

GHG regulation of transportation fuels: Comparing firm incentives under upper-bound and emission quota

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Abstract

Policy-makers targeting reduction in greenhouse gas (GHG) emissions have a variety of instruments at their disposal (emission taxes excluded). Policies implemented thus far such as the Kyoto protocol, EU's Emission Trading Scheme, and the Regional Greenhouse Gas Initiative in the US north-east, suggest that the preferred instrument is an emission quota per polluter. The principal activity targeted for mitigation has been electric power generation. In contrast, one of the first legislations to exclusively target GHG emissions from transportation, California's Low Carbon Fuel Standard, will rely on a direct-control approach, an upper-bound standard on emissions per unit of fuel. This paper is a comparison of the incentives that fuel-producing firms will face under each these two types of regulations, namely, an upper-bound standard per unit of output versus a quota on aggregate emissions (or equivalently, an emission reduction quota) per firm and infer why policy-makers may prefer one over the other.

1 Introduction

Several policies to limit GHG emissions have been launched thus far. One of the first was the Kyoto protocol adopted in 1992, which mandated a GHG

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