

# **Diesel Oil Demand in Brazil: Determinants and 2023 Forecast**

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2016

# SUMMARY

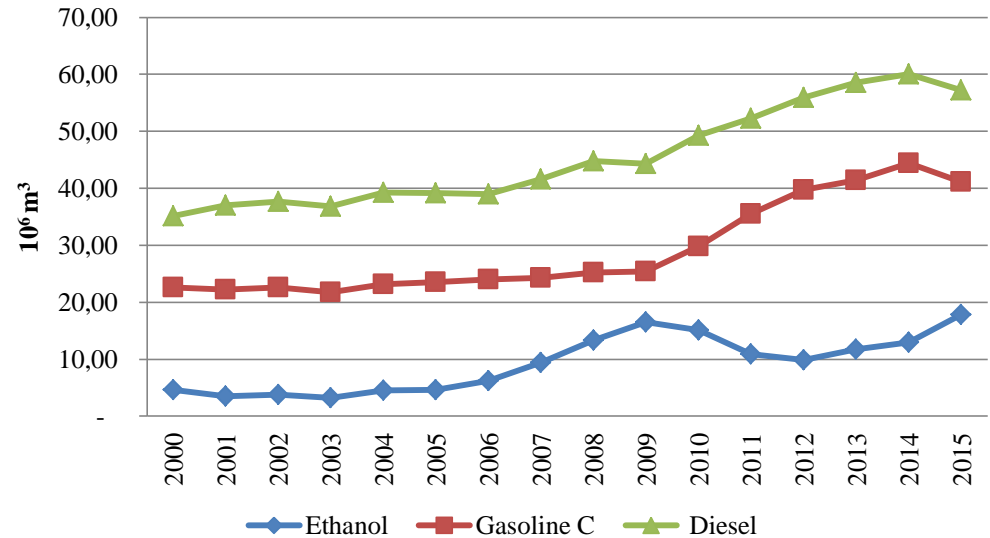
- Overview
- Goals
- Methodology
- Results
- Conclusions

# OVERVIEW

## ○ Diesel Consumption

- Diesel is the main fuel in transports Brazil - 40% of fuel demand
- Transport sector accounted for 80% of diesel consumption
- It grew strongly till 2014
  - Fleet expansion (incentives from the Govt)
- Fall 2015-2016 – Economic crisis

**Ethanol, gasoline C and diesel consumption in Brazil from 2000-2015**

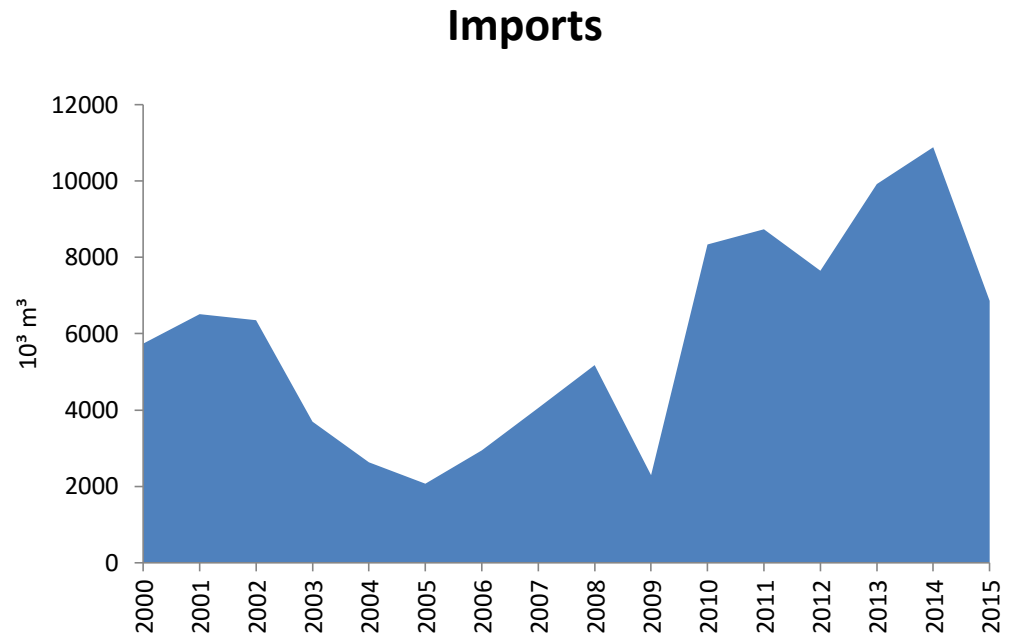


Source: Elaborated based on data from the National Agency for Oil and Biofuels (ANP).

# OVERVIEW

## ○ Diesel Imports

- The domestic supply was insufficient to attend total demand
- Refine expansion was postponed due to Petrobras crisis
- Increase of diesel imports:
  - 2014: 11 billion liters
  - 18% of total consumption



Source: Elaborated based on data from the National Agency for Oil and Biofuels (ANP).

# GOALS

- Analyze the determinants of diesel oil demand from 2000 to 2015
- Forecast diesel demand and imports from 2016 to 2023

# METHODOLOGY

- Dynamic panel data model

  - ❖ System Generalized Moments Method - Blundell and Bond (1998)

$$q_{it} = \beta_0 + \rho q_{i,t-1} + \beta_1 P_{it} + \beta_2 Y_{it} + \beta_3 F + \beta_4 P_{oit} + \beta_5 D + u_{it}$$

$q_{it}$  Diesel demand

$P_{it}$  Diesel oil price

$Y_{it}$  Income

$F$  Oil diesel fleet

$P_{oit}$  Fuel station

$D$  Regional *dummy* - North, South, Center West and Southeast regions

# METHODOLOGY

## ○ Data

Variable	Unit	Source
Diesel Consumption	Litros	ANP
Price	R\$	ANP
Fuel Station		ANP
Oil Diesel Fleet		ANFAVEA
Gross Domestic Product (GDP)	R\$	Banco Central

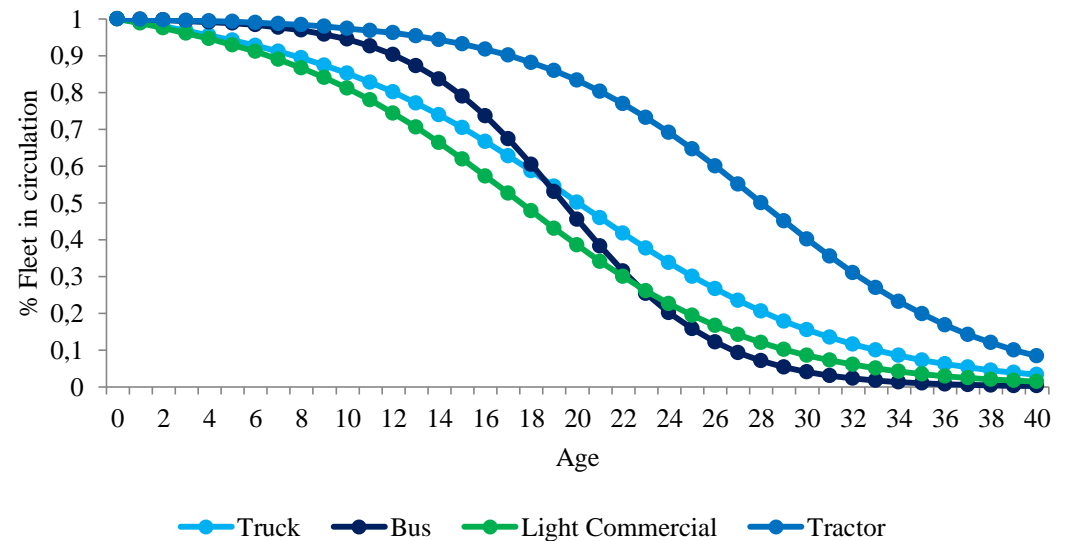
## ■ Reference Scenario

Variable	% 2015 - 2018	% 2019 - 2024	% 2015 - 2024
GDP	1.64	4.49	3.06

# METHODOLOGY

## ○ Scrapping Curve for Vehicles

$$(S_t) = \frac{1}{(1 + e^{(a(t-t_0))})} + \frac{1}{(1 + e^{(a(t+t_0))})}$$





# METHODOLOGY

## ○ Hypotheses

- Diesel Price 2015 - 2023: PDE 2023
- Biodiesel Share: 7%
- Expansion of refining capacity: PDE 2023

# RESULTS

## ○ Diesel Demand Elasticities

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Variable	Elasticity
Income	0.099*** (0.00103)
Price	-0.197*** (0.00543)
Fuel Station	0.057*** (0.00041)
Oil diesel fleet	0.192*** (0.00317)

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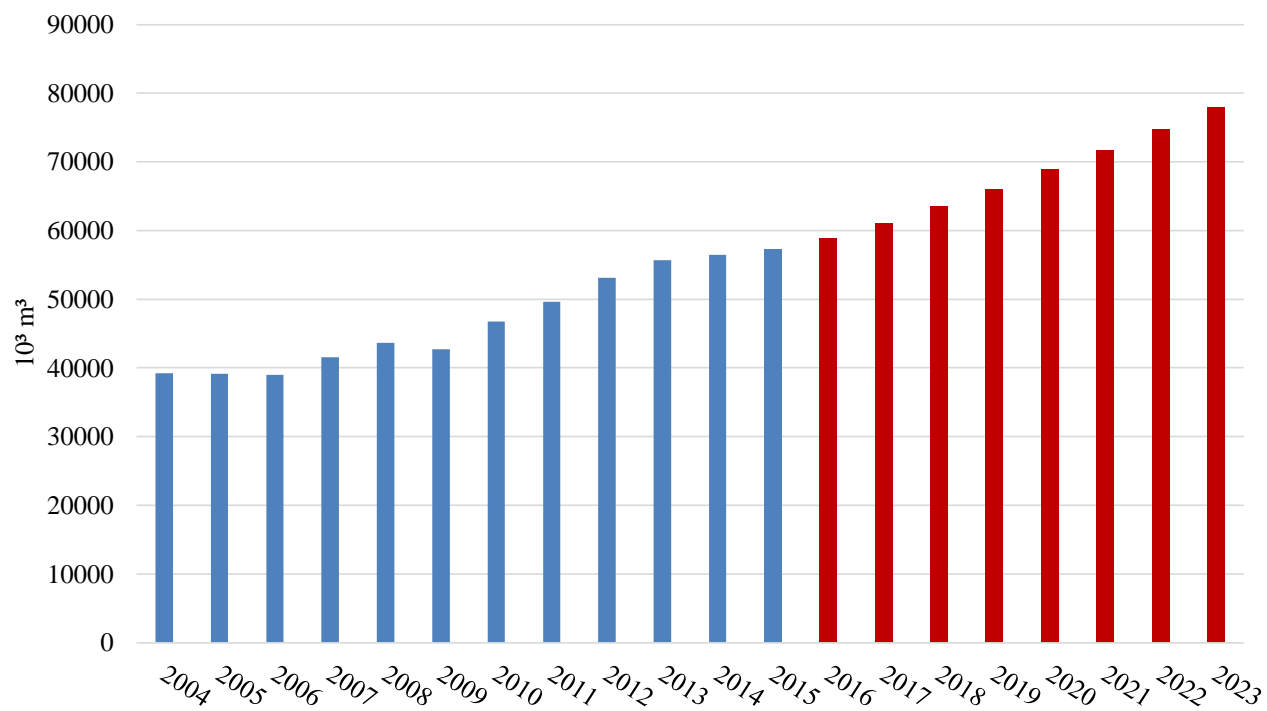
# RESULTS

- Percentage variation of Diesel Future Consumption in Brazil

Period	Brazil (mil m <sup>3</sup> )
2015	58853.50
2019	68856.27
2023	78970.29
(% p.y)	
2015 – 2019	3.21
2020 – 2023	4.22
2015 – 2023	3.66

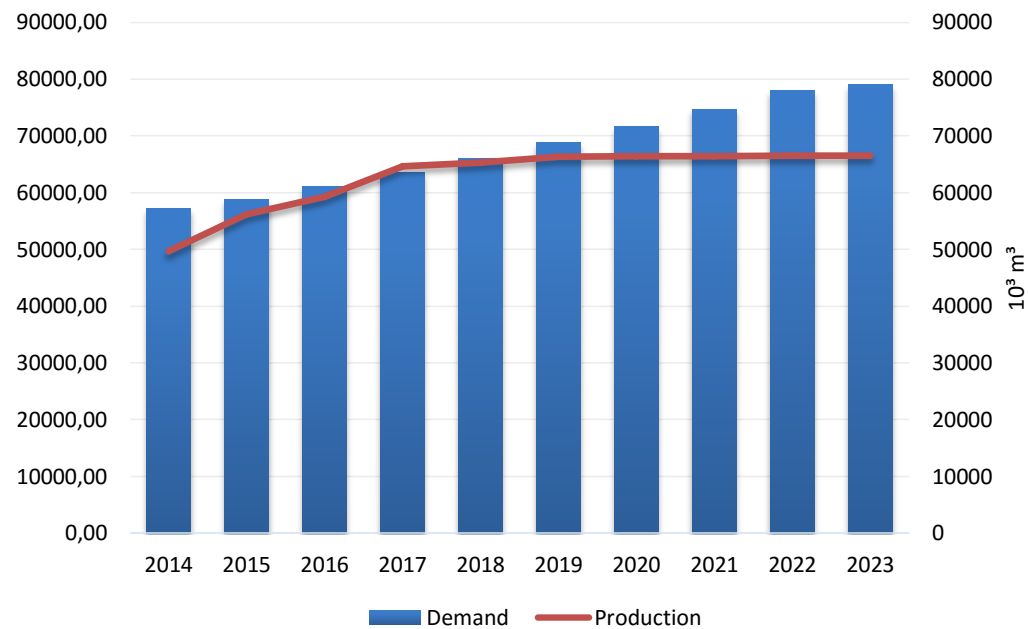
# RESULTS

## ○ Diesel Demand Forecast



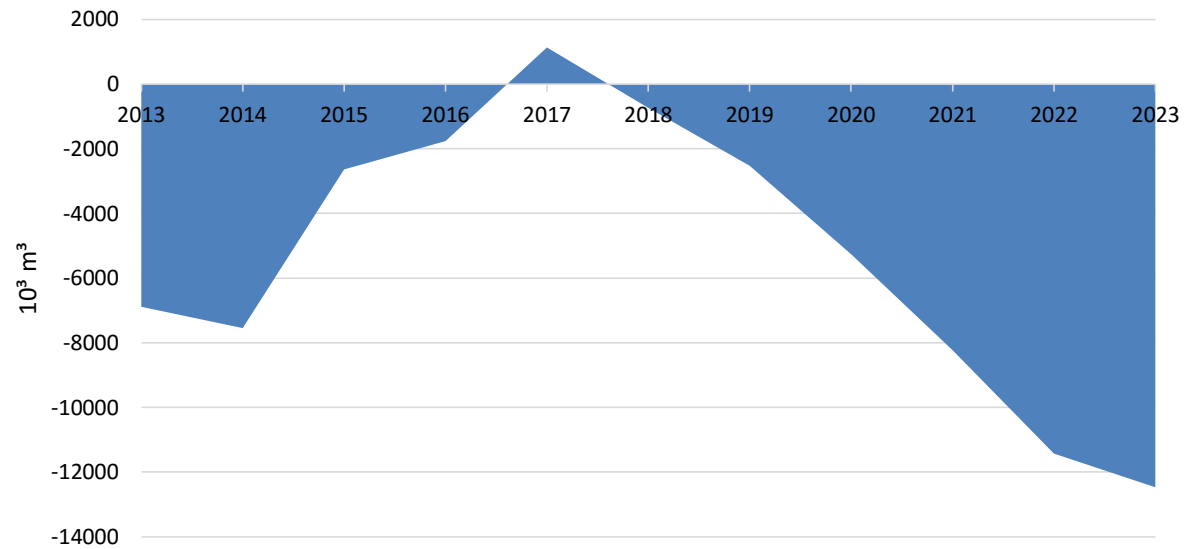
# RESULTS

## ○ Diesel Balance



# RESULTS

## ○ Diesel Balance



# CONCLUSIONS

The demand forecast for 2016-2023 indicates a strong demand increase in our reference scenario. So, Brazilian energy policy must consider it as to provide security of supply of this fuel.

**THANKS**