

Getting Prices Right: Addressing Mexico's History of Fuel Subsidies

By Michael D. Plante and Amy Jordan

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The government of Mexico, the world's eighth-largest oil producer in 2011, and its oil and gas sector are practically inseparable. Petróleos Mexicanos, or Pemex, is the Mexican state-owned monopoly responsible for producing and refining crude oil in the country. It also imports and distributes petroleum products, such as gasoline and diesel.

Mexican President Enrique Peña Nieto has sought a range of reforms through the Pact for Mexico initiative, the product of a broad-based coalition of the nation's main political parties. Substantial energy sector changes are a significant part of the ongoing overhaul. Although the way fuel prices are determined is not explicitly discussed in the pact, it is one aspect of Mexican energy policy that could face reform. In Mexico, as in many other developing countries, the government sets fuel prices, which can then behave very differently from those in a country such as the U.S.,

where prices are determined in a free market (*Chart 1*).

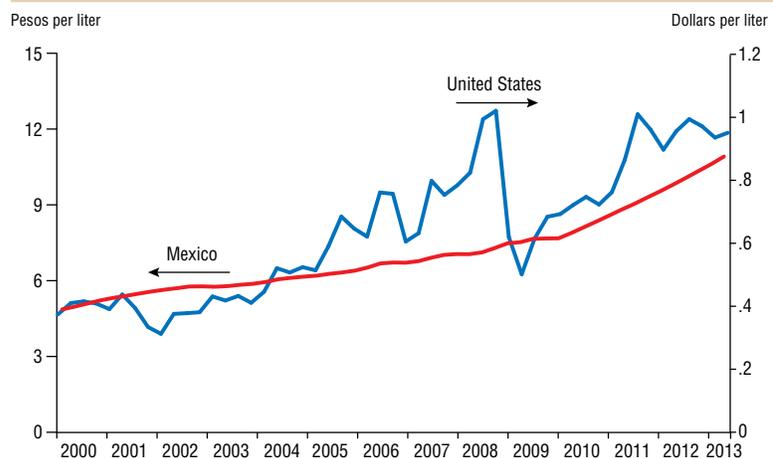
In recent years, Mexico's retail gasoline and diesel prices lagged behind skyrocketing crude oil prices, creating a de facto government subsidy.¹ This support seeks to protect vulnerable groups in society, such as the poor, from high fuel prices or to provide them with extra income. However, in Mexico, as in many other countries, the subsidies have mainly benefitted higher income groups. These subsidies, among the largest in the world, have cost billions of dollars in recent years.

While ongoing government increases have brought domestic prices closer to true economic cost, experience shows that subsidies often reappear if the government controls prices. Mexico's spate of major reforms presents a unique opportunity to reexamine how domestic fuel prices are set in the country.

Several options could produce a more economically efficient out-

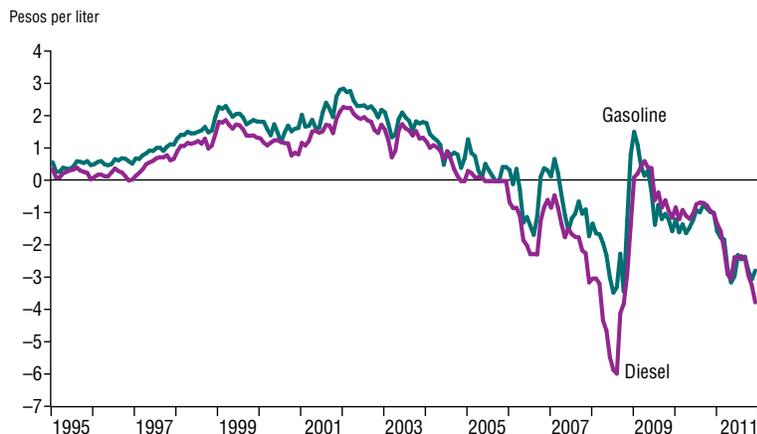
Chart
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Mexico's Gasoline Prices Reflect Price Controls



SOURCES: Bureau of Labor Statistics; Bloomberg; authors' calculations.

Chart 2 Mexico Tax on Gasoline, Diesel Indicates Emerging Subsidy



NOTE: Zero tax rate means retail cost equals cost of producing the fuel; negative tax rate implies consumer subsidy.
 SOURCES: Organization for Economic Cooperation and Development; authors' calculations.

come—for example, automatic adjustment of fuel prices based on strict application of a formula that keeps retail prices in line with the true cost, or a more radical reform that liberalizes the production, distribution and sale of petroleum products (a measure that has been recently proposed).

Fuel Price Systems

Retail fuel prices are set in a free market in the U.S. and in many other countries. Prices change frequently in response to market conditions, and in extreme situations they can rise or fall dramatically in a short period. Under this system, retail prices generally reflect the cost of the fuel being sold.

Not every country follows this approach. Some use a formula, calculated periodically and taking into account factors such as cost of production, to determine retail fuel prices.

In still other countries, the government sets retail fuel prices in an ad hoc manner. Prices change infrequently and unpredictably and can remain fixed for long periods. For example, in Indonesia diesel prices have been fixed at 4,500 rupiah per liter since 2008—a period over which the currency depreciated 9 percent against the dollar.

When fuel prices are not set in a free market, retail prices may not reflect the underlying costs of the

fuel for an extended period. When production costs exceed retail costs, consumers benefit while some other entity sustains a loss—typically the government or a government-run oil company.

Pricing in Mexico

The Mexican government sets retail gasoline and diesel prices monthly. A formula provides an estimate of Pemex's production, distribution and retailing costs, but the government can choose a different price if it so desires. Retail prices can be set above cost

(consumers essentially pay a tax on the fuel) or below cost (consumers receive a subsidy).

Surging crude oil prices in recent years have increased production costs for gasoline and diesel. Mexican retail prices, however, haven't kept pace. The result: Gasoline and diesel, which were consistently taxed before 2006, have been largely subsidized since then (Chart 2). The gasoline subsidies have averaged 1.2 pesos per liter per year since 2006 (about 40 U.S. cents per gallon); 1.8 pesos for diesel (59 cents per gallon).

Misplaced Help

Officials often implement fuel subsidies to protect vulnerable groups of society from high fuel prices or to provide extra income to those groups at a low cost. However, the research on fuel subsidies shows that they are usually ill-targeted—that is, the poor do not typically receive a large portion of the benefits. Higher income groups can afford greater fuel consumption while poor households often lack the income to even purchase the goods that use the fuel—such as a car.

Mexico is confronted with this problem, data show. The bottom 20 percent of the income distribution purchased only 3 percent of the gasoline and diesel in 2010, the last year for which such figures are available (Table 1). Because

Table 1 Mexico's Distribution of Spending on Gasoline and Diesel by Income Decile in 2010

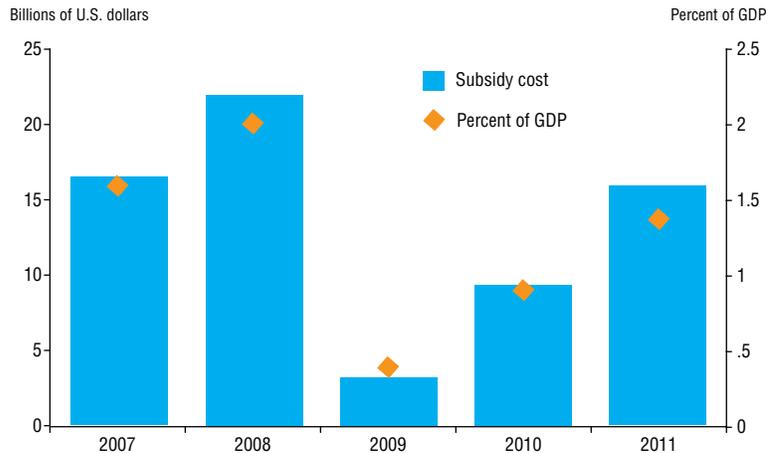
Decile	Total (percent)
1	1.2
2	1.8
3	2.4
4	3.6
5	4.7
6	6.6
7	8.6
8	12.5
9	19.1
10	39.4

NOTE: Deciles are increasing in income, where decile 1 represents the lowest 10 percent of the income distribution and decile 10 represents the highest 10 percent of the income distribution.
 SOURCE: Mexican Secretariat of Finance and Public Credit.

► If the goal of the subsidies is to protect the lowest income brackets, the cost to do so is heavy.

Chart 3

Mexico's Spending on Oil Subsidies Rises Again



NOTE: The IEA includes subsidies on gasoline, diesel and other oil products, such as LPG (propane).
 SOURCES: International Energy Agency; International Monetary Fund; authors' calculations.

the subsidy is applied per unit of fuel, the data show that 97 percent of the assistance went to the top 80 percent of income earners in Mexico.

This is in line with other countries. The International Energy Agency (IEA) estimated that out of the \$409 billion spent globally in 2010 on all subsidies covering consumption of fossil fuels (oil, natural gas and coal as well as the electricity they produced), only \$35 billion, or 8 percent, reached the bottom 20 percent of the income distribution.

If the goal of the subsidies is to protect the lowest income brackets, the cost to do so is heavy. Of the \$15.9 billion Mexico spent on subsidies in 2011, roughly \$15.4 billion went to higher income groups—in other words, it cost \$15.4 billion to provide about \$500 million in aid to Mexico's poorest.

Costly Subsidies

Mexico's subsidies have been expensive on an absolute dollar basis (*Chart 3, left axis*).² While Mexico's fuel subsidies in recent years were below the peak levels in 2008 (when subsidies exceeded \$20 billion), they still exceeded \$15 billion in 2011. Preliminary Mexican government data suggest that the 2012 total will be close to the cost in 2011.

Sometimes it's useful to consider the size of a subsidy relative to gross domestic product (GDP). This method

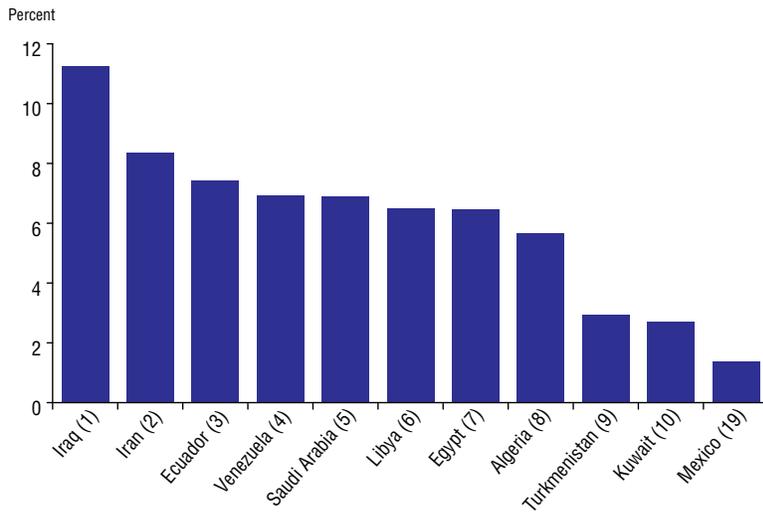
helps illustrate how big a burden the subsidy might impose on the economy, taking into account the country's ability to pay. As a share of GDP, Mexican fuel subsidies were at least 1 percent of GDP in four of the last five years for which data are available (*Chart 3, right axis*). By comparison, expenditures on education amounted to 3.5 percent of GDP in 2010; health spending, 2.8 percent; and pensions, 1.2 percent.

Relative to other countries, Mexico typically ranks high in terms of the subsidies' dollar value. Mexico ranked seventh in such spending in 2011, according to IEA data. Only Saudi Arabia (\$46.12 billion), Iran (\$41.39 billion), India (\$30.86 billion), Venezuela (\$21.97 billion), Iraq (\$20.35 billion) and China (\$18.45 billion) spent more. However, on the basis of subsidies as a percentage of GDP, Mexico ranked relatively low—19th out of 33 countries in 2011 (*Chart 4*).

Other Negative Impacts

Subsidies work by artificially reducing prices for fuel, making it relatively cheaper than other goods. Households and firms respond, changing their economic decisions. This introduces distortions in the economy that can hinder performance. For example, households may choose to consume an outsized amount of fuel and to consume less of other goods because of pricing,

Chart 4 Subsidies Spending as a Percentage of GDP in 2011: Top 10 Countries and Mexico



SOURCES: International Energy Agency; International Monetary Fund; authors' calculations.

► For Mexico, the best way to prevent subsidies from reoccurring would be liberalization of fuel production and product distribution.

negatively impacting non-energy sectors of the economy.³

Fuel subsidies can also negatively affect the environment. Burning gasoline and diesel produces air pollution. To the extent that fuel subsidies lead to over-consumption, air pollution increases. This can impose a cost on the population in general because many forms of air pollution negatively affect public health.

Protecting the Poor

The International Monetary Fund has worked with a number of countries to reform fuel pricing and currently recommends removing subsidies and replacing them with measures that specifically aid the poor. Transfers of cash targeted at lower-income households—rather than applying the subsidies to the entire population—is one preferred method. Mexico, in fact, could implement such a reform through its already-established antipoverty program *Oportunidades*. It has operated since 1997 and is specifically geared to provide aid to Mexico's poorest.⁴

There is also an important theoretical justification for using targeted transfers instead of fuel subsidies. Unlike fuel subsidies, transfers do not artificially reduce fuel prices. Instead of being induced to purchase more fuel,

households are free to use the extra income to purchase what they most desire. They may buy more fuel, but they might also spend the extra income on something they value more, such as food or clothing. By not affecting the price of fuel, transfers may avoid other negative implications of fuel subsidies, including environmental problems.

Recent Events

The Mexican government has had an explicit policy of increasing retail prices by small monthly increments since 2010, aiming to eventually remove subsidies. Contrary to what has occurred in many other fuel-subsidizing countries, no major political upheaval has accompanied the price increases, which as of 2013 brought prices to near global parity.

Although the subsidies are fading, price rises don't guarantee the subsidies' permanent elimination. In other countries where governments control fuel prices, energy subsidies have often reappeared over time, often after an event caused sharply higher world fuel prices. Governments generally hesitate to pass on such rapidly rising costs.

For Mexico, the best way to prevent subsidies from reoccurring would be liberalization of fuel production and product distribution. As long as the market is

reasonably competitive, retail prices in Mexico would reflect the true economic costs of producing and distributing fuel. A second-best option would be implementation of a more mechanical fuel-pricing formula that automatically adjusts monthly. This would smooth short-term, retail-price fluctuations while ensuring that they reflect the fuel's underlying cost over the medium term.

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Notes

¹ Although not the focus of this article, the Mexican government also subsidizes the purchase of LPG (propane).

² Comprehensive estimates on the costs of fuel subsidies, in dollars, are available from the IEA from 2007 to 2011 for more than 30 countries. More information on how these estimates are calculated can be found on the IEAs website, www.worldenergyoutlook.org/resources/energysubsidies/methodology/.

³ For a more detailed analysis on how fuel subsidies can distort an economy, see "The Long-Run Macroeconomic Impacts of Fuel Subsidies," by Michael D. Plante, Federal Reserve Bank of Dallas Working Paper no. 1303, March 2013.

⁴ For more information on *Oportunidades*, see "As Mexico's Social Safety Net Grows, Issues Arise," by Melissa LoPalo and Pia Orrenius, Federal Reserve Bank of Dallas *Southwest Economy*, Second Quarter, 2013.