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## **Global Gasoline Prices**

### **The need to raise gasoline taxes**

Gasoline taxes are considered to be a cost-effective policy instrument for reducing carbon emissions. A study finds that, while gasoline taxes rose in 83 countries between 2003 and 2015, the global mean fell by 13.3 percent due to a shift in consumption towards countries that maintain gasoline subsidies or that have low taxes.

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Gasoline taxes have been touted by many economists as an efficient and relatively simple tool to address environmental concerns and other problems associated with gasoline consumption. However, many countries still subsidize gasoline, and it is unclear whether there has been global progress towards removing subsidies and increasing gasoline taxes. In a recent study in *Nature Energy*, Michael L. Ross and Chad Hazlett from the University of California, Los Angeles and Paasha Mahdavi from Georgetown University use new data to measure and analyze monthly net taxes and subsidies for gasoline in almost all countries of the world, and find evidence of both progress and backsliding.<sup>1</sup>

In their study, Ross and colleagues construct an impressively detailed data set on net taxes and subsidies for gasoline in almost all countries of the world at the monthly level. Their data set includes local gasoline retail prices for 157 countries from January 2003 to June 2015 collected from both primary and secondary sources. To measure implicit taxes and subsidies, they compared observed local gasoline retail prices in each country to a global benchmark price. Their detailed high-frequency data set is a comprehensive, replicable, and observable measure of progress towards fossil fuel price reform in virtually all countries.

According to their detailed measurements of net gasoline taxes and subsidies, the researchers find that 33 countries subsidized gasoline for at least one 12-month period from 2003 to 2015, and 9 countries subsidized gasoline for the entire period. In general, these subsidizing countries also kept their gasoline prices fixed and were economically dependent on oil or natural gas exports. The researchers also find that while two-thirds of the countries in their sample increased their net gasoline taxes from 2003 to 2015, the global mean gasoline tax fell by 13.3 percent due to a shift in consumption towards states that maintain gasoline subsidies or that have low taxes. The data also reveal variation in net gasoline taxes and subsidies across different regions of the world. Europe and North America have the highest net taxes, while oil-rich countries in the Middle East and North Africa have the lowest net taxes. Countries that subsidized gasoline were economically dependent on oil and gas exports, perhaps due to political pressure to distribute resource revenues.

The economics literature has identified many reasons to have a higher gasoline tax. The main one is environmental protection. Gasoline consumption contributes to air pollution and global climate change, both of which are critical environmental issues. Higher gasoline taxes are a direct and minimally invasive policy to address environmental concerns.<sup>2</sup>

There are also other reasons, in addition to environmental protection, that might justify a higher gasoline tax. Higher gasoline taxes also reduce road congestion and traffic-related accidents. Traffic congestion and long travel times are undesirable because they discourage future economic growth, increase vehicular emissions, increase fuel expenses, increase operating costs for both private and freight vehicles, decrease economies of agglomeration, heighten the psychological burden of travel, create a need for more emergency services, decrease the reliability of travel, and impose an opportunity cost on time.<sup>3</sup> The external costs of congestion – which include increased operating costs for both private and freight vehicles, increased fuel usage and emissions, and, most significantly, the delay costs and uncertain travel times confronting motorists – are substantial and have been steadily increasing.<sup>4</sup>

Many economists favor gasoline taxes as a means to address these problems. An appropriate gas tax, in conjunction with a reduction in other taxes, is advocated as a policy tool that would improve the well-being of most households, while at the same time reducing oil imports, local pollution, urban congestion, road accidents, and global climate change.<sup>5</sup>

There are different ways to calculate gasoline taxes and subsidies. Ross and colleagues calculate pre-tax subsidies, measured as the difference between the retail price and the international supply cost, therefore representing a lower-bound estimate of total fossil fuel subsidies. An alternative notion considers post-tax subsidies instead, defined as the difference between the retail price and the sum of the international supply cost, a basic consumption tax, and a Pigouvian tax that internalizes the costs of local pollution, congestion, and carbon emissions. A recent study, which complements the work of Ross and colleagues, estimates such global post-tax fossil fuel subsidies and has found that they have reached a staggering \$4.9 trillion worldwide in 2013 and \$5.3 trillion in 2015, representing 6.5% of global GDP.<sup>6</sup>

In addition to analyzing the actual level of gasoline taxes and subsidies worldwide, the research community is also engaged in examining what the optimal gasoline tax should be. Economists have calculated the optimal gasoline tax to be equal to, respectively, \$1.01/gallon in the United States,<sup>7</sup> \$1.34/gallon in the United Kingdom,<sup>7</sup> \$1.58/gallon in China,<sup>8</sup> \$1.37/gallon in the state of California,<sup>9</sup> and 40.57 cents per litre (in 2006 Canadian dollars) in Ontario and the Greater Toronto-Hamilton Area in Canada.<sup>10</sup> In addition, another study estimates the energy tax that would be needed to reflect environmental costs in each of more than 150 countries.<sup>11</sup>

Taken altogether, these studies show that actual gasoline taxes are not at their optimal level. There is therefore support among many economists to raise gasoline taxes,<sup>12</sup> as a gasoline tax embodies economic principles of Pigouvian taxation whereby polluters pay for the damage they impose on society.<sup>13</sup> The mixed global progress toward fossil fuel price reform and decline in global mean gasoline tax revealed by Ross and colleagues highlight the increasing need of doing just that.

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