



POLICY NOTE OF WORKING PAPER 5.17

INSTITUTIONAL ENVIRONMENT, ECONOMIC PERFORMANCE AND INNOVATION IN TURKEY

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OBJECTIVE

Investigating the relationship between economic performance, innovation, and institutional environment is of significant importance to an emerging economy like Turkey given the now widely agreed impact of innovation on economic performance at different levels of aggregation (firm, sector and economy-wide levels). The mediating influence of the institutional environment on this relationship is crucial and as such needs to be integrated into the analysis. In this research, we tackle the aforementioned issues in the case of Turkey in two successive stages.

SCIENTIFIC/RESEARCH METHODS

We first conduct an in-depth analysis of the shifts that occurred in Turkish national innovation system, and especially changes in STI policy making. The following issues are dealt with: evolution and effectiveness of the public innovation support system, supply and demand of human resources for research, and national R&D targets. In the second part, we make use of firm-level data collected within the framework of innovation surveys for the period 2008-2010 in order to carry out an econometric study. The aim of this exercise is to test for the effectiveness of different types of direct support provided by the government to private firms and present some elements of discussion on this important issue.

POLICY VALUE-ADDED

We will first examine the main results and policy implications related to the significant shifts affecting STI policy making in Turkey. Second, findings of the econometric analysis aiming at assessing the effectiveness of public support to innovation will be examined and its policy implications will be presented.

In-depth analysis of the recent evolution of the STI system points to several issues. First, number and types of direct supports to business innovation –as well as indirect support through tax incentives – has increased and diversified. Especially, the volume of grants provided by TUBITAK-TEYDEB, still the most important actor of the innovation system in Turkey, has increased tremendously especially since 2003: since

its inception in 1996, it has provided R&D and innovation support amounting to 1.5 billion TL. This support reached SMEs as well as large enterprises. Geographical reach and sectoral diversity has improved as well. On the other hand innovation support provided through tax incentives since 2008 – within the framework of Law No 5746 –has also increased significantly and reached almost 5 billion TL over the period 2008-2012. It has been used mainly by large firms especially due to its requirement of hiring 50 FTE R&D staff. There are also other types of innovation support – for instance to enhance techno-entrepreneurship – by other public organizations. The main problem concerns the effectiveness of these supports – input and output additionality issues – and the fact that very few studies were conducted aiming at *ex post* impact assessment of them is really problematic (Ozcelik and Taymaz (2008) for the 1993-2001 period and Tandogan (2011) for the 2003-2006 period) and precludes making any judgment about the effectiveness of these aids – but certainly plaids in favour of implementing the whole spectrum of impact assessment techniques in Turkey. An econometric exercise was undertaken in this study for the period 2008-2010. As for the setting up of technology- and sector-level priorities in the STI system which would allow to give some indications as to where concentrate scarce public resources, sectoral prioritization efforts has been made recently. It remains to be seen what the bases of such an exercise are and whether the mobilization of public support in these sectors will help achieve the objectives – especially that of import substitution. As for the national STI targets determined with reference to the year 2023, the desired evolution of R&D to GDP ratio from 0.85 to 2 % in 2023 is highly dependent on the improvement of the national innovation system (main problems being a lack of coordination between its actors as to the formulation and implementation of STI policies) as well as the objective concerning the number of highly skilled workforce (the number of FTE researchers) to be available in 2023.

In this study an econometric methodology is conducted in order to test for the efficiency of public support system in Turkey. To this end, firm-level data from the Turkish innovation survey (2008-2010) is used for the manufacturing sector. Two alternative CDM models (Crépon, Duguet and Mairesse, 1998) are estimated: the first one assumes that government support is exogenous while the second controls for the endogeneity of support but uses a simplified version for the innovation performance equation. Econometric evidence indicates that government support contributes to higher innovation spending by firms (*input additionality*) and this in turn improves their chances to introduce product innovations (*output additionality*). The positive impact remains valid even when a possibly non-random selection of firms for government support programmes is controlled for.

Our findings point to the following policy implications. Innovation support policy seems to be effective: the EU-related support seems to exert a significant effect on firms-level innovation activities while it forms less than 2% of the total public support in Turkey. It is worthwhile noting that EU-supported R&D projects are based on international collaborations while only 1.5 % of R&D and innovation projects that are supported by national programs are collaborative. Hence, existing support mechanisms should be strengthened and new policy instruments should be developed both for universities and private sector. Further research is necessary to investigate the success of EU-funded programmes on one hand – and the apparent failure of the schemes organized on the local (subnational) level, on the other.