

ECONOMIC LIBERALIZATION AND INNOVATION ACTIVITIES OF FIRMS IN EMERGING ECONOMIES: THE CASE OF TURKEY

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In our paper, we use plant-level data in order to examine determinants of innovation decisions of Turkish manufacturing firms, with an emphasis on those determinants that are closely linked to trade liberalization policies implemented in Turkey since 1980. Indeed, after having pursued a development strategy based on import-substitution policies from 1960 to 1980, Turkey switched to a more outward-oriented one from 1980 onwards. Economic reform process included measures aiming at export promotion as well as import-liberalization. This transition to a more outward-oriented economy is likely to influence innovation activities carried out by firms in the Turkish economy.

The indicator of innovation decision used in our study comes from an innovation survey carried out in 1994 and concerns 1297 Turkish manufacturing firms. The innovation survey provides us with information whether a firm introduced an innovation during the period 1989-1993, or not. Since the indicator of the innovation decision is a dichotomous qualitative variable, we used the binomial probit model in our econometric investigation, in which the probability that a firm will innovate is estimated as a function of a number of explanatory variables.

In order to analyze the impact of trade liberalization on innovation, we use the following variables as control variables in the regressions in order to avoid bias due to missing variables: *firm size*, *market structure*, *profits*, and the *skill level* of the labor force. Secondly, we have included in the regressions determinants of innovation that are likely to be influenced to a great extent by trade policy reforms: *exports*, different indicators of the degree of *competition on the domestic market*, *foreign direct investment* (FDI) as well as an indicator of potential *technology spillovers arising from FDI*, and other means of technology transfer such as *imports of machinery*, *technology licenses* and an indicator of *international R&D spillovers*.

After estimating a probit model where average values of the explanatory variables over the period 1989-1993 are used, we address a possible endogeneity issue of regressors by using in the regressions 1988 values of the regressors in order to explain the innovation activities of firms during the subsequent period 1989-1993. Since the endogeneity problem is likely to be most important for the export variable, we also estimate a simultaneous probit model in order to remove this endogeneity.

Our findings can be summarized as follows: in this paper where we analyze determinants of innovation decisions of Turkish manufacturing firms over the period 1989-1993 using plant-level data – with an emphasis on those determinants that are linked to trade policy reforms of the 1980s – we find that positive effects of trade liberalization on innovation decision are transmitted mainly through technology embodied in imported machinery. Being a technology licensee, an exporter or having a foreign partner does not exert a significant positive effect on a firm's probability to innovate, nor do technology spillovers due to the presence of foreign firms in the Turkish manufacturing industry.

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