

FUEL PRICING IN BRAZIL: INTERNATIONAL LESSONS

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1 – Overview

The world energy sector is undergoing a strong energy transition process, towards a low carbon economy. This transformation in favor of decarbonization promotes profound and irreversible changes in the way of producing and consuming energy. In this sense, adopting policies that benefit fossil energy sources, which are major carbon emitters, is going against the grain of the energy transition, as fossil fuel subsidies jeopardize the construction of a cleaner and more sustainable energy system within a feasible period so that the goals outlined in the Paris Agreement, on tackling climate change and reducing greenhouse gases, are achieved (LOSEKANN E TAVARES, 2021).

In Brazil, despite the fact that fuel prices have been formally free for almost 20 years, the adoption of market intervention policies is a frequently debated topic. In recent years, Petrobras (a state-owned company and the main agent in the sector in Brazil) has been trying to implement a policy of international price parity in refineries. This new pricing policy has faced a lot of political resistance. In 2018, a truck drivers' strike in the country, caused by the increase in diesel prices, forced the government to create a subsidy for diesel, since this fuel is an important input in several sectors of the economy, having an impact on road freight transport and passengers, in agriculture and in the production of industrial goods (TEIXEIRA, LOSEKANN E RODRIGUES, 2020).

In addition, the diesel subsidy program took place because it was no longer viable in political and legal terms to use Petrobras' cash as a way of moderating increases in oil product prices. Additionally, Petrobras sold two refineries and reduced its participation in the country's fuel supply.

With the global economic recovery, after restrictions to stop the advance of the covid-19 pandemic, demand for oil has increased in recent months. Thus, the rise in the price of a barrel of oil on the international market had an impact on fuel prices in Brazil. The rise in fuel prices due to the increase in oil prices and the devaluation of the real in 2021, led to new discussions on the final price of derivatives to consumers, especially diesel and gasoline. Thus, several measures have been debated, ranging from stabilization funds to tax reform, to soften the impact of prices on consumers. This does not only occur in Brazil. In Portugal and South Korea, for example, flexible tax was resumed in a one-off situation after the recovery in world prices resulting from the covid-19 pandemic.

The difficulty of approving significant measures in terms of tax relief made the Brazilian National Congress debate the creation of a price stabilization fund, such as the bill (PL 1,472/2021) that creates mobile fuel price bands, financed by various sources of resources linked to the oil sector. This new strategy, which can be considered a fuel subsidy, has been gaining strength and is not supported by more careful assessments, which represents a real threat to the current process of opening up the fuel market in Brazil, in addition to going against the new directions of the energy sector brought about by the energy transition, as promoting the fossil industry only exacerbates the climate crisis. In addition, several countries are reducing or withdrawing subsidies to fossil fuels (OECD/IAE, 2021).

In view of the above, this article aims to analyze international lessons from fuel price stabilization policies, focusing on countries that reconciled price stabilization policies with a fuel sector open to competition. For this, this research will address three policies: i) price stabilization funds; ii) flexible tax policies; and iii) direct consumer subsidy programs.

2 – Stabilization Funds

Price stabilization funds have been adopted by many countries as a way of reconciling the promotion of fuel price stability with private market participation and the elimination of subsidies.

In practice, stabilization funds work as follows: the government sets a fixed price with periodic adjustments and the supplying companies receive from the fund or pay to the fund the difference between the international quotation and the price fixed by the government. That is, normally the government uses the price of oil itself to capitalize the stabilization fund. If the market price is below the government-set price, suppliers sell at the government-set price and deposit the difference in the stabilization fund. If the market price is above the fixed price, the fund pays the difference

to refiners and importers. In addition, these funds are usually accompanied by some pricing rule, such as price ranges and moving averages, and these mechanisms are used to cushion price shocks in the short term.

Analyzing the experience of stabilization funds implemented in Chile, Peru and Colombia, it is clear that this form of market intervention is hardly sustainable, as these funds end up incurring deficits and need financial support. Otherwise, in all the countries mentioned, capitalization of the fund ended up being necessary.

This is because it is very difficult to finance these funds from taxes collected in the fuel market itself, since there is a high political cost to raise fuel taxes at low prices to capitalize the funds. In addition, there is great difficulty in predicting the trajectory of oil prices in order to establish a neutral taxation policy.

The experience of Chile and Peru clearly shows the trade-off between price cushioning and fiscal cost, especially when considering periods of persistent increases in international fuel prices and in case transfers or contributions made to the fund depend on a band that is subject to political factors, without being aligned with a long-term policy.

Unlike the Chilean fuel price stabilization funds, the Colombian fund does not have a stabilization mechanism, which makes it possible to establish clearly and stable the process of contributing to and withdrawing resources from the fund. The Colombian mechanism is considered incomplete and highly discretionary by the government, being exposed to changes in the external environment (exchange or price shocks) and the government's moral hazard regarding the price adjustment.

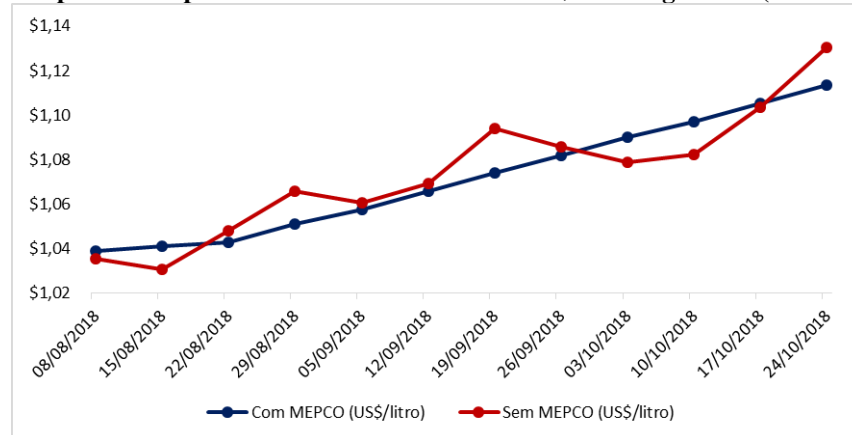
In recent years, the Fuel Price Stabilization Fund (FPSF) in Peru and Colombia has shown deficits and high fiscal costs, becoming dependent on large contributions from public resources, which compromises its long-term sustainability.

In the Chilean case, the FPSF was replaced by the Taxpayer Protection System against Changes in International Fuel Prices (TPS), which depended on adjustments in fuel taxes to buffer the transmission of oil price volatility from the international to the domestic market.

In 2014, the Chilean government implemented changes to its flexible tax policy through the implementation of the Fuel Price Stabilization Mechanism (FPSM), replacing TPS. Such a mechanism maintained the same principles of fixed and variable components. Thus, FPSM aims to smooth price volatility through a weekly adjustment of the variable component of the Specific Fuel Tax (SFT), including gasoline, diesel, LPG and natural gas. For this, the tax mechanism acts by influencing the price of fuels through tax increases or reductions, since the prices of a barrel of oil can rise or fall in the international market (BERNAL, 2018; INEEP, 2019).

Graph 1 shows the behavior of the price of gasoline (93 octane¹) under the FPSM operation, and contrasts it with what would have happened in a scenario in which FPSM was not applied. That said, it is noted that the mechanism preserves the price trend, but reduces volatility, fulfilling its objective, which is to reduce the deleterious effects of rising prices to the final consumer. Thus, the Chilean government does not need to fix prices in the short term or implement stabilization funds, as these have shown that they are not sustainable in the long term.

Graph 1 - Comparison of the FPSM effect in US\$/liter of gasoline (93 octane) in the period 08/2018 - 10/2018



Source: Own elaboration based on data from Bernal (2021).

¹ Octane or octane rating shows the fuel's resistance to burning inside the engine.

The Ministry of Finance, in July 2021, highlighted that fuel prices maintained an upward trajectory due to the recovery in global demand, the appreciation of the dollar and the limited increase in supply. Thus, FPSM acted in 2021 to cushion the rise in gasoline prices, with a net fiscal cost for the same year estimated at US\$ 214.6 million (MINISTÉRIO DA FAZENDA, 2021).

In recent years, the use of stabilization funds as a form of intervention in the fuel market has lost importance compared to other mechanisms used to manage the process of smoothing fuel prices. The main reason is the growing international political consensus regarding the need to eliminate or reduce fossil fuel subsidies to accelerate the energy transition. In addition, the frequent contributions of public resources to capitalize stabilization funds are perceived as direct subsidies to fossil fuels, which is disapproved of by international organizations such as the International Monetary Fund (IMF), the World Bank and the Organization for Cooperation and Economic Development (OECD).

In this way, stabilization funds have been progressively replaced by other forms of state intervention due to the following factors: i) the difficulty in establishing an adequate price level to avoid their decapitalization; ii) the high political cost of maintaining a balance in the fund; iii) the tendency to decapitalize to meet populist policies, particularly at election times; iv) opposition by international organizations and environmental groups to fossil fuel subsidies through capitalization of funds with public resources.

3 – Flexible Taxes

Taxes on petroleum products are an important source of government revenue. This is because taxing fuel is one of the easiest ways to increase revenue: on average, fuel consumption is less sensitive to price changes, and more sensitive to income, guaranteeing revenue to the public coffers as income and taxes increase. (BACON 2001). When fuels are taxed at ad valorem rates (% of sales value), the volatility of a barrel of oil in the international market is not only passed on to final consumers, but is amplified.

However, it is still possible to vary the tax rate in order to reduce volatility and impacts for consumers at times of rising fuel prices. In this case, the government can set a collection target and increase taxes at times of lower oil prices and reduce taxes at times of high prices. Flexible, counter-cyclical taxation that would act as an automatic smoother for volatility. Thus, a flexible fuel tax policy can be created with the aim of reconciling the functioning of a competitive market with the promotion of price stabilization, without creating direct subsidies to fossil fuels.

Several countries have already used flexible fuel taxation, such as China, India, Italy, Portugal, France, Mexico and South Korea and Chile. The first most relevant experiences date back to the 1990s. In the case of Italy, until 1994, fuel prices were regulated by the government, when there was complete liberalization. In order to minimize price fluctuations, an automatic tax mechanism was implemented to reduce the taxes levied on oil products whenever oil prices rise in the international market. Although this measure had great popular support, the policy was abandoned due to the deterioration of Italy's fiscal situation and the need to maintain revenue in times of high prices.

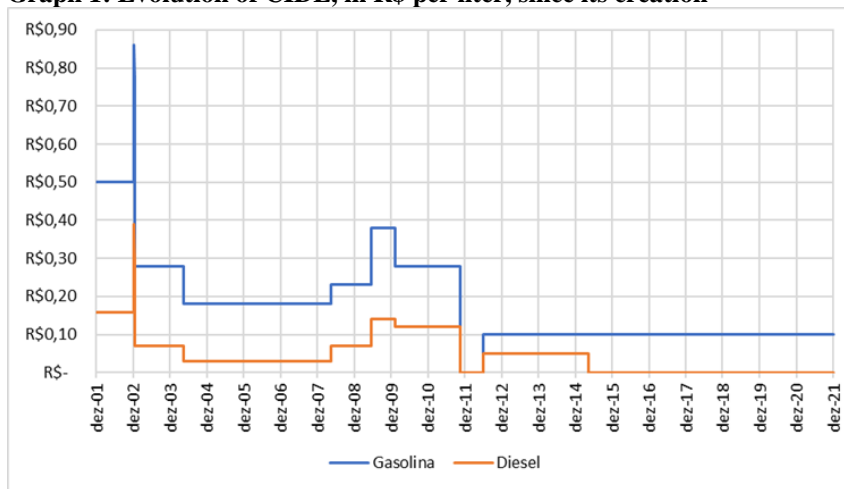
A similar situation occurred in Portugal and France between 2000 and 2002. In France, a flexible tax known as *tipp flottante* was implemented. However, the great importance of fuel taxes in revenue (1.2% of French GDP) led the government to abandon this policy and prioritize tax collection in a context of strong imbalance in the country's public accounts. In Portugal, the floating tax was also abandoned months after its adoption, in the early 2000s. However, it was resumed in an occasional situation after the recovery in world prices resulting from the covid-19 pandemic. In 2021, the Portuguese government decided to lower the tax on petroleum products (TPP) by 0.02 euros for gasoline and 0.01 euros for diesel.

In China and India, flexible taxation was used in a scenario of falling prices. In August 2014, a barrel of brent cost more than US\$ 100.00; in January 2015, the price was below US\$ 50.00 (BEATON et al, 2015). To avoid lost revenue, the Chinese government raised fuel taxes three times between November 2014 and mid-2015 in response to lower oil prices. In turn, the Indian government raised taxes during the same period to prevent derivatives prices from reaching very low levels, as it would face enormous popular resistance to make readjustments when prices recovered and rose again.

The successful functioning of a flexible tax policy in markets with free prices depends on the good functioning of competition, as it ensures that the pass-through will reach consumers (COADY et al, 2012). Additionally, international experience shows that fiscal restrictions tend to prevail over consumer price amortization policies. Some countries that have adopted flexible taxes have given up reducing taxes at times of rising prices to avoid a momentary loss of revenue. Finally, the formula for a variable tax must contain clear and well-established guidelines on how rate variations can occur. Finally, it is ideal to inform the desired level of collection and ensure that the flexible rate does not allow collection to fall below the pre-established level.

It should be noted that, in Brazil, the CIDE could be used as a flexible tax, since it is a federal tax and, therefore, the same for the entire country. However, this tax does not have an automatic variation rule that takes into account oil prices in the market. It is up to the government to assess the convenience of changing the rate. With the reduction and maintenance of the rate at very low levels as of 2011, CIDE lost its ability to cushion increases in fuel prices at times of rising oil prices, as seen in Graph 1:

Graph 1: Evolution of CIDE, in R\$ per liter, since its creation



Source: Own elaboration based on data from the Ministry of Infrastructure (2021).

4 – Direct Subsidies to Consumers

In the OECD, subsidizing policies targeting fossil fuels has become a form of state intervention to help the poorest. Thus, direct subsidy policies given to specific groups (targeted policies) are increasingly common. Thus, it is important to highlight that such policies are directed to the final consumer, that is, to those who buy the fuel and not to those who sell it. This occurs in several countries, such as Spain and France.

In the case of Spain, in 2021, the country established lower prices for LPG, tax exemptions for diesel used in electricity production, navigation and rail transport. In addition, the government reduced taxes on diesel fuel used in some types of engines, such as agricultural tractors, and provided partial tax refunds for road transport activities, including freight, taxis, and some regular passenger transport, as well as for agriculture. and farmers (OECD/IAE, 2021).

In addition, in October 2021, the French government announced a subsidy of 100 euros² to compensate for the increase in fuel prices. The benefit is intended for French people who earn less than 2,000 euros net per month, being paid through a single check. Employees, unemployed and retired individuals can receive the benefit. The idea is to serve 38 million people, so that they do not lose their purchasing power. Thus, the cost to the public coffers will be approximately 3.8 billion euros (VALOR ECONÔMICO, 2021).

Next, we present in more detail the direct subsidy policies for fuel consumption in Portugal and Brazil.

4.1 – Direct Subsidies to Consumers in Portugal

The government of Portugal created Law n° 24/2016 to establish a fuel tax refund regime for companies that transport goods by road. In September of the same year, Ordinance n° 246-A/2016, which determined guidelines and rules for the Portuguese Tax System for Professional Gasoil³, known as the partial refund regime of the Tax on Petroleum Products (TPP) for companies that transport goods by road. Thus, such a tax regime was intended to increase the competitiveness of the Portuguese economy, boost some inland regions and recover tax revenue lost to other countries such as Spain (ENSE, 2016).

In the first two months of 2017, the Professional Gasoil scheme, which returns part of the ISP paid by companies, enabled a reimbursement of 2.9 million euros. In this way, the Portuguese government managed to achieve its objective of creating an instrument to promote competitiveness between companies and eliminate the tax and price

² Reference: 1 EUR = 6.57 BRL.

³ In Portugal, diesel is the same product as diesel oil. Professional diesel, or road diesel, received this name because of the partial refund regime of the Tax on Petroleum Products (TPP) for companies that transport goods by road previously registered with the Tax and Customs Authority (TCA) (PRIO, 2020) .

differential with Spain, which was approximately €0.11 per liter of fuel. Many truck drivers went to fill up in Spain and with that, Portugal ended up losing tax revenue. This regime, in which transport companies are reimbursed a part of the ISP at the time of supply, is already practiced in Spain and France. In addition, in the areas where the regime was applied, there was a 9% growth in sales of Professional Diesel (REPÚBLICA PORTUGUESA, 2021).

The difference between the legally prescribed minimum level of taxation (€ 0.33/litre) and the total amount of indirect taxes levied (TPP + road contribution + carbon tax, excluding TAV - Tax on Added Value). Since October 2021, the amount to be reimbursed to carriers is €0.1726/liter (ANTRAM, 2021).

In addition, in Portugal there is the Fleet Card, which is a financial subsidy to compensate for the difference in the tax burden on fuel between Portugal and Spain and the European Union, which are lower than in Portugal. The tax burden of simple diesel (diesel) in Portugal represents 56% of the final price, which corresponds to €1,393/litre, compared to 49% registered in Spain (€1,206/litre) and 52% in the European Union (€1,277 /liter) (O JORNAL ECONÓMICO, 2021).

4.2 – Direct Subsidies to Fuel Consumers in Brazil

In Brazil, in May 2002, Law No. 10,453/2002 instituted the federal Gas Aid program for low-income families - later incorporated into the Bolsa Família Program -, with the purpose of reducing, in the midst of the liberalization process, the impact of the increase in LPG prices for this segment of the population. This program was managed by the Ministry of Mines and Energy and consisted of the payment of R\$ 15.00 to each family with an income of up to half a minimum wage (R\$ 90.00), every two months to buy cooking gas (BRAZIL AGENCY, 2002).

The new Auxílio Gás program promoted by the Federal Government, established by Law No. 14,237 of November 19, 2021, aims to benefit 5.5 million families in 2022. For this, a budget of R\$ 1.9 billion will be made available by the government. The purpose of the program is to mitigate the effect of the LPG price on the budget of low-income families. Thus, families registered in the Cadastro Único para Programas Sociais (CadÚnico), with a per capita family income less than or equal to half a minimum wage (R\$ 606.00), or families that have among their members residing in the same domicile who receives the benefit of continuous provision of social assistance. In addition, the beneficiary families will receive, every two months, an amount corresponding to 50% of the average national reference price for the 13 kg LPG cylinder determined by the Price Survey System (PSS) of the National Agency for Petroleum, Natural Gas and Biofuels (ANP) (JOURNAL OFFICIAL OF THE UNION, 2021).

Another Brazilian example is the Diesel Price Subsidy Program (DPSP) for Fishing Vessels. The DPSP maintains a system of incentives for the national fishing activity, especially the marine one, through two mechanisms: payment of cash assistance in cash of up to 25% granted by the Federal Government referring to the difference between the price of national diesel oil and the price international diesel; and full exemption from ICMS granted by the States of the Federation when purchasing diesel oil from fuel suppliers. The transfers planned with the DPSP, in the period from 1997 to 2018, exceeded R\$ 2.0 billion in subsidized fuel (TEXEIRA et al, 2021). Subsidies aimed at reducing costs, such as the DPSP, can promote the inefficiency of the activity, in this case, the fishing activity.

Recently, Petrobras created the Petrobras Truck Driver Card, whose objective is to provide a prepaid card that exchanges money in liters of diesel, ensuring the purchase of fuel without suffering price variations within a period of 30 days. This card has no membership or annual fee. In addition, the truck driver earns a 10% bonus for refueling at BR stations, earning a bonus to be used in the next refueling (PETROBRAS, 2021).

Unlike the Fleet Card in Portugal, the Truck Driver Card in Brazil is not a subsidy instrument, as it does not entitle you to a tax reduction. The truck driver card works more as a marketing and loyalty instrument.

5 – Policies to Promote Competition and Transparency

As pointed out by SDE (2009), the fuel resale activity is the branch of economic activity with the most complaints of cartel practices. The combination of the characteristics of homogeneous products and economic and regulatory barriers to entry makes the segment prone to anti-competitive practices. With the restructuring of refining and distribution activities through the reduction of Petrobras' dominant role, the issue of competition defense gains more relevance. Several aspects of the institutional design of these activities have been improved to make competition more effective (CADE, 2018).

In the fuel resale segment, the cost of searching for final consumers, such as the cost of traveling to other gas stations in the neighborhood, represents an opportunity for stations to exercise market power, which can be manifested through price pass-through strategies that imply in losses for consumers. If consumers do not know the prices at competing stations, price increases at the refinery tend to be quickly and fully passed on to end consumers. As any price increase tends to provoke a demand for competing stations, the reseller has no interest in passing on the price increase gradually

to the pumps. When prices drop at the refinery, the incentive for dealers is to pass on the reduction gradually and partially. Any reduction tends to encourage consumers to fill up at the gas station, so the reseller gains by reducing the price with less intensity to the price reduction at the refinery. This trend is called in the literature as rocket and feather effects (Rodrigues and Losekann, 2018).

The dissemination of information on fuel prices reduces the search cost by avoiding the need to travel for consumers to know prices at nearby gas stations. There are several policy experiences to intensify the dissemination of information, such as the development of mobile applications to publicize fuel prices. Prominent cases are Germany, Austria, Australia, Chile and South Korea. However, it is necessary to take into account that the disclosure of retail prices can facilitate the coordination of suppliers, through price leadership or tacit collusion. According to Rodrigues and Losekann (2018), the combination of the development and effective dissemination of price disclosure applications brings gains to the consumer, especially in the current context in which the population is increasingly connected. In a situation where the potential for using this type of application is high, given the share of society with access to smartphones, the gain in search cost reduction is more important than the possibility of losses with supply coordination.

In this direction, the ANP even worked on an application called “ANP no Posto”. The application in question was launched on an experimental basis in January 2020, in a testing phase for the state of Goiás. Through the ANP at the Post, users of the application could locate the nearest fuel dealers as well as the prices charged and information regarding the quality of the products. At first, the information provided would be updated on a weekly basis and, three weeks after the launch, the frequency would become daily. However, in May 2020, the ANP released a note communicating the discontinuity of the application under the justification that “it would not be appropriate to make investments to expand the technological infrastructure initially allocated to the application, since the increase in the database, originally hoped for, has not been achieved”.

Although it opted to discontinue the tool, the ANP stressed that it continues to study alternatives to achieve the preliminary objectives of the ANP at the Post. It is very likely that the scenario in which the application became available for testing was not ideal, especially due to the geographic restriction on the state of Goiás and the strong initial measures to restrict movement due to the Covid-19 pandemic. In this sense, it is valid for the agency to resume initiatives to disseminate applications.

6 – Discussions

It is hoped that the analysis carried out in this article will be useful in the effort to raise awareness of society and mobilize public authorities to face the problem of fuel price volatility in Brazil. The results show that, although stabilization funds and flexible taxes mitigate the volatility problem, other problems arise such as deterioration of the fiscal situation (in the case of the flexible tax) and the need for capitalization (in the case of the stabilization fund).

In view of the technical and political difficulties in implementing stabilization fund policies and/or flexible taxes, the direct transfer of income to the most vulnerable portion of fuel consumers has been gaining ground in the countries of the Organization for Economic Cooperation and Development (OECD). This is because this policy does not create competitive distortions in the fuel market and responds to political demands to mitigate the impacts of fuel prices on the most vulnerable layers and those exposed to fuel prices.

Thus, the recommendations to face the problem of volatility and high fuel prices in Brazil are: i) to maintain the current policy of price freedom and parity of domestic prices with international prices; ii) improvement of taxation on fuels, through specific taxes with *Ad Rem* rates and the design of automatic formulas for the variation of rates to compensate for the volatility of prices in the international market and exchange rates; iii) priority for direct subsidies to consumers, as already exists for low-income consumers for Liquefied Petroleum Gas (LPG) and for diesel for artisanal fishermen, with the design of a policy for independent truck drivers; iv) promotion of competition and transparency in the fuel market, an essential measure to ensure that the reduction in taxation translates into relieving pump prices and not increasing margins in the links in the supply chain.

7 – Conclusions

The investigation of stabilization fund programs shows that this form of market intervention is not sustainable, as they face challenges related to the difficulty of establishing an adequate price level to avoid their decapitalization, high political cost to maintain a balance in the fund, as the government tends to decapitalize it to meet populist policies, and the need for frequent capitalization. Flexible taxes are an option to stabilization funds. Through this policy, it is possible to design tax mechanisms so that taxes vary inversely with oil prices in order to reduce price volatility. In addition, flexible taxes are not sustainable when they depend on government discretion, as it is politically difficult to raise taxes at times when prices are low.

Analysis of price stabilization programs has made it clear that this form of market intervention is hardly sustainable. It is difficult to maintain financing of the funds from resources collected in the fuel market itself, since there is a high political cost to readjust prices in periods of sustained increase. There is also great difficulty in predicting the trajectory of oil prices in order to establish a neutral taxation policy. The analysis indicates that it is very difficult to structure sustainable price management mechanisms that do not imply tax burdens or distortions that delay the adoption of clean technologies for transport. International fuel price parity is the most appropriate guideline for the liberalized context of the Brazilian oil industry and we propose the combination of flexible tax mechanisms and transfers focused on more vulnerable consumers as more effective ways to deal with price volatility.

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