Firms' patenting and collective cumulative knowledge: evidence form the largest R&D investors in the world

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The article discusses the efficiency of R&D investments and the suitability of IPRs altogether. There is a debate about whether IPRs systems balance the need for privately appropriate knowledge returns and accessing cumulative knowledge to feed inventions and technological progress, thus contributing to social welfare. We contribute to the discussion by analyzing the private R&D expenses' productivity in terms of inventiveness and investigating whether firms' investments in R&D do generate knowledge that is of any use in further knowledge creation. Exploiting data about the world's largest R&D investors between 2007 and 2015, matched with their patent filings and citation profiles, we find that a surprisingly sizeable and increasing number of patents do not contribute to the collective knowledge creation because they are uncited. Moreover, by estimating the firm-level R&D-to-patent ratio augmented with the propensity to patent and research productivity factors, we find that R&D investments generate cited and uncited patents with the same elasticity and that the largest R&D investors devote an increasingly larger share of resources in obtaining uncited patents than cited ones. Such figures are robust across industries and patent offices. We posit that uncited patents are socially undesirable and suggest some implications for innovation policies.