

Positive externalities from active car safety systems A new justification for car safety regulations

Michael Berlemann^{a,b,*}, Andreas Matthes^c

^a *Helmut-Schmidt-University, Faculty of Economics and Social Sciences, Chair of Political Economy and Empirical Economics, Hamburg, Germany*

^b *CESifo, Germany*

^c *Dresden University of Technology, Faculty of Transportation and Traffic Sciences Friedrich List, Chair of Transportation Economics and International Transport Policy, Dresden, Germany*

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Abstract

Policymakers around the globe have opted for high levels of regulation of the market for vehicle safety and declared many vehicle safety systems as mandatory for new cars. In this paper we argue that the delivered justifications for these policies are at least questionable. We add a completely new argument to the discussion and show in a simple theoretical model that vehicle safety systems might cause positive externalities. Based on a large dataset of traffic accidents in Germany we show that these externalities in fact occur. Based on our estimation results we show that for anti-lock-brakes (ABS) and electronic stability programmes (ESP) the average expected externality exceeds the price of these systems. Thus, the obligation to equip any new car with both ABS and ESP is adequate from an allocative point of view although the official justification for the introduction of these regulations are flawed.

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1. Introduction

The [World Health Organization \(2004\)](#) estimated that 1.2 million people were killed (2.2% of all deaths) and 50 million more were injured in motor vehicle collisions worldwide. Mortality

* Corresponding author at: Helmut-Schmidt-University, Faculty of Economics and Social Sciences, Chair of Political Economy and Empirical Economics, Hamburg, Germany.

E-mail address: berlem@hsu-hh.de (M. Berlemann).

rates, defined as road traffic fatalities divided by population, differ considerably by age and sex. According to the World Report on Child Injury Prevention ([World Health Organization, 2008](#)) motor vehicle collisions are the worldwide leading cause of death among children 10–19 years old. Mortality rates differ also considerably by region. Low- and middle income countries tend to have higher road traffic fatality rates than their high-income counterparts. More than 90% of the world's fatalities on the roads occur in low-income and middle-income countries, although they have only 48% of the world's registered vehicles ([World Health Organization, 2009](#)).

The costs arising from accidents are enormous. The American Automobile Association (AAA) recently estimated the total annual cost from traffic accidents to be 164.2 billion US Dollar.¹ Similarly, the Federal Highway Research Institute (BAST) estimated the costs of accidents in Germany to account for roughly two percent of the German gross domestic product in 2004 ([BAST, 2006](#)). In the light of these numbers it is not surprising that especially governments of high-income countries have quite actively engaged in regulatory policies aiming to reduce the level of occurring accidents as well as of injuries sustained in crashes.

In most countries policymakers' view on the necessity and legitimacy of road safety regulation changed dramatically over time. We might illustrate this at the example of the United States.² Initially, automobiles were seen as a giant leap forward in the safety of transporting passengers. Due to the low driving speed of the early cars, serious accidents were rare. Although the death toll increased over the years with rising capabilities of cars driving at greater speeds, no serious attempts were undertaken to increase vehicle and traffic safety. This was primarily due to the positive image cars had at that time. Most Americans viewed automobiles as “means to increase the personal freedom and mobility of a highly mobile population” ([Lee, 1998](#), p. 392). The situation changed not before the 1960s, when traffic fatalities escalated and [Ralph Nader \(1965\)](#) published his famous book “Unsafe at Any Speed”. In this book he argues that many automobiles produced in the United States suffered from serious constructional flaws. While the book is openly polemical, it refers to the technical literature and also delivers material from industry insiders. In any case Nader's book contributed significantly to the unanimous passage of the 1966 National Traffic and Motor Vehicle Safety Act. The act established the National Highway Traffic Safety Administration and was the starting point towards a long series of regulations of automobile and driving safety in the United States. Although the plot differed from country to country, similar developments can be found in most other OECD countries.

Nowadays, in most high-income countries a long list of regulations exists, which is concerned with road traffic safety. Roughly, these regulations can be subdivided into three groups: those focusing on car manufacturers, those which are concerned with the behavior of car drivers and passengers and those which deal with provision of road infrastructure. Examples for the first group are the obligation to supply cars with seat belts, crush-resistant windshields, padded instrument panels or energy-absorbing steering columns. The recent decision of the European Commission towards a mandatory equipment of all new cars with electronic stability programs also belongs to this group. The second group consists of regulations such as the obligation to make use of seat belts, adhere to speed limits or the ban on drunk driving. The third group covers regulations of the design and operational standards of roads (or, more broadly, road infrastructure).

The literature on vehicle safety regulation almost exclusively centers around the question which regulatory measures should be taken in order to decrease the risk and consequences of

¹ See [American Automobile Association \(2011\)](#).

² See [Lee \(1998\)](#) for a review of the history of auto safety regulations in the United States.

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