

ETHANOL AS A DESTABILIZING COMPONENT FOR GASOLINE PRICES IN BRAZIL

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Overview

The Brazilian oil industry has been traditionally characterized by a strong presence (and interference) of the government on its activities. Until 1995, the Brazilian government had a constitutional monopoly in exploration, production, importation, refining and transportation of oil and its derivatives and operated directly on these sectors through the state company *Petróleo Brasileiro S.A. (Petrobras)*. Although the distribution and retail sales of automotive fuels were not state monopolies, they also suffered from a strong state intervention. On these sectors, the state intervention was expressed through several controls on prices, sales margins and freight costs.

The fuel prices control was, until the beginning of the 1990's, an instrument used by the Brazilian government not only for energy policy purposes, but mainly to control rising inflation rates and its impact on the economy. In the 1990's, however, the Brazilian government implemented several structural and legal changes in different industries, including oil and gas. Those changes were part of a comprehensive State reform and intended to change the mechanisms directing state participation in the economic life of the Brazilian society. Specifically in the oil industry, the flexibilization of the state monopoly in 1995 (allowing companies other than Petrobras to operate through concession contracts or state permissions) was followed by several small changes that culminated with the beginning of the liberalization of automotive fuel prices in 1996, the creation of a regulatory agency in 1998 and the absence of any kind of official control over fuel prices in Brazil since January 2001 (when the liberalization process was completed).

In a free market environment, with no controls over prices or products imports, one would expect that the prices of automotive fuels in Brazil would tend to follow the observed behavior in the international markets (given the possibility of price arbitration). However, the analysis of the gasoline prices behavior in the Brazilian and international markets since 2001 show the existence of very different patterns, with domestic price significantly stable for long periods of time, regardless of changes in foreign prices. Roughly speaking, the reason for this result is that although the Brazilian government has relaxed the monopoly in the oil and derivatives, and has refrained from acting directly through price fixing, Petrobras remained a state-controlled company, and one with a significant market power, which allowed the government to use the company as an instrument in domestic pricing policies aligned with the macroeconomic goals of price stability and low inflation. Moreover, since 1995, despite the legal possibility of other companies entering the Brazilian refining and fuel imports segments, both of them still show high market concentration indexes (for example, in 2010 Petrobras held 98 % of the country's refining capacity and the almost totality of Brazilian pipeline network), which usually placed Petrobras in a comfortable position to determine domestic fuel prices.

In the first quarter of 2011, however, the gasoline prices in service stations began to show significant (and successive) increases that could not be explained by any change in refining or import prices (which remained unchanged), but by factors related to the rising prices of ethanol.

Ethanol affects domestic gasoline prices in Brazil through two mechanisms: anhydrous ethanol is directly added to all automotive gasoline sold in service stations (the mixture percentage is currently fixed in 20%), and hydrated ethanol is a common substitute for automotive gasoline in the country due to the growing flex fuel fleet in Brasil (in 2009, 86% of cars produced in Brazil were flex fuel, which means they run with a mixture of gasoline and hydrated ethanol in any proportion, or 100% of one or the other).

The increases in ethanol prices in Brazil, in turn, were the result of restrictions on the domestic supply of the product, both on account of the rise in sugar prices in the international market (which eventually lead to ethanol producers to direct a larger share its production of sugar cane for sugar and not for ethanol) and

due to the decreasing investments in expansion productivity growth of sugarcane in previous years. The main reasons for the changes in the behavior pattern in gasoline consumer prices in 2011, thus, were (i) the strong increase in hydrated ethanol prices and the consequent migration of consumers owning flex fuel vehicles for gasoline, particularly in the state of São Paulo (only in February and March 2011 there was a 40% increase in gasoline demand in the state of São Paulo, causing pressure on the supply of gasoline across the country); and (ii) a substantial increase in the price of anhydrous ethanol, which was then mixed at a ratio of 25% of every gasoline gallon sold to final consumers in the country.

The change in the behavior pattern of gasoline prices has made clear the price instability potential that the increasing share of flex-fuel vehicles, as well as the mandatory blend of anhydrous ethanol in gasoline without major government control mechanisms on the supply of this product could have. It should be pointed that although hydrated ethanol is part of the Brazilian fuels matrix since the 1970's, due to a series of technical and market problems its share was reduced throughout the 1980's, a situation that changed only in 2003, with the advent of flex-fuel vehicles. This change, however, although allowing the strong expansion of the share of ethanol in the Brazilian fuels matrix, made forecasts on automotive fuels demand less precise, since the consumer is now able to choose almost instantly among both alternatives, and price signals are not always observed (or followed as expected by economists).

The main goal of this paper is, therefore, to present and discuss the mechanisms adopted by the Brazilian government to ensure automotive fuels price stability in the country in an environment of market liberalization. Furthermore, we address the reasons why such mechanisms worked in the past and are becoming less efficient over time. Finally we discuss the measures taken by the Brazilian government in 2011 to ensure stability of supply of ethanol in the domestic market and thereby reduce the potential for significant variations in automotive fuel prices in the country and its impacts on the inflation rate.

Methodology

The authors will use data and information from their own surveys and other reliable sources to analyze the behavior of gasoline prices on the Brazilian market from 2002 to 2011 and its reasons, as well as the potential destabilizing effect that has been exerted by ethanol since 2009 (and that was more strongly perceived in the first quarter of 2011).

Results

The paper argues that given the ethanol market structure, much less concentrated than the gasoline market, where Petrobras competes with several other companies, throughout the production chain, the role of the international market (either sugar or ethanol) in defining the price and quantity supplied to the domestic market is quite significant. Consequently, the power of government to interfere in ethanol prices and supply is considerably smaller than in the case of petroleum-based fuels. Given the increasing participation of flex fuel vehicles in the Brazilian fleet and mandatory blending of ethanol with gasoline at a rate of 20% (in 2011 was 25%), ethanol tends to be increasingly a complicating factor in any governmental attempt to sustain the stability of domestic prices for automotive gasoline.

Preliminary Conclusions

The main conclusion of the paper is that in order to maintain the current state of gasoline prices stability in the domestic market and, simultaneously, expand the role of ethanol in the Brazilian fuels matrix, the Brazilian government will be required to exercise a stronger intervention in the ethanol market, specially through regulatory measures allowing greater predictability and security in the product supply.

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