

Featured Articles from the Controller's Council of Economic Advisors

Controller John Chiang's Council of Economic Advisors informs the Controller on emerging strengths and vulnerabilities in California's economy, major issues and trends that may affect the State's fiscal health, and how to make the best use of limited government revenues and resources. On a rotating basis, members of the Council will contribute an article to the monthly Summary Analysis.

The Controller has asked each author to give us the benefit of his or her expert opinion on issues regarding the California economy. The opinions in these articles therefore are presented in the spirit of spurring discussion and reflect those of the authors and not necessarily the Controller or his office.

Please see below for an article by C.-Y. Cynthia Lin, Member, Controller's Council of Economic Advisors and Assistant Professor, University of California at Davis.

California's Gasoline Tax

By C.-Y. Cynthia Lin¹

Member, Controller's Council of Economic Advisors and Assistant Professor, University of California at Davis

With landmark legislation including the Global Warming Solutions Act of 2006 (AB 32) and air quality standards that are more stringent than those at the federal level, California is renowned for leadership nationally and internationally in implementing environmental regulation at the vanguard. To round out its portfolio, the state should set an example for the rest of the nation and world by raising the gas tax.

There are many reasons to have a higher gas tax. I will focus on two primary objectives. The first and foremost objective is environmental protection, with particular regard to air pollution, global climate change and our dependence on fossil fuels. According to Greg Mankiw, professor of economics at Harvard University and former chairman of President Bush's Council of Economic Advisors, who has also proposed a raise in the gas tax,

higher gasoline taxes are "the most direct and least invasive policy to address environmental concerns."²

Air pollution is a particularly critical environmental issue for California: in the American Lung Association State of the Air 2007 report,³ California has an alarming 16 out of the 25 most ozone-polluted counties in the nation, including all of the top six. Negative effects of air pollution have been extensively documented, and include impairment of human lung function, degradation of materials, and injury to plants. In addition to adverse health effects, the high ambient ozone levels found in Southern California and the San Joaquin Valley also cause yield reductions up to 30% for some crops.⁴

Global climate change is a critical issue for California as well. California is the world's 12th largest source of carbon dioxide, and the most

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devastating consequences of global warming potentially include a 90% loss of California's Sierra snowpack.⁵

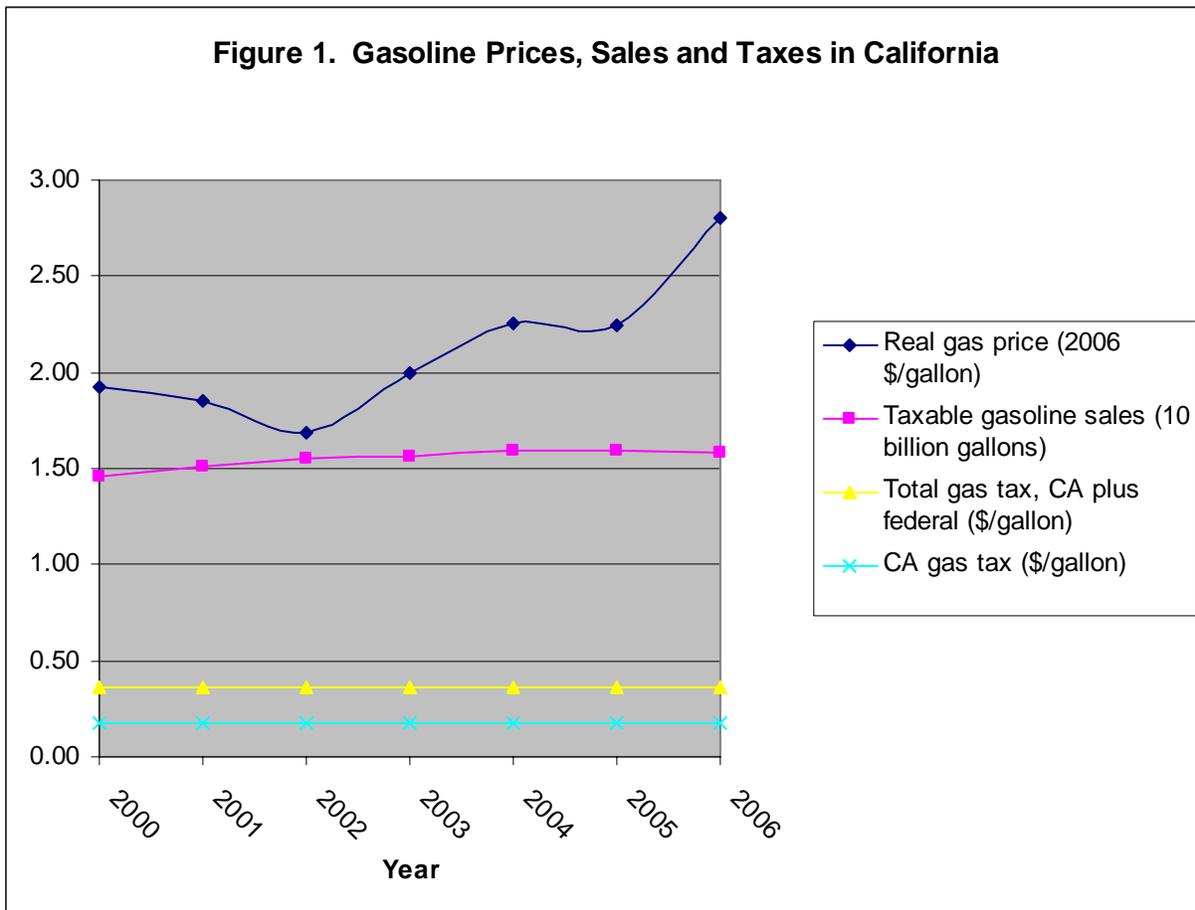
A higher gas tax would discourage oil consumption, reducing our dependence on fossil fuels, particularly oil imported from OPEC, and increase the demand for fuel-efficient vehicles and alternative means of transportation. A higher gas tax would also spur research and development in alternative energy sources and energy efficient technology.

In addition to environmental protection, a second objective for raising the gas tax is to reduce road congestion and traffic-related accidents. Congestion is a particularly acute problem in California. According to 2000 statistics from RAND, California's congestion costs due to delay and wasted fuel alone are 1.88 times higher than the national average.⁶

A higher gas tax is likely the best policy for meeting the objectives of environmental protection and congestion mitigation. It is a better policy than CAFE standards, for example, whose less stringent standards for light trucks are partly responsible for

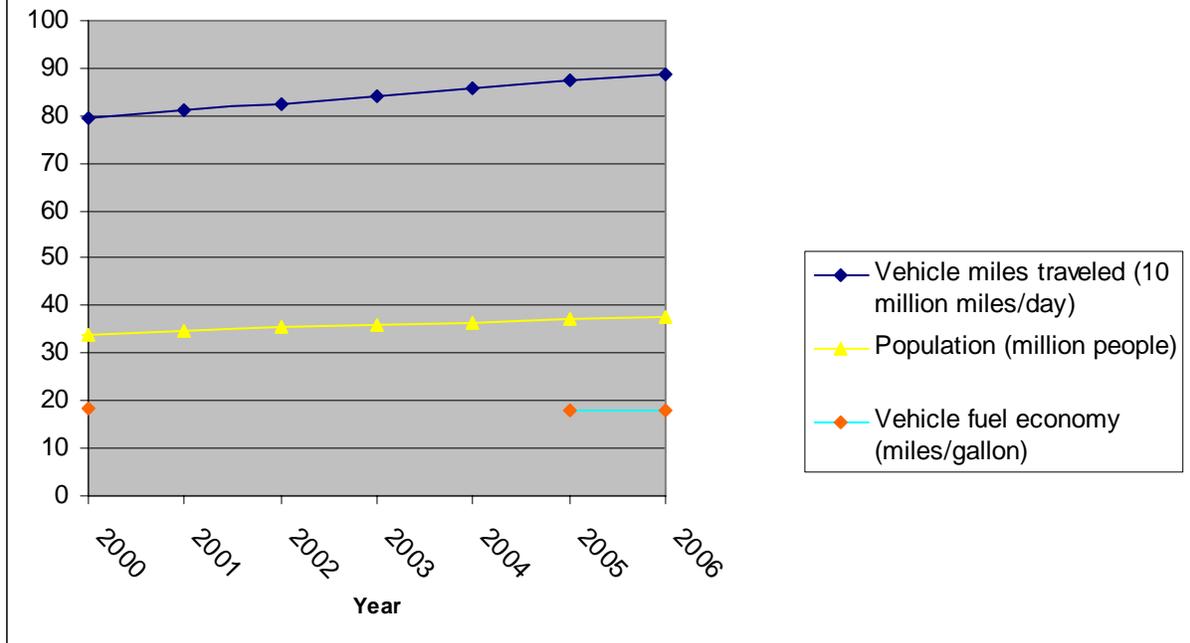
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Figure 1. Gasoline Prices, Sales and Taxes in California



Data sources: California Energy Commission (gas price), California State Board of Equalization (gas sales), California Department of Transportation (CA gas tax), William Buechner (federal gas tax).

Figure 2. Transportation-related statistics for California



Data sources: California Air Resources Board (VMT and population), California Department of Transportation (fuel economy).

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the increase in SUV ownership. CAFE standards may also lower the cost per mile of driving and therefore increase vehicle miles traveled and, hence, congestion. In contrast, higher gasoline taxes encourage development of more fuel-efficient vehicles, discourage people from buying and driving fuel inefficient vehicles, and discourage driving altogether.

Gas taxes also provide government revenue, which can then be used to reduce the income tax, or, better yet, to fund research and development in alternative energy sources.

Figure 1 (see previous page) plots gasoline prices, sales and taxes in California over the years 2000-2006.⁷ While the real gas price has trended upwards, especially since 2005, taxable gasoline sales have remained relatively unchanged, suggesting that a higher gas tax would be needed before changes in gasoline consumption take place. Similar conclusions are suggested by the statistics plotted in Figure 2 (above), which show that even though the state population has remained relatively constant over the past five years, the vehicle miles traveled has been steadily increasing. Moreover, vehicle fuel economy has not improved.

How high should the gasoline tax in California be?

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In a paper published in the top economics journal, economists Ian Parry and Kenneth Small calculated the optimal gasoline tax for the United States.⁸ The formula they use is comprised of three components: (1) a Pigouvian tax on the marginal external cost of fuel use, which includes the marginal damage from pollution and marginal congestion, accident and distance-related pollution costs; (2) a Ramsey tax, which accounts for the government's need to optimally raise revenue; and (3) a congestion feedback tax.

We used Parry and Small's formula to calculate the optimal gasoline tax for California using state-specific data. The optimal gas tax for California is likely to be different than the optimal gas tax for the entire United States because California has a higher congestion cost, a lower accident cost, worse air quality, and tighter environmental regulations than the national average.

According to the our latest analysis, the optimal gasoline tax in California should be at least \$1.06/gallon,⁹ which means that the gas tax needs to be raised by at least 70 cents per gallon. A raise of 70 cents per gallon is likely to be a conservative estimate of what is needed because Parry and Small's formula does not account for such considerations as the costs associated with the dependence on imported oil, considerations that we hope to incorporate as we continue to refine our analysis.

The health of Californians, our environment, society, and the planet are at stake. It is time for California to take the lead once again and raise the gas tax to its optimal level.

NOTES:

¹ I thank Lea Prince for excellent research assistance. All opinions expressed are my own and not necessarily those of the Controller or his office.

² Mankiw, G. (2006). The Pigou Club manifesto. Web blog. <http://gregmankiw.blogspot.com/2006/10/pigou-club-manifesto.html>

³ http://lungaction.org/reports/sota07_cities.html

⁴ Hall, J.V., Winer, A.M., Kleinman, M.T., Lurmann, F.W., Brajer, V., & Colome, S.D. (1992). Valuing the health benefits of clean air. *Science*, *255*, 812-817.

⁵ Nuñez, F. & Pavley, F. AB 32: Global warming solutions act. Accessed 1 September 2007. <http://www.law.stanford.edu/program/centers/enrlp/pdf/AB-32-fact-sheet.pdf>

⁶ <http://ca.rand.org/stats/statlist.html>

⁷ The gas tax plotted excludes the sales tax.

⁸ Parry, I. & Small, K. (2005). Does Britain or the United States have the right gasoline tax? *American Economic Review*, *95*, 1276-1289.

⁹ This is 5 cents higher than what Parry and Small calculated to be the optimal gas tax for the entire United States.