

A preliminary analysis of Inovar Auto impact on the Brazilian Automotive Industry R&D activity

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Abstract

Aiming to increase the competitiveness, technology and security of vehicles produced and sold by the Brazilian Automotive Industry, in 2012 the Brazilian Federal Government established the “Inovar Auto” by executive law. Given the relevance and scope of the Inovar Auto Law, this paper aims to conduct a review of the preliminary results already obtained by different companies that joined the program. Therefore, through interviews with governmental agents, R&D managers, as well as R&D public and private centers representatives, we intend to analyze the quantity and quality of R&D projects developed by the Brazilian Automotive Industry, with or without an external partnership, analyzing how Inovar Auto Law has influenced this result. The interviews and data presented herein suggest that the program is very promising as regards the increase in number and in quality of the R&D activities developed by assemblers, systemists and Institutes of Science and Technologies connected to the automotive chain and particularly to the energy efficiency aspects highlighted in the program.

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Introduction

Aiming to increase the competitiveness, technology and security of vehicles produced and sold by the Brazilian Automotive Industry, in 2012 the Brazilian Federal Government established the “Inovar Auto” by executive law. It is an industrial policy that provides tax reduction benefits to assemblers that meet or exceed certain goals.

Overall, the objectives involve (Ibusuki, Bernardes, & Consoni, 2014):

- A minimum number of productive activities conducted in the country (mandatory for all companies intending to adhere to the program)

- Improvement in energy efficiency indicator, measured in CO₂ emission/fuel consumption (mandatory for all companies intending to adhere to the program)¹

Additionally, each company has to choose two of the following three objectives:

- A minimum percentage of investment in R&D
- A minimum percentage of investment in engineering
- Adherence to the national program of vehicle labeling related to energy efficiency

The program is valid for the period 2013–2017 and will be reviewed at its end.

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¹ It is worth highlighting the fact that as from March 2015, hybrid, electric and hydrogen cell cars sold in the country will receive an additional incentive in the calculation of the energy efficiency indicator used by Inovar Auto rules.

During this period, companies are encouraged to continuously improve the objectives expected to maintain tax reduction benefits over the period.

Theoretically, the program has been considered the most comprehensive and well designed of all previous incentive initiatives established for the sector. Although companies may be considered to be still adjusting their policies in order to meet the program goals, it should be emphasized that by 2014, about 44 assemblers (which already have operations in Brazil and others that plan to do so) had already joined the program, aiming to make use of the benefits offered.

As in all industrial policies, the results are not necessarily those initially expected. Thus, given the relevance and scope of the Inovar Auto Law, this paper aims to conduct a review of the preliminary results already obtained by different companies that joined the program. Our focus is to analyze the quantity and quality of R&D projects developed by the Brazilian Automotive Industry, with or without an external partnership, analyzing how Inovar Auto Law has influenced this result. Therefore, through interviews with governmental agents, R&D managers, as well as R&D public and private centers representatives, we intend to identify:

- (1) To what extent new investments were made as a result of the Inovar Auto Law or were already planned by companies even without this kind of stimulus.
- (2) What the nature of those investments is: what the focus of the projects is, investments planned, if engineers and technicians were hired to do so.
- (3) To what extent Inovar Auto Law could impact the consolidation of R&D activities in Brazil or at least the establishment of a consistent strategy for firms.
- (4) What role do the public and/or private Institutes of Science and Technology (IST) play in this context.

In order to answer those questions, we conducted a multiple-case study in automakers and suppliers, R&D centers and governmental agents that are somehow involved with Inovar Auto Law. We conducted in-depth interviews with managers and/or other executives responsible for innovation projects.

In general, our objective is to contribute to the analysis of the effectiveness of industrial policies aiming to increase competitiveness and to consolidate production value chains in countries with features similar to those in Brazil, i.e. with large market, production facilities and expertise, but with few or non-existent R&D and facing fierce global competition. We also intend to provide a critical analysis of the program, as well as some recommendations on how to improve the program in its possible continuation after 2017.

The article is organized as follows. In second section, the conceptual basis of the study is synthesized. Third section presents the research methodology, and fourth section presents the results of the interviews conducted. Finally, in fifth section, results are discussed and conclusions are presented, pointing out some study limitations and suggesting further research.

Conceptual basis

R&D profile for the automotive sector in Brazil and the Inovar Auto Law

The automotive industry has proven over the years to be an important source of economic and social development to several countries as it generates employment, income, as well as capital investments and thus contributes to short- and long-term growth.

However, this sector is even more crucial to developing countries such as Brazil inasmuch as their economies are not as diversified as the developed ones. The figures below support the latter statement: 23% of the Brazilian Industrial Gross Domestic Product (GDP) in 2013 relied only on the automotive industry. Additionally, it is accountable for generating 1.5 million jobs. Brazil is the 7th major producer and the 4th largest market (ANFAVEA, 2015).

However, unlike other emerging countries, such as China and Korea, Brazil has no actual national automotive industry: all automakers that produce locally are subsidiaries from foreign multinationals, and most of the first tier suppliers are foreign companies. Despite its foreign origin, the industry was able to develop competencies in engineering and product development throughout its trajectory here started in the 1950s (Salerno, Zilbovicius, Marx, & Dias, 2009).

Currently, the country has qualified engineering centers, capable of designing a new vehicle from concept definition to product and process validation; but those competencies are still concentrated in the traditional automakers, also called “latecomer companies”. And most of the innovation efforts are driven to adapting global models to local market conditions (Castro, Barros, & Vaz, 2014; Souza & Mello, 2014).

Latecomer companies in Brazil should not have difficulties in achieving the minimum percentage of investments in R&D – 0.5%. On the other hand, newcomer companies, mostly Asian, which bring from their headquarters all vehicle concept, project and process, and only assemble in Brazil, should face difficulties in achieving the minimum percentage of R&D investments (Ibusuki et al., 2014). The automotive industry still invests more in innovation than the average of the domestic industry: The 2011 National Innovation Survey (PINTEC) showed that the Brazilian Transformation industry on average invested just 0.72% of their net revenue in R&D, while automakers invested 1.39% and autoparts producers, 1.17% (Castro et al., 2014; Souza & Mello, 2014).

As mentioned above, the automotive industry in Brazil experienced a steadily growth in production and sales over the last decade, but this growth was not proportional to the growth in R&D expenditure, as shown in Fig. 1.²

The Inovar Auto Law initiative intends to deal exactly with this point: attract more R&D and engineering investments to modernize products and raise local content and, consequently,

² R&D expenditures definition for Inovar Auto could be more restrictive than those in Pintec (Innovation Survey).

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