Industrial policy and exchange restrictions: An analysis of the Argentine automotive industry, 2012-2015

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Abstract

The automotive parts trade has become a major source of external deficit in Latin America. This poses both a macroeconomic and industrial policy problem. Argentina has designed several policies intended to reverse this situation, especially since external strangulation intensified during 2012-2015. This article evaluates the outcomes of the policies implemented. First, an econometric approach reveals that the measures adopted did not succeed in modifying key aspects of the automotive chain's international articulation. Second, the article seeks to explain its findings by conducting in-depth interviews with officials involved in implementing policy. In so doing, a set of external and internal obstacles to the process of designing and implementing industrial policy can be identified.

Keywords: : industrial policy; external restriction; exchange rate policy; automotive sector; auto-parts imports; econometric analysis.

1. INTRODUCTION

This article sets out to analyze the effectiveness of the set of public policies implemented in the Argentinian automotive sector from 2012-2015, policies intended to promote the integration of auto parts and national components into finished vehicle production. During this period, the sector's trade deficit reached historic highs, contributing to a balance of payments crisis that, in turn, led to the government adopting unusually stringent generalized exchange control measures during recent decades.

Analysis of this concrete policy experience is useful to two aspects of the debate surrounding two major themes of economic development in Latin America, namely: 1) the external constraint on growth, and 2) the role of industrial policy.[1]

The automotive complex was a significant cause of foreign exchange shortages in Argentina during the study period. From 2012-2015, the sector's accumulated deficit constituted more than 150% of the surplus from the country's remaining trade items.[2] The situation is similar in the rest of Latin America, where the deficit of the auto parts sector is equal to the trade surplus from the rest of trade items (Panigo *et al*., 2017). This makes the sector a paradigmatic case study when seeking to understand the problem of foreign currency shortage in the region.

Industrial policy has returned to the center of academic economic policy debates over the past 15 years, both in developing and developed countries (Aiginger and Rodrik, 2020). Within this context, Argentina's automotive regime serves as a case in point of an industrial policy regime. This is partly because of its importance to the country's industrial complex, which accounts for more than 8% of the gross value of manufacturing production in 2011-2014 and about 6.5% of industrial employment (Centro de Estudios de la Producción, 2015). Moreover, it contributed 25% to the most recent major recovery in industrial production, between 2002 and 2010 (Pinazo and Piqué, 2011).

The 2012-2015 period serves as an excellent study period when seeking to examine this type of policy, as this period witnessed a foreign currency shortage. This led the authorities to redouble their commitment to substitution, employing a large number of instruments with relatively diverse mechanisms of action. This set of policies was implemented within a general framework of exchange controls which has set very strict restrictions on Argentine exchange policy over recent decades. This has come to be known as the exchange rate trap.

The central question of the article is how effective this policy is in deepening national integration in the production of final vehicles. Trade data were used for a set of 70 auto parts items and the impact of stimuli produced by public policy on the auto parts sector was evaluated, in view of changes in the final production of vehicles and the real exchange rate.

This article is structured as follows: the second section describes an indicator of the evolution of imported auto parts requirements. The third section then presents the policy framework which will be evaluated, describing how previous components differed and outlining the initiatives adopted during the study period. The fourth section goes on to estimate how this set of policies impacted on the elasticity of auto part imports in the face of changes in the production of finished vehicles (production elasticity) and in the multilateral real exchange rate (price elasticity). To make sense of findings, we have followed the tradition in the international literature on the automotive sector (Helper, 2000) of conducting in-depth interviews with officials involved with implementing public policy. The fifth section presents the working methodology used to record the interviews. This qualitative analysis allowed us to identify a series of obstacles to achieving policy objectives. These obstacles can then be classified as either external to the process of formulating and

implementing public policy, or internal to this process. Finally, the sixth section discusses the main findings and their implications for the debate on this subject.

2. THE EXCHANGE PROBLEM IN THE SECTOR

Auto parts imports have increased steadily over the last 15 years, a fact well documented in the literature (Pinazo, 2015; Manzanelli and González, 2012). Given that local production of finished vehicles is the main determinant of auto parts imports (Cantarella *et al.,* 2017), there is much to be gained from analyzing changes in auto parts import requirements per unit produced of finished vehicles in the country (see Figure 1, elaborated using the quotient between an index of total auto parts imports and an index of finished vehicle production, both equal to 100 in 1994).[3]

Figure 1 shows the evolution of this indicator of import requirements, both for imports as values (Panel A, above) and as quantities (Panel B, below). Likewise, as the indicator can be constructed for each of the 70 positions considered, the figure shows three series: one corresponding to the 25th percentile of the distribution of import requirement indicators for each year, one corresponding to the median, and one corresponding to the 75th percentile.

Figure 1. Coefficients of imported auto parts requirements per unit of finished vehicle 1994-2017
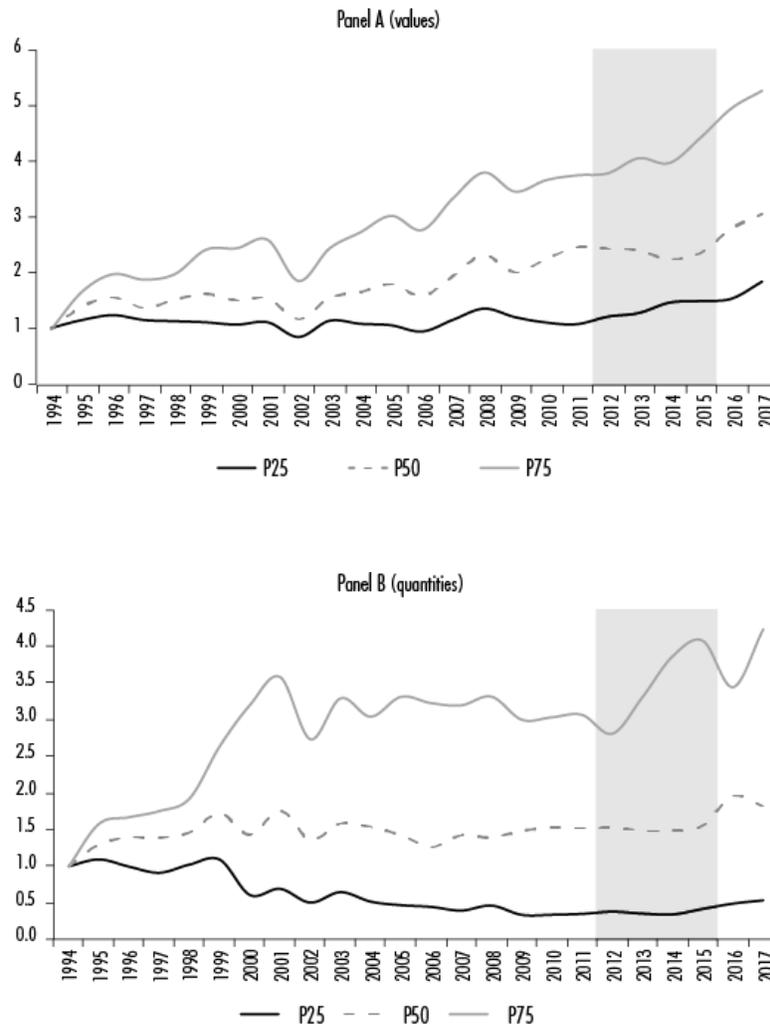
Source: compiled by the authors using data from ADEFA and COMTRADE

The median import requirement in values triples over the entire period 1994-2017. When imports are considered in quantity, the median of the requirement indicator rises over the same period, although to a lesser extent (50%) and during a shorter period (up to 2000), before stabilizing. This shows that a significant part of the increase in imports in value terms is due to increases in import prices, potentially affected by the manipulation of transfer prices.

However, there are systems/auto parts whose import requirements increased at a significantly higher rate. This can be seen in the evolution of the 75th percentile of the distribution in both versions of the indicator, which shows that, for 25% of the auto parts items with the greatest increases in

requirements, there was a fivefold increase in value and a fourfold increase in quantity. Simultaneously, some items reduced their import requirements per vehicle manufactured when considered as quantities. This can be seen in the evolution of the 25th percentile, in Panel B of Figure 1.

3. THE POLICY FRAMEWORK BEING ASSESSED

As previously stated, this article's primary objective is to assess the set of measures implemented from 2012-2015 to control auto parts imports and increase local integration. As was the case with other sectors during this period, a series of foreign exchange trade and industrial policy measures were introduced, which redoubled pressure on the automotive sector to contain its import trends. Indeed, it could be argued that the import substitution policy during this period was unusually severe: Import substitution roundtables were organized, bringing together the government, the final production companies,[4] and the auto parts firms; attempts were made to modify key parameters regulating bilateral trade with Brazil and benefits linked to transitory imports; fiscal promotion regimes were introduced for the substitution of imported auto parts; and very restrictive trade and exchange measures were also implemented, which even went so far as to conflict with World Trade Organization (WTO) regulations.

Each of these policies, as well as some of their specific impacts as obtained from various sources, will be described below. Where possible, the policy is described with reference to the official regulations, and assessments found in the academic literature. Journalistic material offering useful insights is also employed. Finally, the description and assessment are completed using data obtained from the interviews, especially data on unrealized policy proposals.

The Common Automotive Policy with Brazil

The Common Automotive Policy (CAP) with Brazil is a major explanatory factor in the sector's trade performance, given that Brazil accounts for a very high proportion of the external deficit. Consequently, a great deal of effort was made during the study period to design policies to modify the parameters that regulate bilateral trade.[5]

The data obtained from the interviews show that the main policy focus in this field was developing a proposal to reform the flex-coefficient that regulates bilateral trade, establishing a maximum ratio between exports and imports of automotive goods for each country. However, due to various design problems, this regulation has been ineffective in containing Argentina's deficit in recent years.

The alternative considered consisted of segmenting the flex coefficient into two parts: the finished vehicle segment and the auto parts segment, significantly narrowing the formal threshold of Argentina's deficit. However, the proposal was unsuccessful due to problems during the bilateral negotiation problems. Below is a general discussion of this external obstacle facing automotive policy.

The In-factory Customs Regime (RAF)

The In-factory Customs Regime (RAF) is a regime of temporary imports of inputs and intermediate goods that are incorporated into goods subsequently exported. The main benefit for final production companies is that imports of inputs used for exported products are exempt from tariffs. Therefore, final production companies need to pay tariffs only on auto parts destined for vehicles to be sold domestically. Furthermore, declaring the destination of auto parts can be postponed for up to one year from the moment the imported good enters the country, thereby affording significant financial advantages to beneficiary companies. However, the most important effect of this regime is the significantly reduced tariff protection for all auto parts. Some estimates indicate that effective protection has fallen to a quarter or fifth of that established in the CAP (Cantarella *et al.,* 2017).

As a result, the RAF effectively acts as a stimulus for auto part imports, whose potential increases over the years and for firms with higher export rates. In an attempt to mitigate this import-stimulus effect, one ultimately unsuccessful policy initiative was the proposed imposition of more ambitious and specific integration requirements on final production companies in certain sectors (especially electrical & electronic systems), intended to make available the benefits of the RAF. According to some interviewees, one particularly significant obstacle to this initiative's success was the internal resistance within the Ministry of Industry. Below is a general discussion of this internal obstacle to automotive policy.

Tax incentive schemes

The study period coincides with the implementation of a regime to incentivize local integration, enacted in 2008 by the Law for the Development and Consolidation of the National Auto Parts Sector, Law 26393), implemented during the period 2009-2014 and which sought to incentivize the integration of local auto parts into automobiles production. Without affecting the customs regime or other instruments governing the sector, its main mechanism was a cash reimbursement on the total value of local auto parts purchases, effective for three years with value decreasing over time, from 8% to 6% of the ex-factory value of local auto parts.[6] To become beneficiaries, manufacturers would have to prove a maximum imported content calculated at 30% of their ex-factory value. The qualitative data shows that, despite being a formal instrument, one systematically designed with input from the sector, none of the officials interviewed attributed much practical importance to these schemes.

There were several limitations to this program being applied in practice. The minimum level of local integration required to receive tax benefits was too far removed from contemporary averages. Additionally, companies did not obtain significant economic benefits from the regime (at most, they received a refund of 8% of the value of local auto parts). Finally, delays in collecting the refunds further reduced the initiative's financial attractiveness.

Consequently, very little income was recorded under the regime. Annex A1 shows that this program's budgetary impact was never more than negligible, both in terms of projected and accrued credit. For several years there was even a zero budget.

These design problems, also recognized during the import substitution roundtables, led to a new law being finally approved in 2016. In relation to the 2008 regime, the more recent law incorporates a series of adjustments, which in summary are: i) a significant reduction in the required local integration threshold; and ii) higher reimbursements according to the degree of local integration of auto parts. The impact of this new regime, which came into force in June 2016, is outside the study period of this article.

Trade measures: Non-Automatic Licenses and Advance Sworn Import Declarations

As was generally the case in other countries (Baldwin, 2009), the collapse of international trade after the 2009 crisis resulted in global oversupply, which triggered in Argentina an intensification of trade regulations. Two measures took special prominence in that context: the Non-Automatic Licenses (LNA), first, and the Advance Sworn Import Affidavits (DJAI), later.

The LNAs were implemented via an authorization to import certain products from sensitive sectors. In 2012 they were replaced by the DJAI, which functioned through import requests that, if not observed by the application authority within 14 days, were considered authorized. In practice, both acted as a disincentive to imports (Heyn and Moldovan, 2011).

In the automotive sector, such exchange restrictions resulted in the allocation of dollar quotas that firms could use to import auto parts and capital goods. These quotas have been negotiated with each final production company since 2011, based on export performance, employment volume, and investment projects (Ceriotto, 2015; La Política Online, 2011).

These measures led to the European Union lodging a complaint with the WTO, resulting in a 2014 ruling obligating Argentina to dismantle the DJAI and the *trade-related requirements* (PRC). Thus, the validity of these trade and exchange measures did not extend beyond the study period of this paper.

Sectoral import substitution roundtables

The 2020 Strategic Industrial Plan, launched in 2012, included sectoral roundtables in which the public sector and the private actors of each chain interacted with one another. Their main task would be to solve coordination problems and identify bottlenecks in 11 production chains (Lavarello and Saravia, 2017). The automotive sector was one of the strategic chains selected. For the automotive sector, a roundtable was set up for each of the major auto parts systems or subsystems. The roundtables began with accounts from auto parts companies, directed to government officials, of the loss of auto part sales to a final production company or the possibility of final production companies being supplied with imported parts.

Generally speaking, when the preliminary diagnosis was a cost problem with the local supplier, the next step in the process was to compile a report. These reports were elaborated by teams of officials who visited the supplier's plant, studied the cost structure of the parts in question, and compared these values with international prices or with private data provided by the final production companies. On completing this step, some officials expressed concern regarding the lack of a regulatory framework to make interventions more effective. Finally, a new meeting was held in which officials presented their findings and analyzed possible courses of action.

The general consensus on the part of officials is that such initiatives are unlikely to be successful. Although the roundtables achieved some agreements favorable to local providers, they were relatively few and required a great deal of effort. In addition to the lack of a clear regulatory framework, the main obstacles encountered were final production companies' lack of knowledge of existing suppliers, auto parts suppliers' cost problems that limited their price competitiveness, and the stringent product approval requirements necessary to begin selling to final production companies.

4. EXPLORING THE IMPACT OF THE REIMBURSEMENT POLICY ON AUTO PARTS IMPORTS

It has been established that the import requirements coefficient continued to increase in both values and quantities for a high percentage of tariff positions. What follows is a quantitative analysis of the effects of the policies implemented during the study period (2012-2015). Special attention is given to the impact on the elasticity of auto part imports in light of changes in their more structural determinants: finished vehicle production and the Multilateral Real Exchange Rate (MRER). In other words, to what extent do production and exchange rate elasticities fluctuate during the validity period of the policies we analyze here?

In addition to the ADEFA data on finished vehicle production, MRER data prepared by the Central Bank of Argentina was also used. Given that in Brazil a large proportion of auto parts imports originate from Brazil, it could be argued that using the bilateral exchange rate (RER) with Brazil would yield more accurate results. The following assessments were carried out using this bilateral exchange rate rather than the multilateral one, and findings are expressed in qualitative terms. Given its high correlation with the MRER, it was decided not to include both exchange rates within the same model.

An exploratory econometric analysis was conducted at the tariff item level. For each of these, we sought to determine whether or not these elasticities fluctuated using an ordinary least-squares model. This was decided due to the fact that estimations were not made using the panel format base, but rather for each trade item individually, with findings (the elasticities) then being analyzed together, presented in the density functions estimated with the non-parametric Kernel technique.

The following equation serves to make the above estimation:

$$\begin{aligned} log\_impo_{it} = \alpha_0 &+ \alpha_1 log\_prod_t + \alpha_2 log\_tcrm_t + \alpha_3 politica \\ &+ \alpha_4 politica * log\_prod_t + \alpha_5 \, politica \\ &* log\_tcrm_t + u_{it} \end{aligned} \qquad (1)$$

Where log_impo_{it} represents the natural logarithm of the current import value of item i in year t, log_prod_t represents the natural logarithm of finished vehicle production in year t, log_mrer_t is the natural logarithm of the multilateral real exchange rate, and policy is a variable dummy equal to 1 for the period 2012-2015 and 0 for the rest of the period. Policy * log_prod_t is the interaction between the previous dichotomous variable and the logarithm of vehicle production, while policy * log_mrer_t represents the interaction between the dichotomous variable and the logarithm of the multilateral real exchange rate. Consequently, the parameters α_1 and α_2 represent the production and exchange rate elasticities, respectively. Meanwhile, the parameters α_3 and α_4 represent the changes in production and exchange rate elasticities, respectively, during the period 2012-2015, and are the main focus of interest. Finally, u_{it} represents a random error.

However, the estimation of a model such as the one proposed in equation 1 is vulnerable to multicollinearity problems, due to the high correlation between the variables it contains (see Table 1).

Table 1. Correlation matrix

	log_prod	log_mrer	Policy	politica_log_prod	politica_log_mrer
log_prod	1				
log_mrer	-0.0438	1			
policy	0.6618	0.0813	1		
policy_log_prod	0.6644	0.0795	0.9999	1	
policy_log_mrer	0.6581	0.0885	0.9995	0.9991	1

Note: Table 1 presents the correlation matrix between the variables of equation 1.
Source: Compiled by the authors using data from COMTRADE.

In view of the impossibility of making a reliable estimate of equation 1, three separate equations were estimated. This approach's capability to capture fluctuations in production and exchange rate elasticities is limited with respect to equation 1, as it does not incorporate the cross-checks included in that model.

$$log\_impo_{it} = \alpha_1 log\_prod_t + \alpha_2 log\_tcrm_t + \alpha_3 politica + u_{it} \qquad (3)$$

$$log\_impo_{it} = \alpha_1 log\_prod_t + \alpha_2 log\_tcrm_t + \alpha_4 politica * log\_prod_t + u_{it} \qquad (4)$$

$$log\_impo_{it} = \alpha_1 log\_prod_t + \alpha_2 log\_tcrm_t + \alpha_5 \, politica * log\_tcrm_t + u_{it} \qquad (5)$$

Our main area of interest is the magnitude and significance of the parameters α_4 and α_5. Table 2 summarizes findings for the 70 items analyzed, indicating the number of items in which there was a statistically significant change to elasticity (5%), whether these changes are positive or negative, and the average change in elasticity experienced by items with significant changes.

Table 2. Summary of the impacts of automotive policy, 2012-2015

|	Number of branches with significant changes	Negatives	Positives	Average Elasticity change with negative changes	Average Elasticity change with positive changes
Interaction Elasticity Production	22	8	14	-8.16	2.59
Interaction Elasticity Exchange Rate	22	8	14	-23.35	20.23

Source: compiled by the authors.

Negative shifts in elasticity are politically desirable. In fact, reduced increase in imports when faced with a change in production volume would impact positively on production elasticity, (negative variation), an outcome that is dependent on this policy. In the case of exchange rate elasticity, the policy objective is that, in the face of a real devaluation, imports would contract more (negative variation) than they would in the absence of the policy.

It can be seen that 8 items experienced negative changes in elasticities, for both types of elasticity. For these items specifically, production elasticities fluctuated by 8% on average, and by 23% for exchange rate elasticity, in relation to their respective values during the rest of the period. Meanwhile, 14 items experienced significant positive changes (in contrast to policy objectives), with production elasticity shifting by an average of 2.6%, and 20% in the case of exchange rate elasticity.

Another way to analyze the impact the policies implemented is to see if there was a significant shift in the distribution of production and exchange rate elasticities by item. This can be done by comparing the distribution of the elasticities that exist in the period of policy implementation with the distribution that is observed outside the policy period.

This is analyzed in Figure 2, which shows the Probabilistic Densities Functions (PDFs) of the elasticities estimated using the Kernel method before and during the policy's validity period. It can be seen that the displacement of the PDF is practically nil. To factor in possible lags in the policy's impact on the productive structure (see Annex A2), these findings include a robustness analysis, using the period 2015-2016 rather than 2012-2015. In general terms, the qualitative outcomes are the same.

Figure 2. Kernel Probabilistic density functions of production and exchange rate elasticities outside
(1994-2011 and 2016-2017) and within the policy period analyzed (2012-2015)
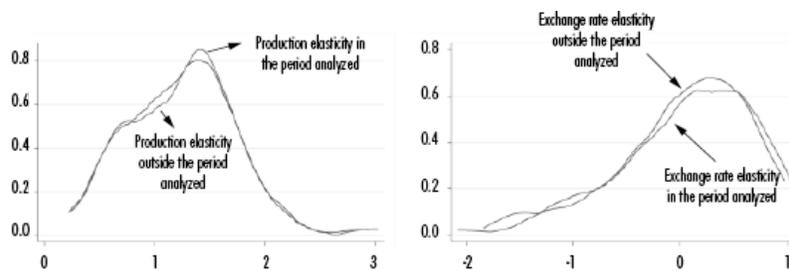
Source: compiled by the authors

In the second section, it was shown that the coefficient of imported requirements tends to increase during the policy's validity period. In addition to this, the findings presented in this section demonstrate that only 10% of the items experienced changes in production and exchange rate elasticities in line with policy objectives, and these are offset by changes in the opposite direction. Finally, the PDF for the various item's elasticities remains virtually unchanged. In summary, it can be said that this exploratory quantitative analysis obtains few positive findings on local integration and the correction of the auto parts trade deficit.

5. EXPLAINING THE FAILURE OF THE POLICY

The primary objective of our qualitative analysis here is to formulate a possible explanation for public policy's ineffectiveness in modifying the auto parts import trends, a finding that can be inferred from the previous section. The qualitative analysis is also intended to cast light on the particular context in which the policy was implemented, so as to uncover additional factors to those usually cited in the specialized literature. In fact, the interviews offer deeper insights into problems related to internal organization and conflicts between the agencies involved in executing the policy.

Methodology for working with interviews

Respondents were selected using purposive sampling or theoretical sampling (Glaeser and Strauss, 1967). Namely, this consists of selecting a panel of interviewees made up of individuals who are either experts in a specific area or have been privileged witnesses to an event. In this case, the panel consists of a group of officials or "bureaucrats" who worked for the Ministry of Economy between 2012 and 2015, in agencies charged with implementing public policy related to the automotive complex.

Six officials were interviewed. The size of the panel was defined according to the criterion of theoretical saturation and reflects the fact that new interviewees ceased to be included when interviews with them ceased to add information that is relevant to that obtained in previous interviews (Glaeser and Strauss, 1967).

To collect the data, a semi-structured interview instrument was designed, which was recorded, transcribed, and processed using the *Atlas.ti* software. An issue-focused analysis was carried out (see Weiss, 1994). Following Maxwell (2013), codes were established on three levels: thematic, notional, and theoretical.

General obstacles identified during qualitative research

The officials interviewed generally had a negative assessment of the outcome of the sectoral policies. None of them considered that the set of policies implemented achieved significant changes in the sector's local integration or external performance. Nevertheless, some of them point to specific achievements, limited to specific companies that began or strengthened their commercial links with final production companies during the study period.

How can we account for the sectoral policy's poor outcomes? Analyzing interviews allowed us to classify two major sets of obstacles to answer this question. The first of these categories is external obstacles, linked to (i) the sector's technical characteristics and the international articulation of the automotive value chain; (ii) the regulatory limitations imposed by signing international agreements such as the WTO; and (iii) more specifically, the difficulties in adequately modifying the CAP with Brazil.

On the other hand, there are a number of internal obstacles, which can be broken down into: i) the fact that policy is conditioned by short-term emergencies arising from the macroeconomic situation; ii) the lack of pre-existing institutional capacities for designing and implementing industrial policy in the sector, as well as difficulties in consolidating new capacities; iii) conflicts between agencies and private sector capture of state functions. Each of these obstacles will be discussed in detail below.

Obstacles external to the policy

The sector's structural determinants

The group of interviewees identifies final production companies' lack of interest in the policy objectives as a primary obstacle. In fact, final production companies and even some large early stage suppliers, acted as antagonists against the local integration of auto parts. The most significant of these are connected to the automotive GVC at the global or international level, as well as to the trend towards acquisition by final production companies of finished assembly kits (complete knock-downs, CKDs) that are then assembled into the final production of the vehicle.

Recent literature indicates that the international articulation implemented by the automotive value chain has made it difficult to achieve local integration of vehicle manufacturing in several countries, and has also relegated national capital companies to a secondary position. Thus, the experience of the officials interviewed confirms a widely documented fact in other national cases. In particular, the interviews reveal more specific aspects in which the international configuration of the automotive GVC conditions the possibility of integrating local suppliers.

First of all, a set of limits to the integration process derives from the specific modality adopted by the competition in the final production sector. The trend towards an increasing rotation of models (Talay et al., 2014) conditions the possibilities of maintaining or increasing local integration of auto parts. On the one hand, the high rotation means suppliers of parts or subassemblies whose life cycle in the market is 4-6 years have only short windows of opportunity to develop and establish themselves in developing countries (Sturgeon and Van Biesebroeck, 2011). This difficulty is accentuated by the fact that the models only begin to be manufactured in Argentina several years after having been manufactured in other markets,[7] which implies that their suppliers abroad are already developed and are in a position to supply the Argentine subsidiaries immediately.

Furthermore, several interviewees mentioned as an obstacle final production companies' resistance to granting supply contracts for long periods, and their tendency to substitute local suppliers with international ones in the face of short-term price fluctuations. This can be seen in the surveys carried out by the Chamber of Metallurgical Industries and Components of Córdoba (CIMCC), which certify that these are relevant reasons for the loss of sales of parts from metallurgical companies to final production companies and large suppliers (CIMCC, 2017).

Finally, these limitations are strongly reinforced by the technical conditions typical of the products manufactured by the sector. Becoming a direct supplier to a terminal entails high barriers to entry associated with the approval of parts and pieces, as well as the quality guarantees that the supplier must provide. Standard practices at final production headquarters are protracted and require considerable investment by the potential supplier.

In short, it is possible to identify a first set of limits typical of the sector's structural con-figuration, linked particularly to the structure of the automotive GVC. In this sense, it can be said that the experience of the officials interviewed confirms the existence of general limits, widely documented in the literature, deepen the local integration of auto parts in countries with smaller market size.

Absence of formal instruments

A second factor cited by interviewees to explain the poor policy outcomes is the lack of institutional instruments to force companies to meet local integration and trade objectives. This regulatory deficit occurs in the context of the national state's commitments to the WTO, and to various international agreements. An extensive international literature addresses the shrinking space for industrial policy in developing countries resulting from the signing of such agreements (Gallagher, 2005). For the Argentine automotive case, it was shown that the DJAI or the dollar quotas per company were challenged in the framework of the WTO towards 2014.

The lack of specific instruments prevented significant progress from being made during the import substitution roundtables. For example, officials were limited to merely reliably verifying the veracity or accuracy of all the information provided by the terminal companies. It also resulted in commitments that were too lax to "study the possibility of substitution" under conditions and deadlines that could never be fully defined.

However, the existence of these limits to implementing industrial policy in the sector does not imply that the authorities have exhausted the available intervention alternatives. The diversity of industrial policy experiences regarding the sector in developing countries during the last two decades shows

that it has been possible to establish greater performance requirements for companies in the sector, without immediately provoking condemnation in international instances (Sturgeon et al., 2017). The outcomes of the Innova Auto Plan in Brazil are an example of more effective policy alternatives, although a more careful comparison that factors in differences between countries, in particular given the different market sizes, would be required.

Challenges to renegotiating the common automotive policy with Brazil

A third major external obstacle to achieving policy objectives is the difficulty of renegotiating the CAP with Brazil. As we have seen, this is a strong explanatory factor of the policy outcomes, as a high proportion of the deficit in auto parts originates from trade with Brazil. However, attempts to modify the parameters that regulate intra-zone trade (specifically, the proposal to segment the flex coefficient) were frustrated and resulted in conditions in Brazil becoming more favorable to free trade.

Interviews with officials allowed for the reconstruction of a more accurate explanation of this failure. The automotive agreement is only a chapter of a broader bilateral relationship that includes other sectors, one which fluctuates with the economic cycle and is punctuated by relatively urgent trade difficulties. Furthermore, it is also conditioned by political factors. Thus, modifications to the CAP that are favorable to local integration in Argentina lose priority when placed in the broader context of the bilateral negotiation agenda.

Obstacles internal to the process of implementing sectoral policy

So far, we have analyzed the external obstacles faced by policymakers when designing or implementing policy. We will now go on to analyze the internal obstacles identified from the interviews with officials, which are linked to the intensification of the industrial policy, the lack of technical capacities, and the quick rotation of teams that prevented their consolidation, and the internal conflicts between units with differing objectives.

Delays in intensifying the import substitution policy

An initial internal obstacle was the delay in intensifying the substitution policy and the reluctance of actors to take it seriously. Starting from a public policy scheme that in net terms was antagonistic to the local integration of auto parts, evidence shows that the policy pressure on the sector intensified towards 2012. In other words, once the balance of payments crisis had set in, and the government had already had to place strong exchange rate restrictions on the entire economy. If more ambitious policy goals had been set earlier in the term beginning in 2003, a different outcome could have been achieved.

This limitation is consistent with more general criticisms of Argentina's industrial policy during this period. For instance, Lavarello and Saravia (2017) assert that the design of the 2010 Strategic Industrial Plan was based on the need to contribute to macroeconomic stability within the framework of external constraints, rather than on long-term development criteria.

Lack of capacities, coordination, and stability of teams

Some officials also highlight the state's lack of technical capacity to implement an import substitution policy. In fact, by 2011/2012, the officials who began working on the sector did not find a methodology or a consolidated body of information in the ministry.

Furthermore, in the sector recognition process, the various technical teams worked relatively independently of each other. At least two officials who worked in different teams within the ministry claim to have begun a process of systematic information gathering independently. For its part, the Ministry of Industry had its own database.

Finally, the difficulties in consolidating state capacity in this policy area were accentuated by the high turnover of technical teams, as secretaries and undersecretaries were replaced. This instability of the technical teams involved seems to be a key aspect in explaining the low technical capacities, due to the huge-scale and long-term nature of the work of systematizing data and establishing links with the sector.

Conflict between agencies and state autonomy

Conflicts between agencies are a final internal obstacle identified in the interviews. The main source of conflict seems to have been between the Ministry of Economy and the Ministry of Industry. According to several testimonies, the latter constitutes the bureaucratic instrument with the least autonomy with respect to the large firms in the sector, and is, therefore, more permeable to their requirements. This conflict made it difficult to implement more stringent policies. Of all the instruments evaluated, this conflict seems to have had the greatest effect on the attempts to reform the RAF.

This has implications for the debate regarding the impact of the relationship between the state and the business sector on the effectiveness of industrial policy, as addressed by authors such as Evans (1995). In particular, this limit detected during the qualitative analysis demonstrates that the lack of state autonomy in relation to large firms is a serious obstacle to implementing industrial policy in the sector.

6. SYNTHESIS AND DISCUSSION

We have assessed the outcomes of a set of policies intended to constrain the import trend of auto parts during the period 2012-2015, a period of particular intensity and diversity of instruments in this regard. The econometric results presented in the fourth section demonstrate that the set of

policies analyzed did not prevent strong increases in the coefficient of imported requirements in some auto parts. Nor did they significantly impact production and exchange rate elasticities. Thus, the results have been very poor in terms of local integration of auto parts and systems, despite the especially stringent policies.

Within this framework, the interviews with officials allow for the identification of various obstacles to achieving the policy objectives being studied, in turn allowing for an explanation of the process which contributes new elements to those generally discussed in the literature. These obstacles were categorized as either external or internal to the policy (i.e., they come from factors that are either unrelated or inherent in its design and implementation, respectively).

The following are examples of external factors: a first factor is related to the structural configuration of the sector, particularly the organization of the automotive GVC. This element makes the possibilities of local integration critically dependent on the production and supply strategies of foreign terminal companies and large suppliers. The second factor consists of the lack of formal instruments that force companies to align themselves with authorities' industrial development objectives, and it is connected to the reduced scope for industrial policy resulting from WTO membership and the set of agreements signed in that framework.

There is some controversy surrounding this second factor: on the one hand, the instruments used to regulate trade and the use of foreign exchange during the period under analysis were, in fact, challenged by the WTO and had to be subsequently dismantled. On the other hand, both the officials interviewed and other international experiences (that of Brazil, for example) indicate that there is a margin to implement industrial policy in the sector without breaching active supranational regulations. Thus, this axis leaves a field to explore new policy instruments.

The third external factor consists of the challenges to renegotiating the PAC with Brazil with terms more favorable to local integration in Argentina. As we have seen, this challenge results from two factors. On the one hand, there is little interest on the part of Brazilian public and private actors in moving forward in this direction. On the other hand is the difficulty to prioritize sectoral needs within the bilateral negotiation with Brazil.

The following are examples of the internal obstacles, i.e., those inherent to the process of designing and implementing public policy: first, the authorities' delay in intensifying public policy efforts to deepen local integration in the sector. It is worth asking then, what impact would these measures have had if they had been implemented earlier? A second factor is related to the lack of (i) technical capacities and accumulated data in the public sector, (ii) coordination between different agencies, and (iii) stability of state bureaucracies, an instability which, in turn, hinders the accumulation of capacities to implement policies that, in this case, require long periods of design and implementation to produce results. Thirdly, interviews with officials reveal the existence of conflicts between agencies and obstacles related to the capture of state officials or agencies by the private sector.

In short, the poor outcomes of the automotive policy implemented in the 2012-2015 period are due to serious structural limitations inherent to the GVC and to institutional conditions that prevent the design of aggressive industrial policy instruments. In fact, many of these conditions were known and foreseeable beforehand. However, the policy actions undertaken during the period were also deficient, and areas for future review can be identified, inasmuch as i) there was a margin for implementing more effective measures, even within the WHO's restrictions, as shown by the case of Brazil; ii) the policy objectives linked to the sector do not seem to have received sufficient priority in the bilateral negotiation agenda with Brazil; iii) the increased pressure on the sector to increase local integration could have begun earlier; iv) the apparent lack of efforts directed to consolidating state capacities to promote import substitution and the stability of the bureaucracies involved; v) persistent conflicts of objectives between different state offices, with agencies even being captured by the private sector.

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ANNEX A1

Table A1. Budget allocated to the Law for the Promotion of Auto Parts

	2012	2013	2014	2015	2016
Automotive Companies Benefit Law No. 26.393	20	90	214.6	198.3	213.6
Accrued	0	0	22.3	0	62.2
Budget Objective Services Economies - Industry function	1 449	2 257	3 544	6 393	9 621
GDP	2 637 914	3 348 308	4 579 086	5 954 511	8 228 160
As a percentage of the budget allocated to the Industry function					
Automotive Companies Benefit Law No. 26,393/Budget Industry Function	1%	4%	6%	3%	2%
Accrued	0%	0%	1%	0%	1%

Notes: Table A1 shows the budgeted and accrued credit corresponding to the "Law for the Development and Consolidation of the National Auto Parts Sector", in accordance with the National Budget Laws.
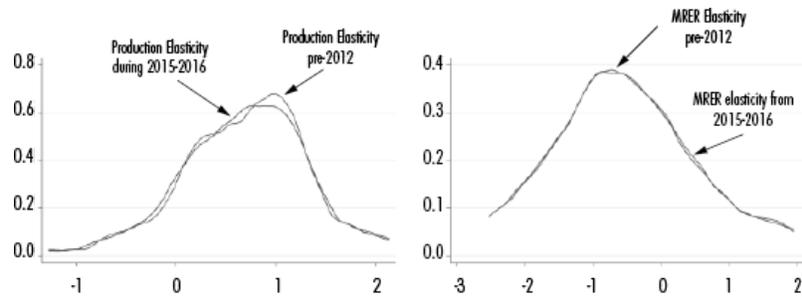
Source: Compiled by the authors based on <https://www.presupuestoabierto.gob.ar/sici/> (Millions of current pesos).

Table A2. Summary of automotive policy impacts from 2015-2016

	Number of branches with significant changes	Negatives	Positives	Average Elasticity change with negative changes	Average Elasticity change with positive changes
Interaction Elasticity Production	34	1	33	5.76	2.0
Interaction Elasticity Exchange Rate	37	1	32	5.75	43

Source: Compiled by the authors.

Figure A2.1. Kernel probabilistic density functions of production and exchange rate elasticities outside (1994-2014) and within the policy period analyzed (2015-2016).

Source: compiled by the authors

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[1] More generally, this case is representative of other policy interventions implemented in other sectors that emerged as pillars of substitutive industrialization in Argentina.

[2] This data was obtained by taking the sector's trade balance of the sector, using sector 87 at two digits of the MERCOSUR Common Nomenclature, based on data from the Instituto Nacional de Estadísticas y Censos (National Institute of Statistics and Censuses, INDEC).

[3] Data on production of finished vehicles are obtained from the Asociación de Fabricantes de Automotores (Association of Automotive Manufacturers, ADEFA), while the sum of imports of auto parts was obtained from COMTRADE, using the six-digit set of headings constructed by Panigo *et al*. (2014)

[4] Refers to leading firms that are dedicated to the final assembly of systems on finished vehicles. In Argentina, these firms are the local subsidiaries of FCA, Ford, General Motors, Honda Motor, Iveco, Mercedes-Benz, Nissan, PSA Peugeot-Citroën, Renault, Scania, Toyota, and Volkswagen.

[5] Due to extension issues, the main components of the CAP and its most salient problems will not be investigated. An analysis of these can be found in Cantarella *et al*. (2017) and Garriz and Panigo (2015).

[6] Benefits varied slightly depending on whether it was a new exclusive platform within MERCOSUR or just new, or production of differential axles. For the technical definition of platform, new platform, and exclusive platform see Law 26393, article 5.

[7] One of the interviewees highlighted that in recent years this launch modality has been replaced by simultaneous global launches of models in various advanced or developing countries.