

## The triangle of neo-developmentalism in Ecuador

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### **Abstract:**

The neo-developmental thesis basically rests upon a process of endogenous socioeconomic transformation, driven by public policy. To achieve this result, three joint strategies are required: *i*) promote a national project; *ii*) build an industrial policy, and *iii*) solidify a national innovation system. This article introduces the case of Ecuador as an example to illustrate the topic. Starting in 2007, signs of neo-developmental features have gradually begun to appear in the current administration's policies. Through a theoretical and empirical approach, this paper demonstrates that the country has consistently sought to bring about socioeconomic metamorphosis towards neo-developmentalism; however, since 2014, these attempts have taken place under increasingly complex conditions.

**Key Words:** Neo-developmentalism, public policy, national project, industrial policy, national innovation system.

Date received: June 9, 2015.

Date accepted: November 23, 2015.

## Introduction

Latin America has come to offer a useful scenario to analyze neo-developmentalism for various reasons. First, the region has experienced a series of uprisings in recent years that have led to the downfall of neoliberal administrations (namely, in Argentina, Bolivia, Brazil, and Ecuador).<sup>1</sup> Second, the new (progressive) governments have secured a novel form of state activism. The neo-developmental thesis is basically centered on discussion of the latter point, underpinned by the center-left political axis led by Brazil and Argentina, as the administrations in these two countries have bet on industrialism over financial speculation and progressivism over the oligarchical right.<sup>2</sup>

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<sup>1</sup> In our opinion, the case of the Bolivarian Republic of Venezuela is somewhat different, and as such, outside the scope of this article.

<sup>2</sup> Undoubtedly, this pivot towards neo-developmentalism—at the end of 2015—is facing a test of viability. With an economy submerged in a deep recession, the Brazilian government responded by adopting austerity measures, while the Argentines have abandoned the anti-neoliberal policies implemented post-2003 as a result of November's presidential elections. The IMF reported that Ecuador's GDP fell 0.6% in 2015. The country suffered the double

In this sense, the prefix “neo” essentially means that these processes are not purely “developmentalist,” because unlike the developmentalism of the pioneers of the ECLAC development theory from the 1950s to 1970s, this new approach promotes the articulation of three strategies: *i*) fostering a national project; *ii*) building an industrial policy; and *iii*) solidifying a national innovation system. In this paper, these three interdependent aspects are referred to as the “triangle of neo-developmentalism,” which is currently the mechanism used to establish and promote an endogenous development strategy.

The case of Ecuador is set forth as a particularly illustrative example of the topic; starting in 2007, government policy has exhibited progressively stronger signs of neo-developmentalism. Drawing on a historical contextual approach, it becomes clear that the country is trying to progressively complete a socioeconomic metamorphosis to neo-developmentalism, but in conditions different than those seen in the cases of Argentina and Brazil, because its economic base continues to be defined by the primary export model.

With that said, the principal hypothesis of this paper is that the PAIS Alliance has managed to formulate and back a “Proyecto País” (Country Project) that heralded the transformation of the productive system, evident not only in the shift towards neo-developmentalism but also, in theoretical terms, going beyond the theses set forth by the Economic Commission for Latin America and the Caribbean (ECLAC) under the guidance of Raúl Prebisch. This “Country Project” is even more ambitious in terms of scope than what Celso Furtado proposed in 1963 for Brazil (Dosman, 2008; Furtado, 1963).

Aiming to prove this hypothesis, this paper is divided into the following four sections: *i*) characterization of the attempt to revive structuralism in Ecuador; *ii*) the planning of the transformation of the productive matrix as the definition of a national project; *iii*) progress made in building an industrial policy; *iv*) the R&D+I policy (science research, technology development, and innovation) and the launch of a National Innovation System (NIS).

## **Efforts to revive structuralism in Ecuador**

In order to embark on the neo-developmental path, it is necessary to go beyond the thinking of the ECLAC by way of three strategies in conjunction: *i*) a national project; *ii*) an industrial policy; *iii*) a national innovation system.

In regard to the first point, what does the “Country Project” mean? In order to respond to this question, it first must be made clear that it entails a planning system to promote a developmentalist initiative oriented towards structural transformation and that, in addition, it must be in accordance with the country’s history and background. The “Country Project” defines priorities for productive and social sectors pursuant to the skills and capacities of the society in a context of *deeply-rooted horizontal relationships between the private sector, the public sector, grassroots communities, and other civil society organizations.*

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blow of plummeting oil prices, like any other single-export country (“black gold” accounted for nearly 60% of its exports prior to the oil market collapse). At the same time in 2015, the rising value of the national currency—which has been the U.S. dollar since 2000—has made imports cheap and pushed up export prices.

## The "country project" in Ecuador

Ecuador's "Country Project" emerged with the 2008 Constitution. The ideas of the Citizen Revolution proposed by the PAIS Alliance laid out, initially, the future of a new "Country Project," which at that time was the policy instrument bolstering a grassroots proposal that had been in the pipeline for quite some time. The proposal was grounded in the resistance and confrontations of the indigenous movement, farmers' collectives and associations, and groups of activists, as well as the middle class and intellectuals who identified with the left (Ramírez Gallegos, 2008).

The principal guidelines of Ecuador's "Country Project" show that the Ecuadorian government is focused on implementing eight fundamental policies, in order "to achieve sustainable and sovereign development" and "mobilize the income generated by natural resources to develop high added-value sectors" (Correa, 2014; SENPLADES, 2013).

According to official documents, it is possible to assert that the PAIS Alliance government has managed to formulate and back a "Country Project" centered on transforming the productive system. However, it must also be noted that the strides forward made to date have not yet proved sufficient to cement this "Country Project" and that, currently, there are more questions than answers about the completeness and integration of the three key pillars of the "triangle of neo-developmentalism," as will be analyzed below.

Table 1 displays some macroeconomic performance indicators and changes in socioeconomic conditions, taking as a benchmark the year in which the neo-developmental administration was elected in 2006. On average, in 2007-2013, annual real Gross Domestic Product (GDP) growth was 4.03% (Banco Mundial, 2015a). We must recall that in the course of those years, the global financial crisis broke out in 2008. In order to view this in relative terms, average annual real GDP growth over the 12 neoliberal years of 1990-2001 (before the commodities boom in 2002) was only 2.37% (Banco Mundial, 2015a). There has also been significant improvement in investment rates and an encouraging increase in industrial added value (see Rows 3 and 4). Likewise, the data show a balance between national economic growth and export growth (see Row 10). In other words, this is not a case in which GDP grew solely due to exogenous forces, although<sup>3</sup> it cannot be denied that the terms of exchange have evolved rather favorably since 2008, as can be observed in the final row of Table 1 (Banco Mundial, 2015c). The poverty rate (Row 5 in Table 1) amounted to 54.9% in 2001 and 33.6% in 2014 (CEPALSTAT, 2015). Perhaps most striking of the figures registered in Table 1 is the decrease in the portion of Total National Income earned by the top 10% (see Row 6), although we must recall that a very high portion of income in this level is not included in household family income surveys. In other words, practically all of the hidden income at this level is derived from profits, interest, and dividends. The improvement in the meager percentage of income earned by the poorest 20% of the population (see Row 4) was significant—a 28% jump—but surveys still report very high levels of inequality. However, with a Gini index of 56.4 in 2000, income distribution has certainly evolved to become less unequal (see Row 8), reaching a low in 2011 with a Gini index of 46.2 (Banco

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<sup>3</sup> This condition changed radically over 2014 and 2015 as oil prices plummeted. The value of first quarter exports in 2015 was 26.3% lower than it was in the first quarter of 2014, according to IMF data.

Mundial, 2015c), although it subsequently rose again. Undoubtedly, one of the central reasons why the Gini index improved was that the minimum wage was raised dramatically, as shown in Row 9 (CEPALSTAT, 2015).

**Table 1.** Ecuador: Socioeconomic Indicators, 2006-2014

	Indicators	2006	2009	2011	2014
1	Gross national income per capita (amounts in USD, current prices)	\$3,110	\$4,070	\$4,880	\$6,276
2	Annual GDP growth rate (%)	4.4	0.6	7.9	3.8
3	Investment (% of GDP)	22.5	25.6	28.1	28.1
4	Industry, added value (% of GDP)	35.6	34.3	39.0	38.0
5	Poverty (% of the population)	37.6	35.0	28.6	33.6*
6	% of total income earned by the top 10%	42.6	38.2	34.8	37.2*
7	% of total income earned by the bottom 20%	3.6	4.0	4.4	4.6*
8	Gini index	53.2	49.3	46.2	48.0*
9	Minimum wage (2000=100)	130.0	152.0	170.2	196.1
10	Exports (% of GDP)	30.0	25.0	31.0	28.4
11	Terms of exchange index (2000=100)	110.0	110.0	133.0	131.7

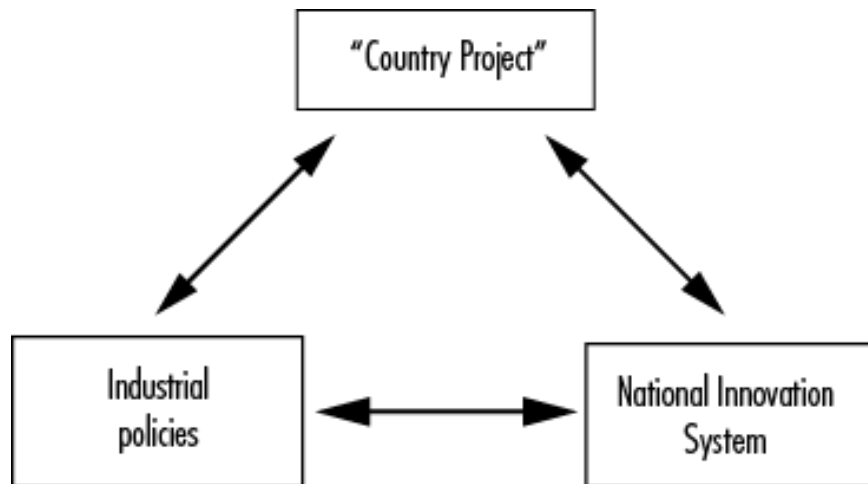
**Source:** World Bank (2015a, 2015b, 2015c, 2015e) and CEPALSTAT, 2013, 2015.

The hypothesis in this paper is that advancing towards the solidification of the “Country Project” is a necessary but insufficient condition in order to wage the full struggle to establish a neo-developmental policy. At the same time, Ecuador must set up an industrial policy and build a national innovation system; the three elements are interdependent and codependent, which is why we understand them as the “development triangle.” At the top of Figure 1 (below) is the “Country Project” as the common thread, and at the base are, on one side, the industrial policy, and on the other, the national innovation system, as complementary forces.

In terms of industrial policy, the operational model to articulate an industrial policy is not that of a meddling autonomous government but rather that of fostering “strategic collaboration between the private sector and the government” (Rodrik, 2004: 4).

Although this paper uses the term “industrial,” what the concept encompasses for the purposes of this article is not limited merely to the manufacturing or assembly industries or heavy industry, but rather to a range of strategic and essential activities such as: *i*) the extractive industries with an emphasis on national reinsertion in value chains; *ii*) agroindustrial activities tied to the national innovation system; and *iii*) service sector activities, specifically, ecotourism, with initial programs to prevent tourist enclaves dominated by transnational capital and big national capital.

**Source:** Created by the authors, 2015.



**Figure 1.** The Triangle of Neo-Developmentalism

## Transforming the productive matrix in Ecuador

Starting in 2009 with the *National Plan for Good Living 2009-2013* (SENPLADES), the transformation of the so-called “productive matrix” was defined as a new way for Ecuador to produce and consume. The idea of making the “productive matrix” the cornerstone of national development was deepened in the new *National Development Plan for Good Living 2013-2017*, which defines it as “overcoming the relationships of dependence generated by the primary export model based on the accumulation of knowledge about natural resources” (SENPLADES, 2013: 62).

The Ministry of Industries and Productivity is the public institution charged with defining and executing the development policies for the industrial and crafts productive sectors. As in the application of industrial policies in other countries, this transformation would be implemented for certain “strategic” activities; in this case:

Productive diversification based on the development of strategic industries—refining, shipbuilding, petrochemicals, metallurgy (copper) and steel—and the establishment of new productive activities—mariculture, biofuels, wood forestry products—to expand the offer of Ecuadorian products and reduce dependency (SENPLADES, 2012: 11).<sup>4</sup>

The transition to an import substitution industrialization (ISI) model did not look the same throughout all of Latin America. In the case of Brazil or Mexico, industrialization took off after the First World War. Ecuador took its first steps in the 1960s, following the nationalist leanings of the developmentalist military members. The 1967 Constitution bolstered the developmentalist spirit by stipulating that the State was the principal driving economic force

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<sup>4</sup> There are fourteen priority sectors: tourism; fresh and processed foods; renewable energy; pharmaceutical and chemical products; biotechnology; biochemicals and biomedicine; environmental services; the metal-mechanics industry; technology; hardware and software; plastics and synthetic rubber; manufactures; footwear and apparel; vehicles, automobiles, bodywork, and parts; transportation and logistics; construction.

in Ecuador. It could be said that the first stage of ISI in Ecuador was relatively “painless,” between 1965 and 1976, although the primary export model resurged again in 1972 with the oil boom, as oil came to account for 47% of total exports in the trade balance (Larrea, 2006, 1987). The state was entitled to exploit certain economic activities to supplement, foster, and complement private initiatives, and as such, took on the role of promoter and manager of the economy (Paz and Miño, 2007). In this period, the *General Development Plan 1964-1973* was implemented to transform the productive structure, diversify production, and expand the domestic market. The government also undertook profound measures to transform Ecuadorian society in the context of the banana crisis and its effects on the exhaustion of the agroexport model; however, these policies were not enough to create an *endogenous base of capital accumulation* and a more coherent productive system.

Even up until 2012, exports of commodities or natural resource-based manufactures amounted to 81% of the total (SENPLADES, 2012: 294), which is why the primary export model is not only a legacy of the past, but also a specific feature of (under)development in Ecuador; a process dominated by business groups.<sup>5</sup>

Ramírez (2010), the top official at the National Ministry of Higher Education, Science, and Technology (SENESCYT), asserted that changing the productive matrix is a long-term process that entails transforming the accumulation, redistribution, and distribution models, and that the strategy that will make possible the transition to said purpose is based on planning and progressive implementation in four phases over four years, approximately one a year.

In the first phase, defined as the transition, the idea is not so much to change the primary export model in terms of sustaining the national economy, but rather to address the redistribution of the wealth generated by this model. The priorities during this first phase involve selective import substitution, boosting the ecotourism sector, strategic public investment, technology disaggregation through transfer, public investment in education abroad to train human resources (especially in the basic sciences and bio-disciplines), investment in childhood development, and sponsorship for ecological farming. The core change during this initial phase will come from investment in social policy.

During the second phase, national industry is expected to grow. The government forecasts that wealth generation will rise by way of community ecotourism, on the one hand, and prioritized investment in research and development, through partnerships among universities, industry (public or private), and public research institutes or technology research centers. The priority during this phase will be to consolidate a fourth-level higher education system and investment in R&D+I.

The third phase aims to consolidate a diversification strategy oriented towards substituting exports with a higher added value that do not depend solely on extractive processes. Investment in Science and Technology will be key in this process to drive productive innovation in aspects related to branches of industry.

The fourth phase seeks to deploy bio-services and their technology application. "The relative size of this type of service—principally bio-knowledge—and tourism services should have a weight higher than that of the primary sector. The knowledge services that receive support

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<sup>5</sup> In 2013, the Internal Revenue Service (SRI) of the Government of Ecuador registered 110 business groups (national and transnational) in control of 3,759 companies, with sales amounting to nearly 46% of GDP: Note: sales ≠ added value (SRI, 2015).

will be tied to nascent industries that were given aid during the first phase" (Ramírez, 2010: 71).

In this sense, we get a glimpse of the problems the government of Ecuador will face in the near future based on the much anticipated way in which it plans to apply this variant of industrial policy—perhaps unprecedented. We are referring, first, to the fact that the "secondary" ISI phase will begin (for heavy industry) without having built a bridge between the two phases (the "easy" and the "secondary") as countries in Asia that successfully based their industrial policies on ISI have done. In Asia, for example, the administrations promoted—at the end of the “easy ISI” stage—major capacity to export simple and basic consumer goods, before using their already augmented national industrial capacities to leap to “heavy” industry, which includes the shipbuilding, petrochemicals, etc. industries (Amsden, 2001; Wade, 1990).

Second, all of the designated "strategic" sectors have "production functions" that are highly intensive in the usage of capital inputs. To work in these industries with upgraded production systems, it will be necessary to create or buy high technology inputs in these sectors, which will entail, during the implementation phase, many years of importing heavy construction machinery and other specialized machinery, or the creation of a new machinery and tools industry.

As it has been proposed, the change to the productive matrix will be a long-term transformation, which includes institutional processes that do not yet exist. Perhaps the most difficult and complicated thing to set up in any economy is an endogenous machinery and tools industry. And behind all of that, in terms of capital intensity, technology required, etc.—there must be ranks of capable scientists, technicians, machinists, and engineers. In 2012, Ecuador was ranked 89<sup>th</sup> on the Human Development Index, with spending on Research and Development (R+D) amounting to as little as 0.3% of GDP on average (2005-2010), with 106 professionally trained researchers for every one million people—one-seventh of the figure in Brazil, nearly on par with Sri Lanka, and behind Bolivia and Panama—and only 12.8% of higher education graduates (2002-2011) holding degrees in science and engineering (UNDP, 2013: 143, 187).

All of the above points to gaps in three areas: *i*) vast needs for productive capital, as well as the capacity to reproduce and amplify said physical capital; *ii*) profound need for human capacities in science and engineering; and *iii*) total spending on R+D. Closing these gaps, or reducing them significantly, will take years, if not decades, of continuity in the *national R+D policy* with profound investment in capital goods, and the acquisition of national capacity in technology education.

Even more challenging is the desire to establish new productive activities related to mariculture, biofuels, and wood forestry products, where the learning curve will be steep. This will entail building specialized labs and acquiring capacities in the exact sciences through knowledge transfer, especially difficult considering that in many cases, the owners of this knowledge are not so willing to transfer it. And, to top it all off, many heavy industries, such as the shipbuilding, metallurgy, and steel industries, frequently experience conditions with high idle capacity worldwide and, therefore, an oversupply in the market.

## **The industrial policy**

This section describes the divorce among the vision, application, and execution of the industrial policy. There are two mandatory requirements to manage an industrial policy. First, the country must create and grow a social layer of professional public managers and officials who earned their positions based on merit (Evans, 1995, 2008). It was not until 2011 that Ecuador created the National Meritocracy Institute (launched in 2014), but since then candidates for the public service have been recruited and selected based on “competitive selection and assessment procedures and methods” (Correa, 2011: 2).

Second, the key to executing an industrial policy, as has been done in Asian countries (underscored well by Amsden), *is the concept of reciprocity between the public and private sectors* in terms of any type of support and/or incentive offered by the state—such as preferential exchange rates, tax exemptions, subsidized loans, etc.—to foster “strategic industries” (Amsden, 2001: 8-13, 290). Amsden insisted that when there is an economic structure based on revenue from the production of raw materials and related activities, and when that structure is rooted in “path dependent” processes,<sup>6</sup> neither the government nor the private sector is able to adopt and implement the reciprocity principle based on criteria oriented towards compliance with the rules imposed by the objectives of an industrial policy. Although the Ecuadorian industrial policy is formidable, the *principle of reciprocity* has not been incorporated (or even taken into account, apparently) (SENPLADES, 2012: 22).

The target of any industrial policy is to increase national content by way of programs to strengthen forward and backward linkages, as articulated by Hirschmann (1977). In fact, in the first presentation of the industrial policy, one of the essential objectives was to “promote the creation and strengthening of productive chains” in order to produce goods with higher added value, frequently, through public tendering (Ministerio de Industrias y Productividad, 2009: 47-48). However, to date, no methodology has been constructed to measure the effects of these policies; nor (as far as we were able to determine) have any empirical data about productive chains been disclosed.

One attempt to find data updated to 2010 or earlier revealed the unsurprising fact that, except in three activities that have a lower weight in the GDP (like animal-raising), the effects of the linkages were very low (Prado, 2010: 4-5). This evidence leads us to the following question. Can this be considered real progress towards changing the productive matrix?

## **The national innovation system in Ecuador**

According to the specialized literature, the term National Innovation System (NIS) refers to a network of public and private sector institutions, whose horizontal interactions permit a country to create, acquire, disseminate, and use knowledge to initiate, develop, modify, and market new technologies (Cypher, 2014; Da Motta and Albuquerque, 2007; Freeman, 1995). In that sense, the objective of an NIS is to build an adequate and *deeply-rooted* structure consisting of companies (both public and private), universities, technical institutions,

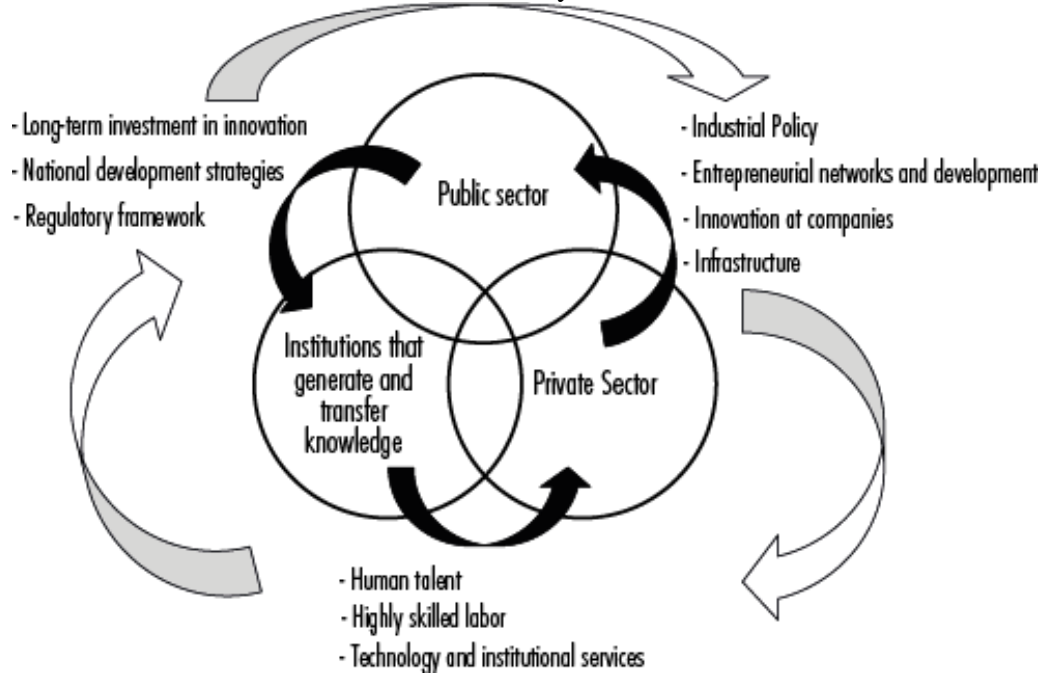
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<sup>6</sup> This concept can be understood as the socioeconomic context and prevailing ideology of a society at a given moment in time, both of which are profoundly conditioned by the social structures built in the past.



technology development centers, and research institutes. All of these institutions are not only part of the capacity-building process needed to kick off and sustain the autonomous development of technology, but also play a role in developing the mechanisms, dissemination, and use of the products that result from innovations<sup>7</sup> (see Figure 2 below).

Source: Created by the authors.



**Figure 2.** Actors and Components Involved in the Deeply-Rooted National Innovation System

Following the analysis written by Acosta and Prasanta (2014), it can be demonstrated that in order to drive the transformation of the productive matrix, various transformations at different scales and in varied realms of production, social action, and institutional processes have been necessary. As such, the rise of the NIS in Ecuador has demanded not only that multiple government institutions in Ecuador interact, insofar as the implementation of this system encompasses economic, political, social, organizational, and institutional factors, but also that a legal framework be drafted (COES+I)<sup>8</sup> to implement R&D+I policies and regulate

<sup>7</sup> According to Acosta and Prasanta (2014), the NIS in Ecuador consists of various activities organized into three broad levels, led by the office of the Vice President, the Coordinating Ministry for Production, Employment, and Competitiveness, and the Coordinating Ministry for Human Talent. These three institutions develop the guidelines for science and technology- and innovation-related policies. The second level consists of support or infrastructure services. This level focuses on introducing innovation through funding, knowledge transfers, training, and other information resources. The third level is made up of R+D+I policies and programs related to them.

<sup>8</sup> The objective of the Organic Code of the Social Knowledge and Innovation Economy (COES+I), also known as the *Genius Code*, is to regulate and articulate the National

the relationships and interactions between public and private sector actors involved in the transformation of the productive matrix.

## **R&D+i policies**

After various decades of little planning in science and technology, in 2013, the Ecuadorian government launched a public policy design process in this realm, allocating 0.44% of GDP to two major fields of action: *i*) science research and technology and social innovation and *ii*) training highly qualified human resources (Guaipatin and Schwartz, 2014: 58).

According to data from the United Nations Conference on Trade and Development, in 2007, the percentage of GDP that Ecuador allocated to R&D was a mere 0.17% (CNUCYD, 2013: 11). By 2011, Ecuadorian public investment in R&D projects was 269 million dollars—or 0.35% of GDP—a significant jump over 2006, when the figure recorded by the World Bank was only 0.13% of GDP (SENECYT, 2013a: 11; Banco Mundial, 2015d).

These estimates demonstrate, on the one hand, that R&D investment in Ecuador is still below the Latin American average (0.78%) and, on the other hand, that at the national level, this investment marks a substantial change for the country, producing social profitability of 47%, four times higher than physical capital investment (12%) (Guaipatin and Schwartz, 2014: 19, 57; RICYT, 2008).

Looking at the makeup of R&D investment, in 2010, private enterprises represented only 9% of total R&D spending in the Ecuadorian economy, in contrast with South Korea, where the figure was 75%. This means that public investment is the principal factor driving the transformation of the productive matrix (Guaipatin and Schwartz, 2014: 60).<sup>9</sup>

In addition, investment in human talent has made significant strides in enrollment. For example, access to higher education has been achieved for the lowest quintiles of the population. It is also important to note that this growth is not related to the quality or pertinence of higher education, because Ecuador continues to be one of the countries in Latin America with the lowest number of engineering and science majors. Likewise, the number of publications for every 100,000 people (2.42) is much lower than the regional average (11.20) (Guaipatin and Schwartz, 2014: 70-74).

According to SENESECYT estimates, public spending on higher education in 2010 amounted to 2.0% of GDP, a figure above that of countries with similar economies (2013b: 2). For example, in Peru, in 2011, total investment allocated to higher education was equivalent to only 0.4% of GDP.

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Science, Technology, Innovation, and Ancestral Knowledge System with the National Education System, Higher Education System, and National Culture System.

<sup>9</sup> Aiming to fill the profound vacuum of technology capacities in the private sector, "in 2012, a group of Ecuadorian professionals decided to create an organization able to foster entrepreneurship and innovation nationwide. Thus was born the Corporation for Entrepreneurship and Innovation of Ecuador (CEIE), an 'independent, non-profit, organization that encourages entrepreneurship and innovation nationwide through involvement with topics of public interest....'" (Guaipatin and Schwartz, 2014: 98).

The strategies that SENESCYT has proposed with respect to science research and technological and social innovation range from creating environments suitable for investment in high value-added productive activities to opening research centers in productive areas that will become a motor of economic growth. The principal project in this research field is *Yachay: The City of Knowledge*, which purports to create a technology park, and industrial park, and a biotechnology zone, articulated with public and private research institutes, high-tech companies, a university, and spaces to develop biotechnology and experimental agriculture (SENESCYT, 2015).

The field of training highly qualified human resources is based on the third higher education reform, and the understanding that universities must rethink their relationship to the productive sphere in order to produce knowledge that is applied and articulated at various levels of aggregation in the organizational change of the productive matrix. With the creation of four Emblematic Universities, the idea is to promote scientific research, and the generation and dissemination of knowledge grounded in basic and applied research, the development of human talent, and the generation of national and international knowledge networks. As part of this, there will be various research and development institutes focused on different specific lines of research, tied to solving national problems and fostering productive entrepreneurship.<sup>10</sup>

The projects in both fields of actions are based on the R&D+I model, pursuant to which innovation is the result of applied technology, which in turn is the result of scientific research conducted at universities (in other words, the “linear model”). Likewise, unlike the orthodox economic perspective, this point of view aims to develop a productive model that, beyond just science, technology, and technology innovation, incorporates the knowledge dialogue as a variable endogenous to the productive system (SENPLADES, 2009).

One relevant aspect is that in light of the absence of enough highly qualified human resources to sustain the aforementioned projects in Ecuador, the government has implemented a scholarship program to bring together foreign professionals and Ecuadorians residing outside of the country. The project “*Becas Prometeo*” (Prometheus Scholarships) aims to increase the knowledge capacities of universities and polytechnic schools, public research institutes, technical and technology institutes, public sector entities and bodies, in general, and the prioritized productive sectors. In addition, the “National Scholarship Program” supports post-graduate education for Ecuadorian nationals, both domestically and abroad. According to official SENESCYT data, in 2012 and 2013, 15,000 scholarships were granted to low-income students; 45% of the scholarship aid for higher education was allocated to knowledge areas related to engineering and Information and Communication Technologies (ICT): 29% to life sciences, 18% to social sciences, 5% to basic sciences, and 3% to arts-related subjects (SENESCYT, 2013c).

## Final reflections

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<sup>10</sup> These include the Universidad Nacional de Educación (UNAE); the Universidad Regional Amazónica (IKIAM); the Universidad de las Artes (UNIARTES); and the Universidad de Investigación de Tecnología Experimental (YACHAY), whose buildings have been approved by the Higher Education Council (CES).

Ecuador has consistently sought to implement a socioeconomic transformation towards neo-developmentalism, with the particularity that the conditions in this country are different from those in other South American nations. In other words, the steps that Ecuador is taking include a national project, building an industrial policy, and solidifying a national innovation system, a sign that the country is engaged in a process to dynamically change its institutional socioeconomic structure.

In this way, the theoretical framework described at the beginning of this paper and the heterodox development program introduced in Ecuador starting in 2007 are extremely aligned. This is notable not only in terms of the "Country Project," but also in terms of the ideas and proposals related to the industrial policy. However, the challenge for this policy resides in its application and ensuring the country has access to the resources (capital, management, technology, specialized human capacities) to achieve these objectives.

These pending transformations and, above all, the variety of policies, all reflect the aspirations of a regime that has indulged in thinking big in the midst of a major commodities boom. Perhaps the proposal of achieving a "knowledge economy"—when the foundation to leap from a consolidated primary export model to this type of economy is practically non-existent—is the strongest proof of this tendency.

In light of current conditions, it is difficult to think that Ecuador will be able to mobilize the resources needed for the common thread of the transformation of the productive matrix to be the specialization of the so-called "strategic" industries, in light of the fact that industrial policy experts have demonstrated that this will only be possible if there is deeply-rooted strategic collaboration between the private sector and the government. The evidence (to date) of strategic collaboration—forward and backward linkages—is very limited. In fact, although the government has provided a certain degree of support for the private sector (as some representatives of the private sector have been suppliers and/or contractors, therefore permitting the State to have greater intervention in the economy), to a large extent, this sector has been reluctant to accept the national project launched in 2007. In other words, although real national economic growth between 2007 and 2014 was strong—4.3% annual average—private investment grew at only 1.5% on average annually in real terms (Banco Mundial, 2015a; CORDES, 2015b). Under such conditions, it is not surprising that the percentage of added value attributed to the industrial sector hardly budged between 2007 and 2014—the figure was 36.2% in 2007 and 38% in 2014 (Banco Mundial, 2015b).

Even so, whatever fragile "understanding" has been forged between the private sector and neo-developmentalistic policymakers, it was gravely undermined when, in June 2015, the government enacted the "real estate inheritance and surplus bill." In response to mass rallies throughout the country, the bill was withdrawn just a few days after its official launch. This marked a turning point in the path of neo-developmentalistic policies. The designers of this policy crossed "the invisible" line between what is debatable and prohibited in Latin America. In other words, although neo-developmentalistic governments have introduced certain structural changes, they have left the power center of oligarchies largely untouched—they have not dampened the "right" of the oligarchy to enjoy countless exemptions on its forms of income. In this way, the oligarchy and the wealthy have been able to maintain an income tax rate, in the case of the top income decile, of, on average, a mere 5.6% (Jiménez, 2015: 35). Likewise, the owners of capital are used to avoiding taxes on their riches, given that wealth taxes are practically non-existent. Thus, when the government proposed an

inheritance tax—which would affect a mere 2% of the population—the moneyed right coordinated enough protests to defeat the bill.<sup>11</sup>

Although Ecuador has made significant strides over the past seven years in terms of the R&D+I policy, unfortunately, the point of departure for the construction and consolidation of the National Innovation System has been defined by a primary export economic structure—although it is deeply economically and culturally rooted. In this sense, it could be said that there are at least four limitations facing the country: *i*) weak ties between the various actors involved in the National Innovation System, in particular the linkages between industry and other system players; *ii*) little emphasis on the dissemination of technology, which results in even less transformation of innovation; *iii*) little interaction between academia and industry to generate applied knowledge; and *iv*) lack of scientific research conducted during doctorate and post-doctorate studies.

In addition to these limitations (which cannot be resolved, at least in the short term), we must keep in mind that the situation at the end of 2015 took a dramatic turn in the relationship between the State and the economy. The State announced a major budget cut for 2016—amounting to approximately 4% of GDP (CORDES, 2015b). If this change is interpreted through the Keynesian model—with a very conservative multiplicative factor of 1.5—the total effect would be a direct reduction of GDP of 4% (assuming all other factors remain the same), plus the "multiplicative effect" ( $1.5 \times 2.4$ ), with a potential drop in GDP of up to 6% throughout 2016.

Undoubtedly, the big requirement to cement the “triangle of neo-developmentalism” presented here is the capacity to handle the changes needed over the course of various years. But if the economic base is built on shifting sands, in light of the weaknesses of the international oil products market, beginning in 2014, any attempt to redirect the economic oil surplus to the productive matrix and innovation will be jeopardized. Consequently, the national-popular alliance that reached power in the 2006 presidential elections is now facing a major problem; its socioeconomic transformation program is far from consolidated, and its neoliberal opponents are known for their capacity to make rapid tactical, doctrinal, and political moves when the underlying conditions change (Peck, 2012: 177). As Bowen (2014: 97) noted, “[...] business groups and their political representatives [...] have targeted civil society by creating (or throwing their weight behind already existing) social movement organizations that protest the policies of the Correa administration [...]”. In June 2015, although far from the first time, Correa noted a major effort by the right, awakened from its torpor, to set in motion strategies to destabilize the administration with a set of initiatives ranging from permanent rallies to attempts to engage in psychological and economic warfare (to lower the morale of those who support the "Country Project") (ANDES, 2015).

For some—the active citizens who have taken up a “critical” stance—the government program is inadequate because *i*) the oligarchical power of national economic groups has not

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<sup>11</sup> There was a strikingly similar case in Bolivia when, in 2004, an attempt to enact a wealth tax on the top 3% was roundly defeated. The loudest criticism came from the landowners in Santa Cruz through their elite organizations; it seemed to prove Miliband's instrumentalist theory of the state (Barrow, 2008; Fairfield, 2015: 239-244). Was the Ecuadorian government unable to examine the failure in Bolivia and learn its lesson? Apparently, just like in Ecuador, although there are certainly divisions among Bolivian property owners, the government found a way to unite the entire opposition of the wealthy, setting itself up for defeat.

been restricted; *ii*) the topic of agrarian reform has been notably absent from the new policies; and/or *iii*) the model is essentially based on unsustainable neo-extractivism (Larrea, 2013). In the meantime, for the previously hegemonic socioeconomic coalition (the agro-export-financial elite), the steps towards neo-developmentalism have been unbearable. As it stands, in this new fragile context, the entropic revanchist power of the traditional elite could be opportunistically and successfully employed to block the transition to the new Ecuadorian/Furtadian neo-developmental path.

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