acquiring those skills and who makes that decision, and *how* the development of such skills should be pursued, considering both firms and public policies.

What: Identifying skills needs through skills intelligence

Skills intelligence refers to strategically using data on workers' abilities to understand and anticipate labour market trends. It involves collecting, analysing and applying insights on skills, as well as identifying current workforce proficiencies and emerging trends. According to Draghi, this is crucial for diagnosing problems and determining how to address them. In recent years, both the public and private sectors have invested in improving skills intelligence to support both organisational agility and economic competitiveness.

For a comprehensive skills intelligence system to support firms, individuals and the economy, three areas need fur-

ther development: skills taxonomies, data sources and skills anticipation methods (Alcidi, 2024).

Taxonomies

A key challenge is establishing a coherent categorisation of skills and tasks. At the European level, theoretical advancements have been made by the Joint Research Centre and Eurofound (Fernández-Macías & Bisello, 2022; Rodrigues et al., 2021). In practice, multiple skills taxonomies still exist, complicating efforts to combine different data sources. This is particularly relevant for the green and digital transitions, where skills for new jobs are not yet fully understood. In the green transition, the lack of clear definitions of "green jobs" and "green skills" has led to a consensus favouring the term "skills for the green transition" (Urban et al., 2023).

Similarly, the impact of generative AI on the EU labour market is complex, as it affects not only repetitive but also intellectual tasks (Nurski & Ruer, 2024). While generative AI is unlikely to replace jobs entirely, it will replace or augment certain tasks, making it crucial to identify the specific skills that remain relevant and those that can complement machines. The concepts of AI-complementary skills, transversal skills and soft skills also need to be given better definitions before data can be collected.

Data sources

New data collection methods, such as web-scraped big data, are transforming skills intelligence. Online job postings provide insights into labour demand, while CV platforms capture parts of the labour supply. These sources enable faster and more cost-effective analysis than traditional methods, like surveys, which are often delayed. However, internet-based data are not collected for statistical purposes and can include irrelevant information or biases.

Academics agree that new sources should complement and be integrated with traditional ones for a more complete analysis. A key challenge for integrating data sources is the underdevelopment of a unified common language for skills. Coordinating data linkage efforts and improving procedural standards would enhance labour market analysis, supporting better insights into skills development and employment outcomes.

Skills anticipation

The ultimate objective of skills intelligence is to map current skills in the demand and supply of labour and anticipate future needs. For businesses, educational systems, training providers and policymakers, skills anticipation

represents a key tool for making informed decisions by projecting tomorrow's most in-demand skills and preparing for change.

There are different ways to approach such skills anticipation (Nurski et al., 2024). *Forecasting* projects future employment trends based on historical data, assuming past trends will predict the future. *Automation risk analysis* focuses on assessing which tasks in current jobs are susceptible to automation. *Strategic foresight* develops multiple future scenarios based on key drivers of change, helping policymakers to create robust strategies adaptable to different outcomes. *Discourse analysis* examines public debates and narratives to understand the perspectives of different stakeholders on the future of work. Finally, *backcasting* starts by setting a desired future goal and working backwards to identify the necessary steps to achieve that goal, providing a structured path for long-term policy development.

All five of these methods can be combined to create comprehensive future anticipation strategies.

Who: Focussing on adults, SMEs and managers

Transformations brought about by the digital and green transitions demand more frequent and systematic updates or upgrades of skills, and in some cases, complete reskilling. A growing number of individuals will no longer remain in the same job or perform the same tasks throughout their working lives. Education systems alone are therefore insufficient to address these changes, which affect everyone from low-educated, low-skilled workers to those who are highly educated and skilled. However, the different groups face different challenges.

Adult and lifelong learning

Analysing the results of the Adult Education Survey reveals that time and money are the primary barriers to training but these barriers vary across demographic groups (Güner & Nurski, 2023). Women often cite family obligations, while health and age are significant barriers for older individuals. Low-educated people frequently point to other reasons, such as not meeting training prerequisites, lacking internet access or negative past learning experiences. Policymakers must address these barriers to increase training participation among low-skilled individuals.

However, the most common reason for not participating in training is a lack of interest, particularly among low-educated individuals, who often do not see the need for it. Lifelong learning, a relatively new concept for most peo-

ple, requires a significant shift in mindset, even among the highly skilled. Without a supportive organisational culture, this shift is difficult to achieve. Organisations must create environments where continuous learning is encouraged and seen as integral to both personal and professional growth, making learning a key part of daily operations rather than an isolated activity. Crucially, this should be recognised as a way to nurture human capital and value for the organisation, which ultimately contributes to competitiveness.

SMEs

The shift towards lifelong learning is particularly challenging for small companies, which often lack the resources to support continuous employee development. This is crucial, as there are around 23 million small companies in the EU, accounting for over 50% of jobs. Employees in these smaller firms participate less in adult learning than those in larger companies, making them more vulnerable to market changes.

A 2020 CEPS study (European Commission et al., 2020) identifies four key challenges that hinder small and micro companies from investing in adult education and training: financial and time obstacles, informational deficiencies, constraints in the supply of training specific to these companies, and market failures affecting investment in adult education and training. In micro companies, the lack of time and financial resources is especially pronounced. Even when financial resources are available, employees taking on multiple roles cannot participate without affecting operations. Human resources (HR) management and skills development are often handled by the owner-manager, who balances these responsibilities with operational and managerial matters, and in practice struggles to organise training activities for their staff.

Managers

The Draghi report highlights the critical role of management in effectively deploying human capital within organisations. Management's ability to identify, reward and retain talent influences employees' motivation to acquire new skills. However, managerial skills go beyond incentivising training. First, managers control training budgets and decide which programmes employees can attend, often in line with learning and development frameworks developed by HR departments. Second, they make strategic decisions that guide organisational activities that create tasks for workers. Third, managers design jobs, assigning tasks and responsibilities to their employees. This job design not only dictates the skills required in vacancies but also creates opportunities for

on-the-job learning. By assigning tasks slightly beyond an employee's usual scope, managers enable skills development without employees needing to take time off work. Thus, managers play a central role in shaping skills needs, development and utilisation in the workplace, directly influencing both individual growth and organisational success.

How: Policy instruments for addressing underinvestment in training

Labour is a form of capital that requires continuous investment, especially in the context of the twin digital and green transitions. While the need for skills investment is not new, the pace and complexity of these transitions make it more crucial than ever for firms and individuals alike. Companies will play a critical role in making sure their employees have the right skills to support the company's competitiveness and success. However, the central question is whether the market alone can provide the necessary levels of training to support these transitions. The answer is likely no, due to several significant market failures that inhibit optimal training investment (Brunello & De Paola, 2004).

Underinvestment by firms

One of the key market failures lies in the *free-rider problem*, particularly in firms' investment in transferable, non-firm-specific skills. When companies finance training that enhances skills that are transferable across the industry, they risk losing their investment when employees leave for other employers. This creates an underinvestment in training, as firms are reluctant to bear the costs when other companies might benefit. Incomplete contracts, which cannot fully guarantee a return on training investment, exacerbate this issue.

Policymakers can and should intervene in several ways: first, by implementing institutional frameworks like dual learning systems, apprenticeships or payback clauses that secure returns on training. Second, they can reduce the financial burden of training through grant schemes or tax incentives. Third, mandatory sectoral training funds or firm-level training budgets can ensure that all companies invest equitably in workforce development.

Underinvestment by workers

Market failures also inhibit workers from investing in their own training. *Credit constraints* can prevent workers, and even more so the unemployed, from financing their skills development, an issue that can be mitigated through individual learning accounts or adult education grants. Work-

ers also face *signalling problems*, where their skills and qualifications may not be visible to potential employers.

Policymakers can address this by promoting skill accreditation systems and micro-credentials that provide transparent and verifiable skills records. Additionally, *imperfect information* about the skills needed in the labour market or available training opportunities hampers workers' ability to make informed decisions. Public employment services, improved online recruitment websites (private and public) and more sophisticated matching technologies can help workers navigate these gaps. Furthermore, workers may hesitate to invest in training due to *low expectations for new job opportunities*, particularly in areas with limited regional, sectoral or occupational mobility.

Addressing these market failures is essential not only for individual skills development but also for broader economic growth. As argued above, a well-trained workforce can drive innovation and improve competitiveness, especially in a rapidly changing global economy. Without adequate training, both workers and firms will struggle to adapt to new technologies and shifting market demands.

By fostering environments where continuous learning is supported, policymakers can and should ensure that European companies remain competitive, and their workers are equipped with the skills necessary for both current and future jobs. Skills development is a crucial factor in driving innovation and sustaining economic resilience, making it essential for long-term growth and global competitiveness.

Conclusions

Closing the skills gap requires clarity on what skills are needed, who needs them and how they should be developed. Skills intelligence can shed light on the what, but it needs better taxonomies, integrated data sources and varied anticipation methodologies. The who includes a diverse range of groups: adults needing to undertake lifelong learning, workers in SMEs with limited access to training and managers who shape skills development within their teams. Finally, the how should also include policy measures that overcome underinvestment in training by workers and firms due to market failures. Aligning these efforts will ensure that skills development fuels innovation, strengthens economic resilience and enhances competitiveness in a rapidly changing world.

Importantly, these efforts will not happen in a vacuum. The demand for specific skills is shaped by firms' competitive strategies, which are in turn influenced by policies and

regional contexts. A well-designed smart specialisation strategy can help regions leverage their unique strengths while addressing the dynamic needs of the labour market.

This approach promotes competitiveness, a fair distribution of the benefits of innovation and prepares the EU workforce to confidently meet the challenges of tomorrow.

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