

Finance and Carbon emissions

ECB Working Paper

For given levels of economic and financial development and environmental regulation, CO₂ emissions per capita are lower in economies that are relatively more equity-funded. Industry-level analysis reveals two distinct channels. First, stock markets reallocate investment towards less polluting sectors. Second, they also push carbon-intensive sectors to develop and implement greener technologies.



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The discussion about the link between financial and economic activity on the one hand, and climate change on the other, has markedly intensified in recent years. The 2015 Paris Climate Conference called for green finance initiatives to fund low-carbon infrastructure and other climate.

Central Banks around the world have also begun discussing the implications of climate change for monetary policy. This discussion typically focuses on the impact of climate change, as well as of policies designed to tackle it, on financial stability and on the nature, persistence, and magnitude of economic shocks that monetary policy needs to identify. At the same time, little attention is devoted to understanding better how financial market activity contributes to climate change through its impact on the real economy. This is important because different types of financial markets can have different effects on economic activity, and by extension on the industrial pollutants that sit at the heart of anthropogenic climate change.

The mechanisms that connect finance, industrial composition, and environmental degradation, as measured by the emission of CO₂ is analysed. The findings are given below:

- It was found that for given levels of economic and financial development, carbon emissions per capita are significantly lower in economies where equity financing is more important relative to bank lending.
- Industry-level analysis confirms that industries that pollute more for technological reasons, start to produce relatively less carbon dioxide per capita where and when stock markets expand.
- Holding cross-industry differences in technology constant, stock markets tend to reallocate investment towards more carbon efficient sectors.
- Stock markets facilitate the adoption of cleaner technologies in polluting industries, leading to a decline in carbon emissions per unit of value added.

- Auxiliary sectoral evidence confirms that deeper stock markets are associated with more green innovation and patenting in traditionally carbon-intensive industries.
- Higher funding through corporate bonds does not have a greening effect on the economy, suggesting that when it comes to green innovation, the right definition of financial structure is not one based on a distinction between banks and markets, but one based on a distinction between debt and equity.
- The reduction in carbon emissions, due to domestic stock market development, in carbon intensive sectors is accompanied by an increase in carbon emissions associated with the production of both final and of intermediary goods abroad, suggesting a role for the outsourcing of dirty technologies.