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An intelligent industrial policy for sustainable growth

Policy Brief

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Policy brief

The need for an industrial policy for long-term growth¹

Putting back industrial policy on the growth agenda.

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Key insights:

- We aim to formulate an industrial policy framework based on capabilities (improved skills and management practices), innovation, and technology adoption.
- Greece has a considerable mismatch between supply of and demand for skills, which is a significant impediment to potential growth; there is a need to improve both the endowment of skills, as well as their allocation to jobs; policies should be closely coordinated and integrated into an inclusive industrial policy for both higher and vocational education and training.
- Greek firms perform worst in issues pertaining to people management, planning, and oversight, as well as synergies, dialogue, and collaboration; they do their best in decision-making, possibly by a single individual. Given the lack of appropriate policy levers, policy should focus on improving business culture and management practices through training and dialogue.
- Industrial firms in Greece remain laggards in both technological adoption and innovation, both essential elements for long-term growth, while academic research

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remains unutilized. A system-wide approach aiming at rectifying this shortcoming is necessary.

- Although export performance has shown notable signs of improvement, there are still concerns about the limited competitiveness of Greek products, and their inadequate differentiation and penetration into foreign markets; policies should therefore be designed and implemented with the aim to increase the technological sophistication of exports.

This policy paper is an attempt to formulate a version of a new industrial policy framework based on capabilities (improved skills and management practices), innovation, and technology adoption of business firms in the context of 4IR. In this regard, this policy brief could contribute to creating an industrial policy paradigm in the context of Southern European countries.

Industrial policy encompasses a wide array of tools, spanning from the establishment of intellectual property safeguards to public procurement, incentives for research and development, or public support for skill development. Innovation policy can either seek to broaden the array of capacities (vertical policy) or enhance capacities across industries (horizontal policy).

In this study, we selected some important problem areas of Greek industry, which constrain the country's long-term economic prospects. In particular, we focus on skills, management practices, innovation, and technological adoption of Greek firms and establish new empirical facts using international datasets (PIAAC, WMS, and ORBIS-BvD) as well as novel survey data (LIFE/NTUA).

1. ***On the skills and capabilities front***, our results show that, first, Greece has a considerable mismatch between supply of and demand for skills, which is a significant impediment to potential growth. Secondly, focusing on “on-the-job mismatch,” we find that Greece suffers from a high level of mismatch between the skills workers possess and those demanded of their jobs.

Furthermore, by distinguishing between over- and under-skilled workers in highly skilled (“professional”) jobs and all other jobs, we show that Greece exhibits the highest professional over-skill mismatch compared with all other countries in the sample. As opposed to all other countries, this mismatch is higher for professional

occupations than for all other jobs in the case of Greece. This implies that over-skilled workers tend to underuse their skills, resulting in a waste of human capital. In this regard we show that a one-standard-deviation increase in over-skilling, at the expense of well-matched workers, reduces weighted sectoral productivity by almost 10%.

The results reveal that there is a need to improve the alignment of workers' skills with the needs of industry, in terms of enhancing both skills endowment and the allocation of current skills to jobs. The key message is that the various policies should be closely coordinated and integrated into a holistic and inclusive policy framework which relies on both higher and vocational education and training (VET). More precisely, some strategic initiatives should be carefully designed and implemented. We suggest the following recommendations:

Policy Recommendation 1.1: Establishing and promoting university-industry cooperation schemes. This will help link the needs and problems of manufacturing firms with the valorisation/commercialisation of academic research. This is a clear double dividend: the industry will address the skills shortage by tapping and forming/building the exact type of human capital it requires, all while reducing brain drain. In this context, joint programmes to pursue diploma theses and industrial doctoral dissertations in fields of common interest should be designed and implemented.

Policy Recommendation 1.2: Maintaining a balance between formal education, in-firm training, and lifelong learning. The Greek skills development system is characterised by academically oriented formal education and limited in-firm training. Participation in lifelong learning is also low. There is an urgent need to invest in human capital before and after entry into the labour market; such upskilling and reskilling is essential, due to the rapid technological and organisational changes. In this regard, a balanced mix of training and lifelong learning schemes by large industrial firms, business associations, and academic institutions should be launched and funded.

Policy Recommendation 1.3: Maintaining the balance between formal and tacit curricula in Greek universities. A variety of joint activities in addition to the formal curriculum could be developed systematically, with a view to strengthening students' business acumen. Examples are industrial visits, internships for students as a degree

requirement, career days, joint workshops dealing with specific industrial problems, mentorship programmes, etc. Such initiatives can reduce the acute problems of adverse selection in job search, as students are unfamiliar with the work environment and the needs of industry before graduation, and thus improve the matching process.

Policy Recommendation 1.4: Promoting student networks – as part of the broader university activities – can serve similar goals. In particular, this can include volunteer networks, student groups dealing with issues related to their studies, their scientific discipline, or industry and business evolution, conferences, training summer schools and workshops, and exploration of different career paths.

Policy Recommendation 1.5: Upgrading secondary and upper secondary technical-vocational education and training. This is an essential step to ensure that students' skills and capabilities meet the needs of the industry. Apprenticeships are required for many trades and can take different forms. The Swedish approach, for instance, involves students completing a three-year-long vocational education in upper secondary school, followed by a post-secondary apprenticeship in a particular trade (Fjellström and Kristmansson 2019). Another approach incorporates vocational training directly into upper secondary school through an apprenticeship, along with a carefully established apprenticeship curriculum (to ensure that educational goals are not overlooked). An eclectic approach is warranted, depending on the needs of different sectors.

2. **On the management practices front**, we dig deeper on the well-known deficiencies of management in Greek industry, which has the lowest average management score of all advanced economies. Moreover, the quality of management practices in Greece is highly uneven. Two features stand out as key drivers of this dispersion: (1) Greece has the largest gap in management practices between domestic firms and foreign multinationals operating in Greece, and (2) Greece has the largest gap in advanced economies between domestic firms active only on the domestic market and domestic firms with overseas operations. A key theme we identify is that Greek firms perform worst in issues requiring people management, planning, and oversight, as well as synergies, dialogue, and collaboration. Instead, they do their best in issues requiring decision-making, possibly by a single individual. Similarly, we find

that Greece scores last in terms of employee autonomy. Given the high share of family-owned firms, this points to a corporate culture tied around the founder, leaving little room for talent development and firm decentralisation. Finally, the results show a positive relationship between management quality and firm performance in terms of productivity for Greek manufacturing firms.

While this is a particularly challenging area to improve, because it would conflict with the inner workings of firms, we suggest the following:

Policy Recommendation 2.1: Engaging in changing business culture and management practices in Greek manufacturing firms. This can be achieved in a number of ways. It can involve developing tailored in-firm training programmes, covering leadership development and communication skills, while encouraging the active participation and engagement of employees in the training sessions to foster a sense of ownership and commitment to the managerial changes. External services can further help assess the current state and identify areas of improvement, and can also facilitate the integration of advanced technologies. It is also important to experiment with new management practices and relevant organisational schemes.

Policy Recommendation 2.2: Human resource departments should focus on the selection processes of managers at different levels. A well-designed selection process ensures that managers are not only skilled in their technical roles but also possess the interpersonal skills to support their team members. At the same time, it is imperative to create channels for open communication and feedback from employees. This allows for continuous improvement and adjustment of strategies based on real-time insights.

Policy Recommendation 2.3: Dealing in a professional way with the problem of succession in Greek family firms. This is arguably the most difficult, but also the most important task. A particularly useful model for Greece, taking into account its societal structure, is the German Mittelstand, where family-held firms are typically run by professional managers outside the family.

Policy Recommendation 2.4: Promoting joint ventures and other forms of cooperation between professionally organised and managed firms and traditional family-managed firms. Professionally managed firms often excel in adopting and integrating advanced

technologies. Partnering with family-managed firms can help in disseminating these technologies to enhance efficiency and competitiveness.

3. **On the innovation and technology adoption front**, the results show that firm size has a positive and significant relationship with product innovation. While the role of family-owned firms is not significantly related to firm performance, the results suggest that those firms are less likely to (i) have an in-house R&D department and (ii) adopt practices associated with the process of digital transformation. Both those factors are indicators of persistent innovation activity. Greek firms are also shown to lack usage of Big Data, data analytics, and new business models suitable for online operations. Finally, we show that participation in GVCs is positively associated with innovation and adoption of digital technologies.

In this regard, linking research with innovation and further activating knowledge-intensive entrepreneurship (startups, spinoffs, spinouts, and mature firms) as well as corporate entrepreneurship could be a driver for upgrading the innovative capacity of the Greek industrial system (Pissarides Commission 2020; LIEE/NTUA 2021). We suggest:

Policy Recommendation 3.1.: Establishing a bottom-up technology transfer initiative. An especially successful example is the Commission for Technology and Innovation (CTI) in Switzerland, which provides coaching, networking, and financial support to academic and private research initiatives, in order to create viable commercial ventures. Empirical work has found strong evidence that the CTI has improved the productivity, sales, and R&D intensity of treated firms. The Swiss model is especially attractive for Greece because it does not feature a leading role for the central government, which only acts in a coordinating capacity, and instead allows for bottom-up initiatives by various actors. As such actions have already started to materialise in Greece (e.g., the Science Agora knowledge transfer hub, or the partnership of SEV with NTUA and the National Centre for Scientific Research “Demokritos”), it would be wise to foster and allow such a system to flourish, rather than imposing a top-down approach. In this regard, policy could encourage the creation of industrial research fora between academia and industry.

Policy Recommendation 3.2: Activating university administrator capacity. This is key to the diffusion of academic research into industry, most notably including technology transfer offices (TTOs), which have been recently revitalised. At the same time, it is essential to enhance Innovation and Entrepreneurship initiatives and units, which can expose scientists to ways in which their research can be commercialised and teach entrepreneurship to students, as well as promote the newly established Competence Centres, which aspire to organize and streamline university resources.

We also put our finding within the context of ongoing discussions about vertical policies. Amidst the resurgence of interest in targeted support policies directed at specific industries or technologies, we propose that an economy progresses by acquiring new capabilities, allowing for the production of an ever-greater variety of products with increasing complexity. For Greece in particular, this warrants a rebalancing of the export basket away from tourism, transportation, and the oil refining. In this respect, several policy measures for the development, diffusion, and absorption of knowledge should be designed and implemented, with the ultimate aim of increasing export sophistication. While handpicking specific subsectors is beyond the scope of this brief, the following policy set is biased in favour of knowledge-intensive industries and can thus assist with the aforementioned rebalancing.

Policy 3.4: Accelerating the transition of businesses to the 4th Industrial Revolution, by preparing, launching, and implementing a coherent 4IR strategy for Greece.

Policy 3.5: Strengthening domestic value chains and corresponding “sectoral productive ecosystems,” as well as encouraging cooperation among small and medium-sized enterprises (SMEs).

Policy 3.6: Enhancing the participation and upgrading of the role of Greek companies in global value chains and their connection with sources of knowledge of other innovation systems.

Policy 3.7: Bolstering regional innovation systems in the context of a smart specialisation strategy (S3). S3 is part of the European Commission’s agenda for regional policies, recognizing both that smaller areas with high potential but limited

resources (e.g. university town) can be innovation hubs once provided with resources, and that other areas can excel at more traditional activities (Radosevic et al, 2017).

Policy 3.8: Supporting the “corporate systems of innovation,” with large business centres that will act as a testbed for small and start-up companies, as well as research teams of universities and research centres.

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