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The aerospace industry in Mexico: an evaluation of public policies and the possibilities of industrial capacities and technological development

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ARTICLE SECTION

The aerospace industry in Mexico: an evaluation of public policies and the possibilities of industrial capacities and technological development

Abstract: Through this article, an evaluation of the public policies adopted in the last five years by the Mexican State regarding the stimulation of the aerospace industry and the possible formation of industrial and technological capacities is carried out. To achieve this purpose, the results of a field research aimed at unraveling the specificities adopted by the aerospace industry in Mexico and, particularly, in the socioeconomic region that forms around the city of Querétaro, are presented. In this interpretive effort, it is important to study the behavior of the aerospace industry in the world and the centralization and concentration of technological innovations in order to understand the strategic and duopolic nature assumed by this productive branch in the countries of origin of the matrices that coordinate the global business networks. The international comparability exercise provided the basic elements to understand that the specificity of public policies aimed at stimulating the aerospace industry in Mexico lies in the creation of entrepreneurship and not in the formation of technological capabilities and / or the adoption of a policy industrial oriented to the articulation of the internal market; situation that deepens - in the aforementioned country - the contradictions of the development/underdevelopment dialectic.

Key words: public policies, industrial capabilities, technological capabilities, state functions, technological development.

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IDEAS CLAVE / HIGHLIGHTS / IDEES CLAU

1. El subdesarrollo de México se basa en la dependencia científico/tecnológica gestada con las plataformas exportadoras de insumos maquilados.
2. La industria aeroespacial tiende a centralizar y concentrar las innovaciones tecnológicas en el centro de las redes empresariales globales.
3. La industria aeroespacial en México inhibe los encadenamientos productivos en el mercado interno.
4. Las políticas públicas mexicanas se orientan a generar empresarialidad, omitiendo la formación de capacidades tecnológicas y la re-industrialización.
5. La intervención del Estado mexicano en la industria aeroespacial responde a la exigencia que impone el patrón de acumulación del sistema de la manufactura flexible.

1. Mexico's underdevelopment is based on scientific/technological dependence on maquiladora input export platforms.
2. The aerospace industry tends to centralise and concentrate technological innovations at the centre of global business networks.
3. The aerospace industry in Mexico inhibits productive linkages in the domestic market.
4. Mexican public policies are oriented towards generating entrepreneurship, omitting the formation of technological capabilities and re-industrialisation.
5. The Mexican state's intervention in the aerospace industry responds to the demands imposed by the accumulation pattern of the flexible manufacturing system.

1. El subdesenvolupament de Mèxic es basa en la dependència científic/tecnològica gestada amb les plataformes exportadores d'inputs maquilats.
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3. La indústria aeroespacial a Mèxic inhibeix els encadenaments productius en el mercat intern.
4. Les polítiques públiques mexicanes s'orienten a generar empresarialitat, ometent la formació de capacitats tecnològiques i la re-industrialització.
5. La intervenció de l'Estat mexicà en la indústria aeroespacial respon a l'exigència que imposa el patró d'acumulació del sistema de la manufactura flexible.

EXTENDED ABSTRACT¹

The intensification of globalization processes and the deepening of a knowledge-based economy imply the emergence of development paradigms that position, as one of their central references, technological innovation efforts that add value to the world economy. Hence the need to study a sector such as advanced manufacturing aimed at satisfying specific needs that merit considerable sums of financial resources (both public and private), as well as accumulations of scientific and technological knowledge that allow innovation in an area that, traditionally, assumes geostrategic dimensions for the countries interested in its promotion. Furthermore, the aerospace industry is a sector that requires public policy instruments that trigger and promote its growth in order to improve synergies and the formation of business clusters that carry other industrial and technological sectors.

If public policies are fundamental in an industrial sector such as aerospace, it is worth asking the following: What is the nature of the policy instruments adopted in Mexico in the field of aerospace research and innovation? What is the scope of the industrial capacity that is generated in the aerospace sector from the instruments and public policies adopted? Recognizing the relevance of these questions, the main objective of the research consisted of observing and evaluating the policies and results in the field of the aerospace industry until before 2018 in Mexico, emphasizing the instruments used to generate industrial capacity. In order to meet this research objective, it was necessary to resort to international comparability in order to interpret the scope and limitations of the instruments used in Mexico, while still recognizing the nature of the global aerospace industry sharing. In addition, the debate around technological capabilities and the relevance that international technology transfer acquires for aerospace companies based in Mexico is introduced, not without omitting the analysis of the insufficiencies of these processes.

The methodology used consisted of focusing the gaze on the state of Querétaro due to its strategic geographic location, multiple universities and research centers located there, a wide business density and a maturing of its industrial parks; in addition to representing one of the states with the greatest dynamism in its economic growth and with the greatest capacity to attract qualified workforce and flows of direct foreign investment. It is not a case generalizable to the country as a whole, because, although the attraction of investment related to the aerospace industry has gained notoriety over the last two decades, not in all the Mexican states where this industrial branch is established has managed to expand.

The sample selected in this methodology consists of seven aerospace companies based in this region, and in order to obtain empirical references, an interview instrument was designed aimed at managers and plant managers and whose purpose was to understand the behavior of the company in question in terms of technological innovation.

In this methodology, it was important to recognize the organizational and productive dynamics followed worldwide by the aerospace industry and, particularly, the way in which the underdeveloped world inserts itself into the flexible manufacturing system and shapes the technical division of labor. The same international division of labor.

Among the results found in the research, the following stand out: the public policies designed to serve the aerospace sector in Mexico do not privilege the full deployment of

¹ Traducción exclusiva de los autores / Authors' exclusive translation.

strategies that promote the expansion of technological and innovation capabilities. Rather, they are aimed at generating the conditions for the expansion of an entrepreneurialism stimulated by direct foreign investment and under the rationale of responding to the requirements and demands of the international integrated production system and the global market chains, which in the case of Mexico they are confined to the aerospace corridors of North America. Although there are studies that argue that in Mexican regions with Querétaro there are close interactions between local suppliers, cooperation networks, between aeronautical companies and research centers located there, and broad public / private partnerships, our arguments and results are far from what has been observed. in these studies.

Furthermore, as occurs in government strategies and actions regarding the attraction of capital in other productive branches, those oriented to the aerospace industry are part of public policies in which the different levels of government exercise the functions of promoter, manager, convener. and facilitator of private investment, especially foreign. This means that local governments and the federal government carry out a “marketing” task through which the competitive advantages of local spaces that dispute the attraction of investments are publicized. At the same time, they generate the favorable conditions in fiscal matters, basic infrastructure and training of manpower and human resources to satisfy the minimum requirements demanded by foreign investors.

In addition, aerospace companies established in Mexico are conditioned by the demand and specific needs of parent companies based in North America and Europe. In such a way that it is in the latter where organizational and technological innovations are produced, as well as the type certificates on which an aircraft is designed and manufactured. This external conditioning, in itself, represents an important limitation as long as there is no national aerospace industry capable of proposing the design and complete construction of aircraft according to the needs of the country, of assuming foreign direct investment as a complement and coordinate the articulation of production chains and the reconstruction of the internal market.

Among the conclusions of the research, arguments such as the following stand out: Mexico’s vocation and its economic policy to privilege the attraction of direct foreign investment with a maquiladora orientation, nullified (during the last decades) all capacity to configure an industrial policy that would consolidate a national entrepreneurship and capable of competing at the international level, and that articulates the production plant with the need to create and develop technological innovations. In addition, the global business networks that establish their subsidiaries in the country show no interest in technology transfer that impacts other industries or in the deployment of innovations that position the Mexican-based aerospace industry as an advanced industry.