

## **Relatedness, Complexity and Innovations: A Regional Patent Data Analysis in Turkey**

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### **Abstract**

Regional development policies based on regions' core strengths is key for innovative and competitive growth. Potential to diversify into innovative economic activities is vital for smart specialization. Relatedness of the industries in the region (the extent to which a new technology/occupation/industry is related to pre-existing skills and capabilities in the region) and knowledge complexity of the regions (unique and hard to imitate regional capabilities) are two fundamental concepts for smart specialization (Hidalgo and Hausmann, 2009; Hidalgo et al., 2018; Balland et al., 2019). Balland et al., (2019) propose that regions should develop on sectors that related to the regions' core strengths and are difficult to replicate outside the region. Following the regional diversification and economic complexity literature the paper aims to test the hypothesis that regional innovativeness has a positive relationship with regions' relatedness and knowledge complexity. We use OECD-REGPAT database January 2020 Edition (OECD, 2020) for the years 1978-2017 for Turkey's NUTS3 regions. The dependent variable is patent applications and independent variables are average relatedness density (ARD) and knowledge complexity index (KCI). We use per capita GDP, population and number of universities in the regions as control variables. All variables and log transformed and independent variables are have one period lags. The results confirm that technological relatedness significantly relates to patent applications while the coefficient for knowledge complexity is not statistically significant in all models. Findings propose that it is reasonable to support technological relatedness for innovativeness and smart specialization.

**JEL classification:** R10, R11, R58

**Keywords:** relatedness, complexity, smart specialization, Turkey, regional innovativeness