The Impact of the CAFE Standards on Automobile Innovation in the US

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Abstract:
The Obama administration seeks to tighten the fuel economy standards in the US and the target is to almost double the miles per gallon (MPG) of vehicles by 2025 compared to that of 2010. With this new aggressive movement, there is an ongoing discussion about whether auto makers could meet the new standards without providing consumers with vehicles that are much lighter and less powerful. In this paper, I investigate how historical changes in the fuel economy standards impacted innovation in the automobile industry and estimate the induced innovation in response to the changes in the standards. By decomposing innovation growth into natural growth and standard induced growth, I not only show that standard changes can induce innovation but also quantify the induced innovation with respect to the rate of changes in standards. I also estimate that with the induced innovation, automakers can meet the new 2025 target with modest changes in vehicle attributes in cars and small changes in trucks. Such method can provide a more precise prediction of future innovation under new performance standards.

Key words: CAFE standards, technological growth, regulation and innovation, fuel economy, vehicle attributes

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