

# Does carbon capture & storage mitigate carbon premium? Evidence from patents

by *Laura Rondi* | *Antonio Barchi* | *Politecnico di Torino* | *Università di Padova*

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## Abstract

We study firm-level patenting in Carbon Capture & Storage (CCS) technologies and its effect on firms' stock market performance. Joining patent data with balance-sheet, financial and non-financial company panel data (2010-2022), we use zero-inflated Poisson regressions to study CCS patent activity both at the extensive and at the intensive margin. We find that CCS patents behave consistently with other eco - innovations and respond to the environmental pressure exercised by firm-level CO<sub>2</sub> emissions and by country-level environmental regulatory policy. Then, motivated by the recent debate about the existence of a "carbon risk premium" in the stock market, we investigate how CCS patenting affects firms' market value and the risk premium requested by investors to high-carbon emitters. We find that CCS patenting is negatively (positively) related to the market-to-book ratio (stock returns), but the signs flip as CO<sub>2</sub> emissions and environmental pressure intensify, suggesting that innovation in CCS technologies has a positive impact on high-emission firms, reducing the carbon risk premium.