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On the Role of Innovation in the Generation of Value-Added Trade Opportunities

Policy Brief

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The aim of this policy brief is to highlight the importance of the multiple stages of innovation activity and exports. Further, given the importance of technology and commercialization in exports, the team undertook a survey of Greek inventors to uncover opportunities and challenges over the complex process of patent prosecution and valorisation. Finding from this survey and the quantification of the innovation-export relationship are employed to provide policy recommendations.

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Trade is vital in economic growth and development of a nation. What is more, in a continuous globalized world, according to WorldBank data, exports have on average been expanding in the last decades. This highlights the importance of exports for countries as they need to become and stay relevant in the global arena. Therefore, it is unsurprising that countries seek for policy instruments to stimulate exports of their firms.

Further, innovation has been shown to contribute substantially to export and adding value to products (Vetsikas & Stamboulis, 2023). In the first study, funded under this project, we expanded on this relationship by making a clear distinction between technology and innovation. While technological inventions capture the first occurrence of an idea or prototype, innovation corresponds to the process of commercializing or adding value to the invention. In addition to a country's export capabilities, we explored how each innovation stage (from technological inventions to market endeavours) contributes to new export specializations.

Consistent with previous literature, we found that related export capabilities matter. In the most novel part of our study, we found that related technological and market capabilities to also matter for the generation of new export specializations. When dwelling further in the case of Greece we find strong regularities between related innovation capabilities and export specializations throughout the entire period we study (2008-2022).

The policy implications of this finding are clear. First, the empirical regularities uncovered in the study find support towards smart specialization strategies that have been promoted widely under EU policies. Smart specialization strategy, inceptioned by Foray, David and Hall (2011) in the "Knowledge for Growth" expert group, promoted the concept that regions need to have a coherent strategy by building on existing related capabilities in order to branch out to new high-value activities. Our findings highlight the important nexus between related innovation activities and new export specializations suggesting that innovation and export strategies are not independent and need to be viewed under a unified framework.

Second, a country, such as Greece, will benefit from a comprehensive plan on national innovation strategy. While focusing on technological inventions is essential, there are other stages of innovation that merit attention. In fact, through our data compilation we found that out of the seventy-seven countries we observed, Greece ranks forty-eighth in exports, thirty-fifth in patents, sixtieth in trademarks and thirty-fourth in industrial designs. We should note that the innovation-related numbers are aggregated across offices and mask considerable noise across regions; for instance, according to the European Union Intellectual Property Office report, Greece ranks twenty-third in trademarks application in this office in 2023. Nevertheless, they highlight the importance of a national innovation strategy that on the one hand promotes the generation of technological innovations and on the other promotes the valorisation of these activities through novel market and design activities. Returning to the concept of smart specialization, Foray, David and Hall (2011) stress the importance of entrepreneurial discovery and going beyond the technological invention; in their words referring to a success story of smart specialization: "... it is a tale of entrepreneurial discovery... in which the knowledge contributed by the entrepreneur does not concern a technical invention" while "the outcome of the process is much more than a "simple" technological innovation but rather a structural evolution ... – in this case the transition from one old, perhaps declining activity to a new one offering superior commercial prospects".

The latter discussion motivated the second study funded under this project. In this study we identified Greek-located inventors that have recently (2017-2022) filed for at least one patent application in major international offices including European Patent Office, World Intellectual Property Organization and United States Patent and Trademark Office. After a particularly lengthy process, we collected inventors' contact information and disseminated a survey to uncover the opportunities and challenges associated with patent prosecution.

Interestingly, out of the two hundred inventors that replied we obtained a fairly even mix between types of patent assignees with 14.5% of inventors disclosing that their patents are inventor-owned, 28% disclosing that they are affiliated with a university or a research centre, 27,5 % disclosing that they are employed by an SME and 30% disclosing that they are employed by large company (more than 250 employees).

Unsurprisingly, inventors that own their patents and inventors employed by universities view patenting as an opportunity of commercializing their inventions either via licensing or selling compared to large firms. On the contrary, large firms employ patents for blocking and to protect their products. Blocking unfortunately has been shown as a major reason for firms to file for patents (Torrise et al., 2016) and it appears that Greek large firms are no exception.

When distinguishing by office the motives by Greek inventors to file, there are two key observations that stand out. First, when examining motives at the USPTO, EPO and WIPO, market motives and commercial perspectives appear to rank the highest. This shows the opportunities that Greek inventors and their organizations seek to exploit in large international markets highlighting the importance of viewing innovation activity in a comprehensive context with exports, investments and overall commercialization of high-value products and services.

Second, when considering the challenges of procuring a patent, inventors from large firms appear to view them as less significant compared to all other types of inventors. Regarding the latter group, costs of fees and processing (e.g. patent drafting) are significant while challenges regarding the patent attorney and patent drafting rank quite high. Overall, these are challenges that have been mentioned in recent blogs and news articles while several inventors raised these issues in the survey's comments section.

Policy Recommendations

- Innovation and Export strategies should be related. Smart specialization strategies find support in the empirical data promoting the concept that related innovation capabilities contribute to new export specializations. This requires the identification of related innovation and export specializations at the national level and the appropriate nurturing of these activities. More importantly, smart specialization strategies require the training and education of stakeholders to understand opportunities that Greek regions can pursue when branching out to higher-value added export activities.
- Facilitate intellectual property rights prosecution by revisiting laws and regulations pertaining to them. For instance, the law No. 4325/1963 "On National Defense Patents and amendment to the Law of Patents No. 2527/1920" (Ν. 4325/1963 Περί εφευρέσεων αφορωσών την εθνικήν άμυναν της Χώρας και τροποποιήσεως του Ν. 2527/1920 "περί διπλωμάτων ευρεσιτεχνίας") with the contribution of legal scholars and experts could be refined. This law in essence requires for Greek nationals regardless of country of residence to first file for a patent application at the Hellenic Industrial Property Organisation (HIPO) to check if the invention is relevant to national security. While to our knowledge, this law has not been enforced, it creates risks for Greek inventors. While the rationale of the law is well-intentioned it could be transformed to an incentive-based law as opposed to a deterrent-based law.
- The enactment of the Unitary Patent creates challenges and opportunities for Greek innovators. At the time this policy brief was drafted, Greece is not yet part of the Unitary Patent while eighteen other EU member states are. While the discussion/analysis of challenges by stakeholder group (attorneys, government's revenues, innovators, non-

innovators/imitators) is beyond the scope of this policy brief, policy makers need to undertake an informed decision to either participate or not. The last two policy recommendations point to an upgraded position of HIPO beyond protection of trademarks, patents and industrial designs.

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