MANAGEMENT QUALITY AND ENERGY INTENSITY: Well-run firms cut their greenhouse gas emissions only when fossil fuel prices aren't distorted by subsidies

Better managed firms respond to incentives and increase their energy intensity if the difference between the supply cost and the consumer price of fossil fuels – fossil fuel subsidy – is relatively large. This is particularly true for firms in high energy-intensive sectors, such as manufacturing of textiles or basic metals.

But in the presence of environmental costs in the form of global warming and local pollution, all types of firms tend to reduce their energy intensity. In high-energy intensive sectors, the 'polluting' effect of fossil fuel subsidies prevails.

These are the central findings of research by **Helena Schweiger** and **Alexander Stepanov**, to be presented at the annual congress of the European Economic Association in Manchester in August 2019.

Their study combines European Bank for Reconstruction and Development (EBRD) – World Bank (WB) Business Environment and Enterprise Performance Survey (BEEPS) and EBRD, European Investment Bank (EIB) and WB Middle East and North Africa (MENA) Enterprise Survey (ES) business data from almost 2,250 manufacturing firms in 39 economies with IMF data on supply cost, consumer prices and environmental cost of fossil fuels.

The data show that better managed firms reduce their fuel intensity (fuel costs as a percentage of sales) when fossil fuel prices are not distorted by subsidies, and reduce it by less or increase it when fossil fuel prices are distorted by subsidies.

The impact is substantial: an improvement in management practices quality from the 25^{th} to the 75^{th} percentile of management practices quality distribution is associated with a 21-22% fuel intensity reduction when fossil fuel subsidies are low (or negative) and with a 1-3% fuel intensity reduction when fossil fuel subsidies are high.

The relationship is stronger in high energy-intensive sectors, where the same improvement in management practices when fossil fuel subsidies are high is associated with more than a third increase in fuel intensity.

The findings suggest that firms where individual performance is the basis for managers' bonuses and non-managers' promotion are more likely to respond to incentives provided by fossil fuel prices.

The relationship between fuel intensity and management practices quality does not change once we take into account environmental costs. But higher environmental costs are associated with lower fuel intensity, indicating that better managed firms do take into account indirect effect of global warming and local pollution.

On average, the effects of fossil fuel subsidies and environmental costs are similar in magnitude and opposite in direction, so the overall effect on the relationship between fuel intensity and management practices quality is negligible. But in high energy-intensive sectors, the 'cleansing' effect of environmental costs does not compensate for the advantage associated with the gap between the consumer price and supply costs of fossil fuels.

The authors conclude that while better management practices are associated with improved productivity, they may also be linked to worse environmental performance in the absence of incentives to economise on energy use.

Well-managed firms use energy inputs more efficiently and thereby increase their productivity while at the same time reducing their greenhouse gas emissions only when fossil fuel prices are not distorted by subsidies. Governments wishing to reduce greenhouse gas emissions should carefully consider the impact of fossil fuel prices on firm behaviour.

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