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Industrial Policy and Structural Change in Bolivia: Resource Curse or Historical Institutional Failure?

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After fifteen years of state interventionism during the presidencies of Evo Morales in Bolivia, the data show that the country did not achieve the desired structural changes. The literature offers two explanations for this industrialisation failure: first, the resource curse hypothesis, and second, a dysfunctional institutional framework. However, none of these analyses look at the wide variety of instruments used to apply industrial policy in order to reach deeper conclusions on the nature of industrial performance. In our analysis, we adopt a wider scope (financial, fiscal and trade incentives) in order to explain the specific nature of the failure of industrial policy in Bolivia. Our results point to two causes of industrial failure. Firstly, the *strategic sectors* suffered from classic institutional problems (bureaucratic inefficiencies, politicisation, etc.) and secondly, the *new manufacturing sectors* showed a pattern of rentier behaviours associated with the resource curse expenditure boom.

Keywords: Bolivia, developmental state, industrial policy, rentier state, structural change.

For more than two decades (1985–2005), Bolivia deployed a developmental model based on commodity export-led growth, public firm privatisations, and a general economic liberalisation and deregulation. This model, labelled as neoliberal, encountered growing popular opposition during the 2000s due to its social costs and a perceived (and real) loss of sovereignty. Over these years popular opposition crystallised in the Movimiento Al Socialismo (MAS, Movement Towards Socialism) movement which proposed a radical break with neoliberal policies. Finally, in 2006, Evo Morales, the MAS party leader, gained the presidency. After the approval of a new constitution and the renegotiation of gas contracts with foreign firms, in 2009 Morales established the pillars of a new development model called 'el Vivir Bien' (Good Living) that was set out in its Development National Plan called 'el Plan Nacional de Desarrollo: Bolivia Digna, Soberana, Productiva y Democrática para Vivir Bien'.

Firstly, this new developmental model reinforced Bolivian national sovereignty over its strategic resources, such as gas, lithium and other raw materials. Secondly, it prescribed state interventionism to industrialise those sectors, on the one hand, to reduce inequalities through redistributive policies, and on the other hand, to industrialise its economic structure and make a break with a dependent developmental system. This

discourse coincided with the emergence of a new wave of Latin American 'leftist' thinking (Venezuela, Ecuador, Brazil, Argentina, Nicaragua, etc.) that believed that the region's underdevelopment derived from a submission to foreign powers and that therefore solutions were to be found in breaking with those dependencies and the development of their own industrial autonomy.

After more than a decade of industrial policies in Bolivia, the data show that the country has made little progress in the modernisation and transformation of its industrial sector. Moreover, some authors claim that, in aggregate terms, the data show that the Bolivian economy did in fact 'reprimarise', this is, the manufacturing sector did not gain weight in the economy, but rather grew smaller. In order to explain this failure, the literature points to many different types of institutional dysfunctions (Arze, 2014; Carmona and Aranda, 2014; de la Cruz, 2020). From a wider perspective, the literature also points to institutional dysfunctions as the result of the 'resource curse hypothesis', that is, the Bolivian economy, being based on internationally high prices for its primary goods exports, gave rise to structures promoting rentier, rather than developmental, behaviour (Cendero, 2014; Macías Vázquez and García-Arias, 2019).

Our research explores these issues, and specifically the role played by the state in the promotion of developmental or rentier industrial policies; however, it is done from a wide perspective including an analysis of horizontal instruments, such as financial/fiscal factors, trade and R&D. To do so, the analysis is structured into four parts. The first part offers a wide review of the literature on industrial policies in Bolivia between 2005 and 2017. The second part presents an analytical institutional framework for industrial policy, which looks at its normative, strategic, sectoral and incentive dimensions. The third part connects the effects of the emerging institutional problems associated with industrial policy with the underlying political economy dynamics. Finally, the fourth part offers a summary of the key conclusions of the research.

State of the Art

As argued by Andreoni and Chang (2019), the last decade has seen a rebirth of industrial policies, and through the growth of industrial policy analysis, what is known as the 'fourth wave of industrial policy'. The discipline has also experienced significant improvements in the methodological field. Lane (2019) offers an exhaustive literature review on the emerging new methodologies for the assessment of industrial policy. However, for the last four decades there has been little research on the industrial policies in the Latin American region (Devlin and Moguillansky, 2013), with a few exceptions (Abeles, Cimoli, and Lavarello, 2017; Cimoli et al., 2017). The reason for this absence is partly explained by the absence of industrial policies. Given this, the scarce research efforts have focused on normative approaches to invigorate both policy and academia.

One of the few exceptions to this absence of industrial policy analysis was the one derived from the Andean industrial experience that took place during the first decade of the 2000s. With the arrival of Rafael Correa in Ecuador and Evo Morales in Bolivia, both countries opted for an industrialisation plan to overcome their underdevelopment. The Ecuadorian case faced the typical problems in structural change associated with middle-income countries (Domínguez and Caria, 2016), such as income inequality (Ponce and Rob, 2012) and lack of production diversification (Hausmann and Bailey, 2010). However, as Calderón (2017) explains, the country did not manage to overcome these challenges through industrial policy, because of its limited financial

scope, absence of wide consensus between agents, lack of coordination between institutions and ineffective incentives.

In the Bolivian case, the literature has focused on two explanations for the failure of industrial policies and the inability to bring about structural change. One strand of research deals with the relationship between the resource curse, the deterioration of institutional quality and the reprimarisation of the economy. Following this line of thought, Cendero (2014) shows how the 'nationalisation' in the gas sector did not mean a systemic change in production and investment dynamics, but in the property and benefits derived. The transnational companies still dominated a large share of the gas market (almost 75 percent); since the public sector did not manage to develop successful industrial ventures to break with its primary export structure, Macías Vázquez and García-Arias (2019) focused on the financial restrictions applied by the public sector that inhibited new investments and the modernisation of the gas industry.

The other strand of research focused on the institutional problems associated with the development of successful industrial policies in each sector. Related to the gas sector, Inchauste (2010), as former manager of the industrialisation process in Yacimientos Petrolíferos Fiscales de Bolivia (YPFB, Bolivian Fiscal Oil Lands), offers a descriptive explanation of the key production bottlenecks, financial needs and public instruments needed to develop a diversified industrial structure. From a political economy perspective, the author points to a high degree of politicisation in the administration of YPFB, which slowed down modernisation initiatives, and identifies fierce opposition to industrialisation from transnational companies. Arze (2014) presents a more critical approach, showing a wide array of institutional problems such as lack of institutional coordination, legal overlapping, bureaucratic ineffectiveness, poor incentive design or rent-seeking behaviours. Carmona and Aranda (2014) offer similar conclusions related to the mining sector, characterised by an obsolete bureaucratic structure with limited capabilities for budgeted spending, especially in the execution of investment projects. Thus, industrialisation strategies in the mining sector did not lead to significant advances in the adding of value to production and exports, except in the industrial production of non-metallic minerals.

In his book on the new manufacturing sector initiatives, Arze (2014) analyses the scope, subsectors and funds created to develop these new industrial initiatives. His conclusions are not promising; as he puts it:

The most remarkable thing about the manufacturing industrialisation projects of the current government is their reduced magnitude in terms of investment, contribution to production, generation of public income, and the nature of basic transformation concentrated in the food sector without productive linkages.

In the same vein, CEDLA (2018) shows the poor performance of most public industrial enterprises. Some were closed; others produced recurrent losses and unbalanced budgets, the majority without feasibility and financial sustainability studies, and there were recurrent problems related to access to information on operations, contracts and budget transparency.

Finally, other authors offer interesting insights into the political economy surrounding the industrialisation policy. Thus, McKay (2018) explores the instrumentalisation of the industrial policies in the agro sector, and what he calls the 'agrarian extractivism' developed by the transnational companies and the Bolivian agro oligarchies, especially in the eastern region. Wanderley (2013, 2017) and Molero and Antolín (2012) examined the different social movements feeding the developmental discourse of the MAS government and its contradictions with the developmental public policies effectively

implemented. Of particular interest is the work developed by Postero (2017) on the evolution of the indigenous discourse and its associated developmental model, which went from an initial emancipatory stage to a liberal one after 2012. Monasterios, Stefanoni and Do Alto (2007) analyse the relationship between the MAS organic structure, composed of a wide array of interest and lobby groups (unions, indigenous movements, working-class parties and others) and a rentier configuration of certain public policies created to satisfy their demands in terms of access to institutional positions, budgets and public structures.

The literature therefore offers a wide consensus on the absence of productive structural change associated with the industrial policies deployed over this long decade. Examining the causes of this industrial ineffectiveness, two main explanations arise. On the one hand, there are those which associate it with the resource curse, and the inability of the government to prevent the economy from concentrating on the gas sector, and the rentier behaviours derived from it. On the other hand, there are authors who identify different kinds of institutional problems, which are largely associated with a history of institutional dysfunctionalism in Bolivia. However, none of these strands of research offer a systematic approach to an institutional analysis of industrial policy, that is, by connecting the whole range of institutional dimensions and levels of industrial policy: strategies, goals, instruments, public structures and policy incentives (relating to trade, fiscal matters or R + D). Our aim with this research is to bring a systematic and wider approach to the institutional analysis of industrial policy, to shed some light on the specific sectoral institutional failures, not addressed by current explanations.

Industrial Policy and Institutional Setting in Bolivia

One of the main lessons derived from the third wave of industrial policy studies, the one linked to the successful East Asian developmental states, was that the quality of the institutional setting, in which industrial policy is developed, is a key factor for its success (Johnson, 1982; Amsden, 1989; Wade, 1990; Evans, 1995). Some of the features, which differentiate a successful institutional setting from a failed one, are (de la Cruz, 2014, 2020):

(i) An institutional setting oriented to economic development as a whole.
(ii) Some kind of transversal agency with a mandate to intervene in the whole range of industrial policies.
(iii) A complex industrial incentives structure focused on productivity and enhancement of international competitiveness.
(iv) A competent, meritocratic and autonomous economic bureaucracy.
(v) The establishment of strategic alliances with industrial and private banking conglomerates.
(vi) Redistributive policies to improve human capital.

In contrast, the Latin American region has historically been a paradigmatic example of how a dysfunctional institutional setting can lead to the failure of a well-intentioned industrial policy. As shown by Gereffi and Donald (1990), industrialisation through the import substitution approach (*industrialización por sustitución de importaciones*), developed by the Latin American countries in the second half of the twentieth century, exhibited an excessive interventionism through price targeting and trade protectionism,

funding whole sectors and picking winners without any conditionalities linked to productivity goals, among other issues (Stiglitz, 1996). In a completely different way, the Asian developmental states practised a more nuanced approach, characterised by flexibility, selectivity, coherence and promotion of industrial development (Jenkins, 1991).

The Bolivian case exhibits some of these virtues and sins. To analyse in a structured manner the industrialisation proposal during Morales's time in office, we look at three key aspects related to industrial policy and its institutional setting. First, we address the legal and institutional structure deployed by the government and thus the strategic approach guiding the industrial policy and its implementation. Second, we deal with the sectoral policies, differentiating two key sectors, one related to strategic resources (gas, lithium, etc.) and the other to the new manufacturing sectors (textiles, food, beverages, etc.). Third, we finish the analysis with an assessment of the industrial incentive structure and the underlying strategies guiding it, as well as the bottlenecks that prevented its implementation.

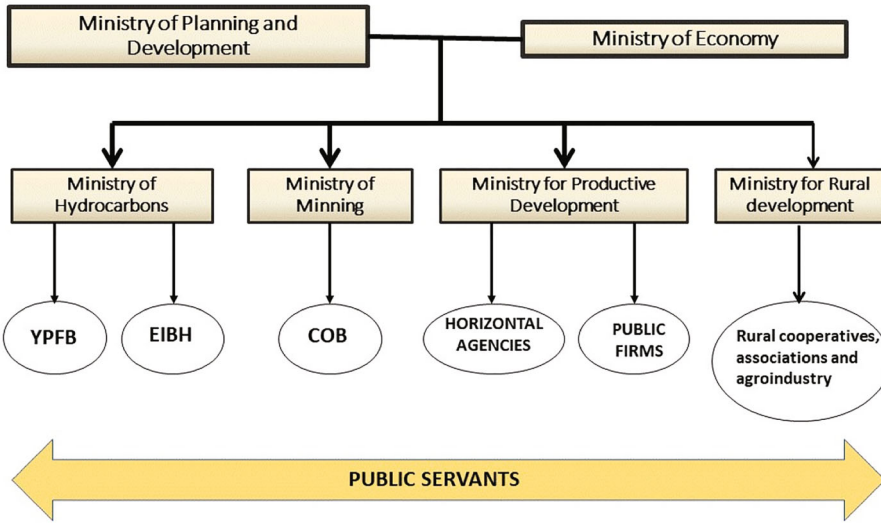
In conclusion, the institutionalist literature linked to industrial policies has shown the limits of this type of analysis, which is usually restricted to institutional settings. As Cummings (1999) points out, this approach is isolated from other key historical (social, cultural and/or economic) factors that offer a deeper contextualisation and a more flexible interpretation of results, thus avoiding deterministic interpretations and one-size-fits-all recommendations. In this sense, the results of this work should be taken with caution and understood within a broader framework of historical determinants, which have been addressed only tangentially.

Industrial Strategy, Legal Framework and Institutional Configuration

For a proper understanding of the industrial strategy deployed in Bolivia, one should first understand that Morales's policies went beyond the industrial spectrum, even beyond the transformation of the developmental model. Over fifteen years, Bolivia experienced an integral revolution at all levels: political, economic, social and cultural. Considering this political context, there are two legal decisions that affected transversally the overall political and economic landscape from 2006 until 2019, and these are closely linked to the industrial policies implemented afterwards. First, the sanction of the New Political Constitution ushered in a Copernican shift in the role of the state in the property rights and managing capacities of the economy. The legal text established the supremacy of the State in the economy and attributed competencies and functions oriented to a high degree of economic and social public intervention. Within this new framework, the government approved a series of decrees rearranging the property and exploitation of strategic natural resources, including the contracts between the government and multinational firms operating in the country. These legal modifications implied a redefinition of these contracts, which allowed the government to multiply exponentially the public revenues derived from a boom period of high commodity prices. These extraordinary fiscal resources would fund the new industrial strategy.

The key planning documents for the new industrial policy were the 'National Development Plan (2006–2011)' (Ministerio de Planificación y Desarrollo, 2005) and the 'Plan for Economic and Social Development (2016–2020)' (Ministerio de Planificación y Desarrollo, 2015). These documents established the overall industrial strategy, prioritising sectors, defining instruments, and assigning funds and human resources. In addition, the government approved another series of documents defining the priorities and instruments assigned at sectoral and territorial levels. This compendium of strategies was the

Figure 1. Industrial Policy Governance Structure.



Source: authors via ministerial sources.

legal body that structured and enhanced the industrial policies in Bolivia. These documents also established a certain institutional structure charged with industrial duties.

As Figure 1 shows, the institutional structure defined by the government had two leading heads, the Ministry of Planning and the Ministry of Economy and Finance, which were responsible for the coordination of the rest of the institutions and overall strategic decision-making. Below these ministries were the sectoral ministries, mainly the Ministries of Hydrocarbons, Mining, Productive development and Rural Development. Each of these ministries had their executive public enterprises and agencies. In relation to the former, the most prominent were YPFB, responsible for gas exploitation and industrialisation, together with Empresa Bolivia de Industrialisación de Hidrocarburos (EMIHB, the Bolivian Company for Hydrocarbon Industrialisation), and the COMIBOL (Corporación Minera de Bolivia, Bolivian Mining Corporation), responsible for the industrialisation of minerals. At the end of 2018, Bolivia had 56 public firms ranging from construction, textiles, food and beverages, among others. Nonetheless, YPFB comprised two thirds of the public budget and generated 90 percent of the utilities (CEDLA, 2018).

Finally, the Ministry for Productive Development created an extended network of public agencies responsible for a wide range of horizontal duties. A few outstanding examples were Pro-BOLIVIA, responsible for enhancement of productivity and diversification, the Servicio Nacional de Propiedad Intelectual (SENAPI, Intellectual Property National Service), in charge of industrial quality control, and Servicio de Desarrollo de las Empresas Públicas Productivas (SEDEM, Service for the Development of Productive Public Companies), responsible for the creation and management of new industrial public ventures (de la Cruz, 2020). Public servants executed the majority of the activity performed by these firms and agencies, and thus their role was key to the successful, or unsuccessful, implementation of the industrial policies, as we will see later.

Sectoral Policies Composition: Strategic Resources and New Manufacturing Sectors

The first National Plan for Development 2006–2010 defined the Bolivian industrial strategy in relation to three key sectors. The first sector, called the 'strategic sectors for surplus generation' (*sectores estratégicos generadores de excedentes*) comprised all raw material sectors (hydrocarbons, minerals, electric and all-natural resources). The second encompassed 'sectors generating rent and employment' (agro, manufacturing, tourism and housing). The third sector was labelled 'horizontal sectors for infrastructure and production support', which included transport, communications, finance and innovation. The underlying logic was to enhance and industrialise the strategic sectors to fund the other two and thus develop new industrial branches.

In the second National Development Plan (2016–2020), the government refined the strategy as a result of past experience and new business expectations. On the one hand, they defined five *complejos industriales estratégicos* (strategic industrial complexes): the gas complex oriented to the industrialisation of ammonia, urea, liquid gas, natural gas and petrochemicals; the steel complex to develop the whole range of industrial derivatives from steel; the lithium complex focused on battery developments and the car industry; the metallurgical complex, for the smelting and industrialisation of minerals; finally, the energy complex, focused on the hydrocarbon and renewable energy industries. On the other hand, the new manufacturing sector was developed through a set of production and processing plants, transformation and storage centres and technological centres for productive innovation, called *complejos productivos territoriales* (territorial productive complexes). These complexes produced sweeteners, textiles, wood, software, Amazonian products, grains, potatoes, dairy products, hides, meats, coca, fruit and vegetables, among others.

After nationalisation, the control of the gas sector and the industrialisation process were placed in the hands of the public companies YPFB and Empresa Bolivia de Industrialización de Hidrocarburos (EBIH, Bolivian Company for Hydrocarbon Industrialisation). YPFB's industrialisation strategy focused on two fronts: on the one hand, the Industrial Gas Complexes Programme and, on the other hand, the Programme to Increase the Capacity for Refining of Liquid Fuels. These two programmes were broken down into a series of specific industrialisation projects, such as the development of liquid separation plants and the production of ammonia, urea, ammonium nitrate, ethanolamines, polyethylene and polypropylene (Arze, 2014). In 2015, the liquid separating plant began its production, which allowed the generation of liquefied petroleum gas (LPG), gasoline and isopentane. In 2017, the ammonia and urea plants also initiated operations. To date, these are the two main value-added contributions delivered in the industrialisation of the gas sector. The other industrial chains are still in the development phase. The 2 billion dollar plan designed by EBIH for the development of petrochemical complexes such as methanol, olefins and aromatics was finally invested in residual projects related to materials and equipment development with a limited contribution to structural advances in the overall gas industrialisation.

In the mining sector, after a few nationalisations, control rested in four multinationals and the public enterprise Corporación Minera de Bolivia (COMIBOL, Bolivia Mining Corporation) (de la Cruz, 2020: 18). The mining industrialisation strategy revolved around three groups of production chains: the metallurgical-collecting chains for export, the metalworking industry poles, and chains with a vocation for industrial linkages (Carmona and Aranda, 2014). However, despite significant public budget resources (around

half a billion dollars a year), COMIBOL showed a significant inability to execute the budget, especially in the area of investment, falling below 50 percent in the execution of investment projects annually. Regarding production volumes, these shot up in 2009 but showed a reduction in basic industrialisation (metal mineral smelting) from 8.7 to 3.5 percent, while the export of minerals as concentrates increased from 86 to 93 percent. In bismuth, tin and antimony alone, more than 50 percent of its production was destined for local smelting, while in the case of gold, silver, copper, lead, zinc, iron and tungsten, the percentage was below 50 percent (Carmona and Aranda, 2014).

The most outstanding achievements in terms of industrialisation and innovation refer to lithium and its potential industrial applications. However, these were still in the making in 2019. In 2018, the Potassium Chloride Industrial Plant began to operate and an agreement was signed between Yacimientos de Litio Bolivianos (YLB, Bolivian Lithium Deposits) (51 percent of the shares) and the German company ACISA (49 percent of the shares) to develop industrial plants for lithium hydroxide, magnesium hydroxide, cathode materials and lithium-ion batteries. Had these plants become operational, Bolivia would have been able to industrialise the entire lithium production chain, which, presumably, would have had a substantial impact on its capacity to export high-tech products. However, to date, this has not been possible.

Finally, manufacturing sector progress was very limited. The main institution responsible for its development was the Ministry of Productive Development, which, through a strategic plan, established the creation of a wide series of agencies and public companies of a transversal and sectoral nature. The results of these ventures were mixed, some of them being profitable, others deficient, and others still in the process of development (Arze, 2014; Ministerio de Desarrollo Productivo y Económico, 2018). Notwithstanding this, 95 percent of tax revenues continued to derive from companies in strategic sectors, while manufacturing sectors had only a residual contribution. As Arze (2014) pointed out,

The most remarkable thing about the current government's manufacturing industrialisation projects is their reduced magnitude in terms of investment, contribution to production, generation of public income and the nature of basic transformation concentrated in the food sector without any industrial linkages.

Industrial Incentives: Range and Scope

Industrial incentives are the cornerstone of a successful industrial strategy, as they signal the rewards for certain types of behaviour, in this case the enhancement of productivity and competitiveness. Following Wade's (1990) analytical framework used to study the case of Taiwan, we analyse four key industrial incentives for the Bolivian case:

- *Financial Incentives*, which can adopt the form of grants or blended lending in order to boost riskier investments, adopt expensive technology and enter high-risk markets, thereby reducing financial constraints and information externalities.
- *Fiscal Incentives*, which reduce tax pressure on certain products and sectors, and thus promote investments and reduce risk aversion.
- *Trade Incentives*, which take the form of protection barriers (tariffs, quotas, duties, etc.) in order to protect the infant industries from international competitors. Ideally, as these new ventures gain industrial maturity protection barriers will become obsolete.

- *R&D Incentives*, or in a broader sense, human capital incentives, which focus on the promotion of knowledge and technological capacity generation in those sectors targeted by the industrial strategy.

Financial Incentives. The government developed a vast array of funding mechanisms to deploy resources into industrial initiatives. For instance, they designed three different funding instruments to enhance agricultural productivity, such as the Banco de Desarrollo Productivo (BDP, Productive Development Bank). Nevertheless, the most prominent financial instrument was the Fondo para la Revolución Industrial y Productiva. (FRIP, Fund for industrial and productive revolution) with 1,200 million dollars of fresh capital. This instrument, governed by the ministries of Economy and Planning, had neither sectoral priorities nor selecting criteria linked to technological and 'added value' promotion, which finally led to the concession of funding to a plethora of unconnected projects. On the blended lending side, the government lent more than 5 billion dollars to the major public enterprises (YPFB,, YLB, among others) with no conditionalities attached linked to either productivity or technological performance. In summary, funding instruments were only targeted at public ventures and there was no collaboration with the private sector. The instruments were not designed to promote technological adoption or the development of new products or sectors, but rather to sustain public businesses financially.

Fiscal Incentives. In 2014, the government approved the 'Investments Law' which established the adoption and development of general fiscal incentives for those ventures oriented to government priorities and specific fiscal incentives for those ventures oriented to the transformation of the productive matrix. However, these issues never took off. In fact, what were effectively implemented were three fiscal measures for industrial promotion: First, manufacturing export promotion through 'value added tax' (VAT) reimbursement (gas and petroleum exports did not apply for this reimbursement); second, a regional tax exemption for Oruro and Potosí, which included VAT and import tariffs for industrial machinery; third, the creation of industrial free zones, which included fourteen free zones, of which nine were commercial and five industrial. In the case of the latter, fiscal incentives were given through specific tariff preferences. Hence, we do not identify a strategic approach to fiscal incentives aimed at promoting technological adoption or the development of new products or sectors; nor do we find any strategic instruments such as deductions for investment in R&D or tax credits for certain technological products.

Trade Incentives. Until 2012, Bolivia maintained a basic tariff structure for imports (0, 5, 10, 15 and 20 percent). In 2012, two new aliquots of 30 and 40 percent were approved, both aimed at protecting the main developing industries in textile and food (leather, doors, windows, jewellery, garments and clothing accessories). These new tariffs reached the limits set by the World Trade Organization, which range between 40 and 45 percent for the entire range of finished products. In addition, the country had a special hydrocarbon import tax (IEH) and a specific consumption tax (ICE), designed to promote and protect the national hydrocarbon industry. In addition, imports of certain food products were reduced to 0 percent within the framework of the Agricultural Community Productive Revolution Law, which sought to facilitate the industrialisation and manufacturing processes of the sector through cheap inputs and agricultural machinery. There was also a tariff reduction from 10 to 5 percent for equipment imports, computer accessories and household appliances to improve and facilitate education and access to the mass use of electronic devices. The regulations for the 'Issuance of Prior Import Authorisations' were also approved, with the aim of limiting competitive exports in

leather, textiles and furniture, and thereby protecting national industries. Finally, some initiatives were developed to promote public purchases, aiming to encourage sales from national industries.

These tariff measures, of a clearly protectionist nature, were aimed at protecting the hydrocarbon industries, as well as the manufacturing firms promoted by the State and certain pressure groups, mainly concentrated in the agricultural, textile and food sectors. The measures were congruent with the objectives. Both the GDP data and the exports and imports show the growing weight of these sectors in GDP and exports, as well as the reduction in imports from their international competitors. However, although the policy was successful, it meant reinforcing and supporting sectors that exported raw materials or low value-added manufacturing goods, without associated technology or productive linkages with the rest of the economy. Nor was a strategy for the removal of these tariff barriers created to allow a progressive entry into international competition. In summary, the trade incentive strategy shows typical features of import substitution protectionism, especially in those industries linked to strategic sectors and the new public industrial ventures, but with little willingness to match these protections with the productivity levels of the new public enterprises.

R&D Incentives. The most notable advances in technological innovation were concentrated in the strategic sectors. YPFB, EBIH, COMIBOL and YLB had specific R&D departments that worked on technical developments to improve efficiency and productivity. In the manufacturing field, some efforts were made, especially in the agricultural field, such as the National Institute for Agricultural and Forestry Innovation (INAIF), which articulated the National System for Agricultural and Forestry Innovation (SNIAF), and collaborated with civil society institutions, such as PROINPA, for the promotion and research of Andean products. In the private sphere, the Bolivian Business Innovation Survey shows an average aggregate investment in R&D of 40 million dollars per year by Bolivian private companies, mainly concentrated in the acquisition of capital goods. The main source of financing for investments in innovation were the companies' own resources, which represented 73 percent of the funds; the second most utilised source was commercial banking, with 23 percent, and to a lesser extent, the public sector (0.1 percent) (Foronda, Beverinotti, and Suaznabár, 2018). In short, private companies had scarce public resources to enhance their R&D, through either financial or fiscal means.

However, despite the lack of statistical information, different reports point to a zero increase in public economic and human resources allocated to R&D, which, moreover, had started from a very low level. Estimates show that approximately 0.16 percent of GDP was invested in R&D compared to the regional average of 0.65 percent, and an average of 2.4 percent in OECD countries (RICYT, 2009). As Wanderley and Peres-Cajías (2018) point out, these scarce levels of investment translated into only a limited number of patents and scientific publications by Bolivian innovative agents and, correspondingly, into technology transfers with industrial applications to companies.

Resource Curse or Institutional Failure?

As we have seen before, on the one hand, a successful industrial policy rests heavily on an effective state able to create the conditions, incentives and instruments to enhance modernisation of the economic structure and spur productivity within the productive sector. On the other hand, countries heavily dependent on internationally high prices for

their commodity exports run the risk of falling into the dangerous dynamic of renting behaviour, thus thwarting the possibility of a successful industrial strategy.

Both data and literature point to the resource curse hypothesis as an explanation for the inability of Bolivian public interventions to achieve the desired structural changes. Building on the results derived from the previous analysis, we suggest that in addition to the resource curse effect on the political economy surrounding industrial policies, there has also been a genuine institutional design failure of a historical nature. Thus, the failure of Bolivian industrial policies may have been the result of a combination of the inhibitor effect of the resource curse, together with a historical problem in the design and implementation of the institutional framework for industrialisation in Bolivia. Further, we suggest that the resource curse effect was concentrated in the new manufacturing sectors, while the failure in institutional design was more associated with the industrialisation process of the strategic sectors, the former being much more harmful than the latter.

In relation to the new manufacturing sector, first, it gave a poor performance in terms of productivity and profitability. None of the entities have succeeded in the creation of new manufactured products or developed new industrial sectors or subsectors. Moreover, many of them either went bankrupt or were in deficit (Ministerio de Desarrollo Productivo y Económico, 2018). Furthermore, there was not a clear strategy that defined sectoral priorities, upgrade goals in the product ladder, or the pursuit of industrial linkages. As a result, the funds went to a wide variety of projects, ranging from software, to *palmito*, to clothes, with no evident goals to be met in terms of industrial upgrades (Arze, 2014). Second, the new manufacturing sector received the financial incentives in the form of grants, while the strategic sector received the majority of credits. These grants did not include any kind of conditionality for their disbursement in terms of profitability, technological adoption or value-added development. Third, the majority of the fiscal, and especially trade, incentives favoured the new manufacturing sectors: the 30 percent and 40 percent new aliquots aimed clearly at preventing international competition in the textile and agricultural sectors with, once again, no conditionalities attached to industrial and technological performance or a withdrawal strategy for the protectionist measures.

To sum up, the new manufacturing sectors received considerable fiscal resources to achieve a certain level of value-added upgrade in the industrial ladders of textiles and agriculture. However, the new ventures did not achieve any relevant industrial accomplishments and the public incentives did not include any kind of requirements to be met to maintain the disbursement of more public resources. This evidently tends to promote rent-seeking behaviour, since 'money for nothing' seems tempting. In addition, from a political economy perspective, it should be noted that there was a strong connection between the social movements which supported Evo Morales and the MAS party, and many of these new ventures (Wanderley, 2017). While the government faced important confrontations with the oligarchs from the east of Bolivia, who owned the principal agribusinesses in the country, they only achieved some kind of social peace through the industrial incentives mentioned above (McKay, 2018). In this context, we cannot disregard the possibility of some kind of fiscal resource instrumentalisation assigned to the new manufacturing sectors as a tool for political bargaining with party supporters, lobbyists and opponents.

In relation to the strategic sectors, our results show that the gas sector made some improvements in terms of industrialisation with ammonia and urea, LPG, gasoline and isopetane plants. Despite delays, other new lines of gas complex industrialisation were

also making progress. The mining sector did not deliver any relevant industrial improvements, but important efforts were made in the lithium industry, providing optimistic expectations for the coming years. In terms of public incentives, mining and gas took the majority of the credit lines offered by the Bolivian Central Bank and the Bolivian Treasury with no conditionalities attached in terms of productivity or profitability. The fiscal and trade incentives offered an optimal equilibrium between protecting the hydrocarbon industry from international competition (e.g. IEH tax) and limitations to sectoral overheating (e.g. excluded from VAT exemption). Finally, the most promising progress made in terms of R&D was developed in the R&D departments of the public firms such as YPFB and YLB.

In conclusion, the strategic sectors presented a more balanced approach to industry promotion, and their underperformance seems to have been the result of classic institutional failure rather than a resource curse effect. As the literature has evidenced, the lack of progress in the mining sector was due to typical bureaucratic limitations and lack of competencies, such as the lack of coordination between authorities, legal overlapping and bureaucratic ineffectiveness (Carmona and Aranda, 2014). The same applies to the gas sector, where institutional stress seemed to be a response largely to a lack of technical capabilities rather than a dysfunctional incentives structure. A few international comparisons of institutional quality support this argument. Velarde, Lafuente and Sanginés (2014) show that Bolivia was the only country that fell back in the whole of their Index on Civil Service, especially in the areas of merit, efficiency and functional capacity. The World Bank's Governance Indicators (2020) would point in the same direction.

It should be acknowledged that it is difficult to establish a clear relationship between the determinants of institutional failure. It is quite possible that both causes (resource curse and lack of coordination and capabilities) were intertwined and produced an institutional vicious circle. What seems to be clearer is that the Bolivian State did not build a powerful and effective developmental state, in line with those successful in East Asia. On the contrary, its performance shows serious problems of institutional coordination, a lack of ambitious alliances with the private sector, eroded institutions, public servants highly dependent on political arrangements, and an incentive structure not sufficiently oriented to enhance productivity, technological adoption and international competitiveness.

Conclusions

This research deals with a failure of public interventionism (via industrial policy) in achieving structural change in Bolivia during Evo Morales's administrations (2006–2019). We have offered a systemic approach to industrial policy analysis which combines the whole range of institutional policy levels, dimensions and instruments. The normative base for industrial policy was founded on the new constitution and the funding derived from the decrees of nationalisation of the gas sector. Specifically, it was put into operation through the National Plans for Development and an extensive network of Ministries, public enterprises and public agencies. The strategy was intended to enhance industrialisation in the strategic sectors (gas and minerals) to boost the new manufacturing sectors (textiles, agriculture, beverages, etc.). This strategy defined the five key industrial complexes of *gas*, *steel*, *lithium*, *metallurgy*, and *energy*, and the new manufacturing sectors opened to a wide range of new ventures such as sweeteners,

textiles, wood, software, Amazonian products, grains, potatoes, dairy products, hides, meats, coca, fruit and vegetables, among others.

The gas sector made a few improvements in the adding of value to its 'productive ladder' with the setting up of two plants producing ammonia, urea, LPG, gasoline and isopetane. The other expected industrial developments suffered delays. The mining sector did not offer any relevant achievements but offered promising progress in lithium industrialisation with potential breakthroughs in the coming years. The new manufacturing sectors were very limited in their industrialisation horizons with scarce value adding and limited industrial linkages. Many of these ventures went bankrupt or remained unprofitable.

The incentive structure designed by the government produced a whole range of new instruments. Financial incentives in the form of grants were channelled to the new manufacturing sectors and credit lines to the strategic sectors. However, none of these instruments had conditionalities attached in terms of profitability, productivity enhancement or technological adoption. Fiscal incentives were very limited and only targeted light industrial sectors. Trade incentives were conceived to protect the new manufacturing sectors, but with no strategy for mitigating detrimental withdrawal, applying similar tactics to those of the import substitution period. R&D incentives were also very limited in their scope and volume, and progress was only made in the departments of R&D of the public firms, such as YPFB and YLB.

In conclusion, the industrial policy of Bolivia performed poorly in terms of structural change. However, we did identify differences of institutional failure between the new manufacturing sector and the strategic sectors. On the one hand, while the incentives for the strategic sectors were better designed to avoid an overheating in the sector, problems arose around coordination, bureaucracy and technical expertise. Such institutional problems have beset Bolivia decades. On the other hand, the incentives for the manufacturing sector seemed to be poorly designed and fed a pattern more associated with rent-seeking behaviour. These different kinds of institutional problems associated with each sector will need different kinds of solutions to achieve successful industrial policies in the future.

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