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**INTERNATIONAL EMBARGOES AND DEFENSE INDUSTRIES:  
INTERNATIONAL SANCTIONS AND THEIR EFFECTS ON  
INDIGENOUS WEAPONS PRODUCTION**

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**ABSTRACT:** This paper investigates the effects of international embargoes on the development of indigenous defense industries in emerging countries. The hypothesis is that embargoes directly limit the capacity of emerging countries to design and manufacture defense products, mostly by restraining access to technology and markets. Embargoes also affect countries with some manufacturing capability, whose reliance on foreign technology for sensitive content makes them vulnerable to exogenous shocks. The historical-comparative method is used, drawing on the cases of Brazil, India, Turkey and South Africa to test the relations of necessity and sufficiency between international embargoes and the development of indigenous arms industries. The cases are selected among SIPRI Arms Industries Dataset, in the period of 2002-2018, considering countries that are not among International Monetary Fund advanced economies and countries defined by the World Bank as Middle-Income Countries. The study analyzes the cases from 1945 to 2018, to explore the full extent of the process of defense industrialization in the post-World War II, considering three different international power distributions along this period: bipolar distribution, unipolar moment and unbalanced multipolarity. Primary sources, such as internal balances, budgets and policy papers, and secondary sources, filtered through bibliographical review, are used to gather the necessary information in each country. The findings suggest that international embargoes have a significant impact on the development of indigenous defense industries in emerging countries, limiting their access to technology, markets and specialized inputs, forcing them to invest in import substitution strategies with limited results in international markets. The case studies reveal the importance of domestic technological capabilities, policy stability and coordination among different actors in developing successful indigenous defense industries in emerging countries. Also, the results suggest that the countries that specialized in technological niches are more prone to succeed in international markets.

**Keywords:** Defense industries, embargoes, emerging countries.

**RESUMO:** Este artigo investiga os efeitos dos embargos internacionais no desenvolvimento das indústrias de defesa em países emergentes. A hipótese é que os embargos limitam diretamente a capacidade dos países emergentes de conceber e fabricar produtos de defesa, principalmente ao restringir o acesso à tecnologia e aos mercados. Os embargos também afetam países com alguma capacidade de produção, cuja dependência de tecnologia estrangeira para conteúdos sensíveis os

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torna vulneráveis a choques exógenos. É utilizado o método histórico-comparativo, valendo-se dos casos do Brasil, da Índia, da Turquia e da África do Sul para testar as relações de necessidade e suficiência entre os embargos internacionais e o desenvolvimento de indústrias de armas. Os casos são selecionados entre o conjunto de dados SIPRI *Arms Industries*, no período 2002-2018, considerando países que não estão entre as economias avançadas do Fundo Monetário Internacional e países definidos pelo Banco Mundial como Países de Renda Média. O estudo analisa os casos de 1945 a 2018, para explorar toda a extensão do processo de industrialização da defesa no pós-Segunda Guerra Mundial, considerando três diferentes distribuições internacionais de poder ao longo deste período: distribuição bipolar, momento unipolar e multipolaridade desequilibrada. Fontes primárias, como balanços internos, orçamentos e documentos de política, e fontes secundárias, filtradas através de revisão bibliográfica, são utilizadas para reunir as informações necessárias em cada país. As conclusões sugerem que os embargos internacionais têm um impacto significativo no desenvolvimento das indústrias de defesa nos países emergentes, limitando o seu acesso à tecnologia, aos mercados e aos fatores de produção especializados, forçando-os a investir em estratégias de substituição de importações com resultados limitados nos mercados internacionais. Os estudos de caso revelam a importância das capacidades tecnológicas nacionais, da estabilidade política e da coordenação entre os diferentes intervenientes no desenvolvimento de indústrias de defesa bem-sucedidas nos países emergentes. Além disso, os resultados sugerem que os países que se especializaram em nichos tecnológicos são mais propensos a ter sucesso nos mercados internacionais.

**Palavras-chave:** Indústria de Defesa; Embargos; Países Emergentes.

## INTRODUCTION

The autonomy on defense production has been an undisputed interest for countries that pursue a prominent international position. It demonstrates how a State is capable of organizing its internal production structure and directing the research and development towards a goal of self-sufficiency, dissuasion and the construction of “soft” resources of power, underpinned by its military prowess.

However, since the end of World War II, the world is going through a deep process of globalization and interdependency, relying on transnational firms and incremental innovations, protected by strict intellectual property laws and trade agreements (WEISS, 2014), which retain the relative dominant position of the most advanced countries. The defense industry is perceived as a way of bypassing these regulations and using the State as a directly involved and interested actor in economic development (EVANS, 1995).

This drive for indigenous defense industries as an instrument for national development is usually built on arguments of spill-over effects and acquisition of dual use technologies (ANDERTON; CARTER, 2009). These assumptions posit that the

investment in the defense sector is a way of achieving sensitive technologies that, when mastered and applied to the private sector, will help the country in sustaining economies of scale, making it up for the sunk costs and improving the overall complexity of the domestic industrial structure (BITZINGER, 2003).

This process, however, does not happen automatically or in a linear path. The explicit investment on defense sector must be based on a comprehensive strategy of material capacity building, making one's intentions clear and maintaining a peaceful regional environment. These are no easy tasks, especially considering historical grievances and the predominance of what William Wohlforth and Carla Norrlof (2019) calls *Raison de l'hegemonie*, defined as the benefits that the dominant power – notably, the United States – obtains from providing security networks that enable trade in a globalized world.

Assessing how do international embargoes affect the development of indigenous defense industries in emerging countries, this paper aims to debate policymaking issues, shedding light in defense industrial politics, their domestic costs and the international intervening variables that may hinder the international insertion and commercialization of defense industrial products. By analyzing the impact of international embargoes, the study seeks to discuss the barriers of entry and the international mechanisms that regulates the international weapons market.

Academically, the study intends to draw a comparison among comparable cases (SARTORI, 1970) from emerging countries, often overlooked by the literature, which focuses primarily on the great power competition and the battle for cutting edge technology. The main goal of this paper is to identify the mechanisms by which international embargoes affect emerging countries, discussing the theoretical and political aspects of defense industries for emerging countries.

The paper also seeks to explore the structure of the international defense markets and the role of the state in promoting the domestic development. In doing so, the cases of Brazil, India, Turkey and South Africa, will be analyzed to provide insights on cases with no embargoes, unilateral embargoes and multilateral embargoes on defense acquisition matters.

To do so, the historical-comparative method will be employed, drawing on the cases of Brazil, India, Turkey and South Africa to explore the effects of international embargoes on domestic defense industries. From these cases, Brazil has no record of international embargoes on arms trade, Turkey and India had unilateral embargoes from the United States and, last, South Africa had a multilateral embargo, imposed by the United Nations.

The cases were selected among SIPRI Arms Industries Dataset, in the period of 2002-2018 (SIPRI, 2019), considering countries that are not among International Monetary Fund advanced economies and countries defined by the World Bank as

Middle-Income Countries. To explore the full extent of the process of defense industrialization, the cases are analyzed from 1945, after the end of World War II, to 2018.

We must also consider the three different power distributions that are observed in this interval: from 1945 to 1991, there is a bipolar distribution; From 1991 to 2001, there is the unipolar moment and, from 2001 to 2018, we consider the power distribution as an unbalanced multipolarity (CEPIK, 2017; MEARSHEIMER, 2001). To gather the necessary information in each country, the study uses primary sources, such as internal balances, budgets and policy papers; the study also uses secondary sources, filtered through bibliographical review.

The paper will be distributed in four sections: the first will make a comprehensive description of the process of indigenous defense manufacturing, identifying the leading countries and the factors that may restrain emerging countries of developing indigenous defense industries. The second will explore the theoretical aspects underlying arms embargoes, exploring why are they deployed and how it impacts sanctioned countries. The third section will lay the foundation to identify the links between emerging defense industries and arms embargoes. After these considerations, the cases from Brazil, India, Turkey and South Africa will be assessed, in order to draw the conclusions on the last section.

### **DEFENSE MANUFACTURING AND THE ROLE OF ALLIANCES**

The Defense Economics are a field of study with a vast intellectual production. In a broad aspect, the area encompasses the fields of collaborative programs, technology transfer, regulations, profits and the provision of security, understood as a public good without substitutes (SANDLER; HARTLEY, 1995). Even in periods of peace, the field remains relevant due to expectations in diminishing defense budgets and the search for efficiency among more costly and advanced systems.

In this sense, Defense Economics are usually related to the seminal study of Emile Benoit, which investigates if defense investment produces economic growth (1978). Defense industries are historically associated with the promotion of disruptive innovations: with the public sector undertaking the risks of the early stage of development, the defense sector has been the cradle of technologies such as the Global Positioning System (GPS), the foundations of the Internet as we know today, nuclear energy and every diversified application of these systems, components and protocols. This process, despite emerging right after the Industrial Revolution, only was consolidated with World War I and II (GIDDENS, 2001).

Shrinking defense budgets and the rise of “soft” resources of power are expected to be seen on periods when international competition weakens, as was

seen with collapse of the Soviet bloc. In these periods, defense enterprises are expected to take diversification and conversion strategies, emphasizing the civilian applications of the embedded technologies or fully pivoting towards the civilian sector (BITZINGER, 1994). One must remember that firms can create endogenous demands and produced the goods required to fulfill the subsistence of defense firms (ROHENKOHL; SANTOS; CASTELLANO DA SILVA, 2020).

For emerging countries, defense industrial activities have long been perceived as means to obtain new technologies, promote research exchanges and incorporate new knowledge into the national innovation system (FREEMAN, 1995; NELSON, 1992). These cooperative arrangements, which derives from shared political-strategical goals, can be beneficial for receiving countries, but also strengthen the perpetuation of center-periphery relations, where the central countries retain the advanced technologies and define the systems and knowledges that the receiving countries would have access to.

The interdependence among the countries of the so called “Liberal International Order” (IKENBERRY; KUPCHAN, 1990) points towards the necessity of analyzing the finished products market through the logic of specialization: the know-how, specialized manufacturing and the capability to effectively integrate systems into a finished product must all be taken into account, observing the mechanisms which enables cooperation and guarantee the supply chains needed for the integrated systems to operate. Academically speaking, Ron Smith (2017) reminds us that historical qualitative aspects remain relevant while studying defense industrial activities.

The internationalization of defense production, according to Richard Bitzinger (1994), is based on sharing the costs of research, development and maintenance through rationalization, standardization and interoperability. All these variations are operationalized through strategic alliances, joint-ventures, mergers & acquisitions and “families of weapons”, production arrangements expected to reduce the R&D, manufacturing and operationalization costs<sup>3</sup>.

Beyond that, Stephanie G. Neuman (2010) and Jonathan Caverley (2007) argues that the capacity to successfully integrate components into proven weapons systems is what effectively enables the United States to have a prominent role in the defense markets. According to the authors, the stratification of the defense production and the lack of information about emerging countries on defense industries are indicators of their relative low outputs and systems available.

Caverley (2007) goes even deeper: with the prominence of the United States, unsatisfied or non-aligned states have little or no influence in the international

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<sup>3</sup> Specific requirements made by local armed forces often reduces the chances of these families of weapons to succeed (DEVORE, 2012).

weapons markets. The asymmetries that derive from the capacity to successfully integrate components diminishes from little to none the possibilities for outsiders to delineate successful insertion strategies on the sector. Also, the leading states, using their relative position, can restrict the trade of sensitive contents and retain the technological edge.

These processes are empowered by a set of international institutions that set the rules and terms of the bargain among States. Realist authors, such as William Wohlforth (2011) and John Mearsheimer (2019), often see international institutions as a reflect of the material capabilities of the member states or as a way to force less resourceful states to comply with hegemonic interests. In order to accept and legitimate the existing international order<sup>4</sup>, States must share – at some degree – the goals and aspirations of the leading hegemon.

These shared interests and acceptance among its international peers are also domestically and regionally useful, given that the increase in defense investment may lead to regional security dilemmas through threat perception from the neighbor countries (WALT, 1985). It also may originate domestic political disputes about development strategies and, systemically speaking, may create tensions if being perceived as a way to defy or build alternatives to the existing international order (TALIAFERRO, 2009).

The push for self-sufficiency and a greater degree of autonomy measurable economic costs and the political consequences of non-alignment. The defiance of interaction patterns on the international scenario is easier to build with domestic acceptance, where the society perceives the possibility of change in international scenario and encompass the goal of structural transformations. According to Stephen Walt (1985), security imperatives, financial interests and acceptance of foreign ideas often shape the preferences of States and their international pathway of (non) compliance.

Identifying the most vital goal of the State as survival, one can trace different strategies used to achieve this objective: strategies of resource extraction will resort to external or internal environment, according to a calculus of future capabilities and the maintenance of current resources. While domestic extraction entails a trade-off on resource allocation, international extraction requires validation and legitimization among peers (MASTANDUNO; LAKE; IKENBERRY, 1989, p. 464). In case a state's objective are not perceived as legitimate, the state itself may suffer from international constraints, intended to stop or change course of a political pathway, such as international sanctions.

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<sup>4</sup> Here defined the rules, principles and institutions that define the relationship among a group of states and the terms of interactions with states outside of the order. For in depth considerations, see Ikenberry (2001).

## INTERNATIONAL SANCTIONS, ARMS EMBARGOES AND THEIR IMPACTS FOR DEFENSE ACTIVITIES

Sanctions are defined as “the denial of customary interactions (strategic, economic, or social); they are intended to promote social, political or economic change in a target state.” (CRAWFORD; KLOTZ, 1999) Their success is conditioned to the expected change desired by the one who imposes them: countries, corporations, individuals, international organizations and so on. According to Crawford and Klotz (*ibid*), for a target state to compel with sanctions, these measures must represent a credible threat, undermining the intended goals of the initially desired political pathway.

Beyond compliance, the authors also identify three other models of influence through what sanctions effectively produce effects: the normative communication, which emphasizes moral arguments and strict standards and rules; the resource denial, which “deprive the state of its ability to act” by diminishing its capability; and the political fracture model, that is designed towards “manipulating the broader balance of political authority inside the target”, focusing on domestic interest groups.

Sanctions can impose effects in five different sites: elite decision makers, government structures, economy, civil society or externalities (understood as regional or global spillovers). These five sites can lead to change in resource allocation, assessments of national interest, business environment, brain drain, political uprising and on the relative position of the neighbor countries of the sanctioned, which may reflect adoption or rejection of the measures. The role of alliances is central for the latter, enforcing the actions and restricting the possibilities of the affected country (CRAWFORD; KLOTZ, 1999).

The role of alignments is also important while considering the interdependence of the global economy. Authors who are positive among the idea of interdependence as a way to preventing unilateral conquest and promoting peace, such as Stephen Brooks (2005), may view sanctions in a positive way, which would hinder states from taking undesirable behaviors and make them more prone to compel with international norms, in order to have access to products and be a part of supply chains. Besides, the imposition of sanctions may pose a great risk to multilateral corporations and hurt local populations (CRAWFORD, KLOTZ, 1999).

In the book “How Sanctions Work: Lessons from South Africa”, Neta Crawford recognizes some of the most important questions regarding the effectiveness of arms embargoes: in her words, “Arms embargoes are intended to decrease the military effectiveness of the target state by denying the target material and technological resources crucial for waging war.” (CRAWFORD, 1999, p. 46). The author

accomplishes that this is a narrow definition, which does not make clear how to assess the success of the policy.

The author recognizes that arms embargoes may trigger non-compliant responses from the affected states. In the defense industry, this scenario is even more dramatic: arms embargoes are viewed as an important political artifact and are always at the table while trying to constrain undesired uses of force. International sanctions through arms embargoes are a way to limit a state repressing apparatus. The embargoed country might look for alternative supplier, but given the restrictions of the structure of the defense market, the push for autonomy and indigenization is a frequent response.

In this sense, arms embargoes can work as a catalyst for domestic interests, repressed through the process of resource allocation. Arms industries in latecomer countries develop in a different way than those in the traditional western center. Late industrializing countries did not have the positive cycle of conflicts and bureaucratic development in their state formation process (TILLY, 1996): being subdued to colonial processes, these states had their apparatuses imported from their colonizers and retained structures that did not necessarily responded to its demands.

So, to draw explanations for defense industries in countries with a colonial past, we must resort to authors as Fred Halliday (1987), who advocate for a deeper debate among the concept of state: beyond sovereignty, states are best analyzed while taking their state capacity into account, tracing how, through which mechanisms and the reach of political reforms and institution building used to secure domestic control. The study of state capacity also gives a more detailed panorama of how – and what resources are employed for - states act in the international scenario.

## **DEFENSE INDUSTRIES AND THEIR DEVELOPMENT IN EMERGING COUNTRIES**

Developing societies that accommodate the impetus of the private sector in a common effort for development are more prone to be successful: the combination must promote (re)structuration, diversification and technological dynamism. Beyond providing property rights, market predictability and legal guarantees, the state must compliment market forces, observing the challenges for industrial transformation and optimize industrial policy through a coordinated, transparent and responsible effort (RODRIK, 2004).

According to Timothy Hoyt (1996), latecomer countries that engaged in regional politic-strategic rivalries are more prone to adopt capabilities building strategies. The main goal is to balance the power projection apparatus of countries in

its immediate strategic surroundings through acquisitions or domestic production. This was accelerated during the Cold War, when securing influence zones were a central goal of the two powers and third world countries could acquire surpluses and obtain technology transfers.

Hoyt (1996) delineates four approaches that addresses defense industry in emerging countries: the first one is based on structural/dependency theories, oriented to self-sufficiency through import substitution policies. The second approach is closely related to economic orthodoxy, emphasizing opportunity costs and the relation between defense expenditures and economic growth, observing how export-led policies can enhance national income. Despite the domestic policy, there are little evidence of export-led policies as being the main driver of defense industrialization policies (BRAUER; DUNNE, 2011, p. 106; HOYT, 1996, p. 34). The third approach is focused on world-system economy, studying the struggle of late industrializing countries to absorb and commercialize products with a higher aggregate value on international markets.

The fourth approach, historical/systemic, encompass elements from all the other, but delimitate them on time and space. This is particularly useful for this paper, given that the study of defense industry in emerging countries can help us formulate research problems and evaluate empirical evidence. This approach pays attention to the relative position of the countries, while considering aspects such as technology transfer and access, taking into account the complexity and cost of advanced weapons systems.

As Crawford (1999) rightly posits, arms embargoes may enhance the spin-in of civilian technologies into military uses and, while doing so, provoke technical innovations, increase regional insecurity through regional security dilemmas and shield infant defense industries. Identifying these risks may act as an enabler for embargoed states to pursue defense industrialization policies, especially if leading states in international order fail to socialize unsatisfied states and take their interest into account (TALIAFERRO, 2000)

The debate on international sanctions and domestic defense mobilization needs to consider Peter Gourevitch's (1978) "reversed second image" questions: what is the relative position of the country in the world-economy system, which domestic actors benefits and which ones are prejudiced by the adoption certain policies, which domestic groups define possible alternatives – or how are policies designed inside the political apparatus – and, lastly, how the adoption of policies are legitimated. The calculus that arrives from these questions needs to be weighed with the possibilities of action in the international scenario.

As Giddens (2001) stated, defense questions are bigger than the mere power projection capabilities and protection of frontiers: the investment, conscription and the

role of the military as a political group are important factors to consider while analyzing legitimacy and acquiescence. They promote a sense of purpose through which technological innovations are pursued and strategic alliances are forged (GOLDE; TISHLER, 2004; RUTTAN, 2006; TAYLOR, 1990).

Besides that, regime security and domestic security are often overlapped in the Global South: the discourse of development is a rhetorical tool used to gain legitimacy and civilian-military elites may collude to increase their power, making democratic control harder to achieve (AYOUB, 1991; AZAR; MOON, 1988). These grey zones all contribute for a country to be perceived as hostile in the international scenario (PIERSON, 2016) and help us justify why elites, processes, political coalitions, legitimacy and the degree of civilian control may be identified as arguments for the imposition of arms embargoes.

### **SOUTH AFRICA – UN EMBARGOES AND THE PUSH FOR REGIME CHANGE**

South Africa is the ideal case to study the impact of international sanctions on defense industrial production: the country suffered a non-mandatory arms embargo from the United Nations in 1963, which originated ARMSCOR and jumpstarted the quest for self-sufficiency and autonomy on defense acquisition. The embargo became compulsory in 1974, based on Article 47, Chapter VII, of the United Nations Charter (BRZOSKA, 1991, p. 22). The 11 years interval gave the state plenty of time to organize its internal production structure, direct R&D e develop a centralized network of supplies needed for its regional goals.

The story of South Africa as a state starts in 1910, with the establishment of the South African Union, under the British Crown. This organization acted as a way to repress domestic insurrections, build regional influence, reproduce the British Empire domination and join the war effort during World Wars I and II (BATCHELOR; DUNNE; LAMB, 2002, p. 340). This period of domination also paved the way for the racial segregation and the Apartheid, building the roots of the political regime that would see the decolonialization and perceive itself as the representant of the modern, western world among newborn states in its surroundings (CASTELLANO DA SILVA, 2017, p. 144).

The lack of knowledge about the story of ethnic groups and the grounds of Austral African society also led the great powers to misperceive its political rivalries as a mere reproduction of the Cold War dynamics (CASTELLANO DA SILVA, 2017, p. 163). During the period, African political elites managed to capitalize on military transfers and cash inflows from the great powers. However, given the excluding nature of great power competition and alignment, and being a byproduct of the British

Empire, South Africa retained access to technology and resources from the western world (BRZOSKA, 1991; TERRILL, 1984).

South African neighbors, mainly Angola and Mozambique, were perceived by the Soviet Union as a market for outdated or surplus defense goods. These countries were fighting their liberation wars against Portugal and needed cheap, fast delivered and easy-to-use equipment, advantages that only the Soviets could provide. Authors as Brzoska (1991, p. 23) posits that these wars retained a low-intensity character given the internal cleavages of the newly formed countries. South Africa, on the other hand, engaged on these destabilizing activities, in order to maintain its position as the only bureaucratically centralized state of the region.

The destabilization of the region and the sustenance of the Apartheid were the main goals of South African defense industrialization. According to Batchelor (1998), even after the end of the regime, in 1994, the defense industry retained its normative role of promoting employment and development. Rogerson (1990) gives us some data on the percentual raise on defense expenditure, growing 500% between 1961 and 1966 and, during the 1980, corresponding to 20% of government expenditure.

South Africa left the Commonwealth in 1961 and suffered the non-mandatory embargo on 1964, year of the foundation of the Armaments Production Board, that coordinated the private sector along the military industrialization efforts. The same year market the creation of ARMSCOR, in charge of manufacturing units and R&D coordination (BATCHELOR; DUNNE; LAMB, 2002; BRZOSKA, 1991). The country already had expertise in producing mortars, artillery, armed vehicles, radios and ammunition, now, it was emerged in a context of direct state involvement and a clear goal for its products (TERRILL, 1984).

Even after the mandatory embargo of 1974, imposed through the UN Resolution number 418, South Africa retained some degree of access to international markets and R&D structures, after all, the country was the western link to the south of the African continent and a way to contain soviet presence on the region. The embargo had loose restriction, leaving it to each supplier country to interpret and decide which items would be commercialized. The restriction would only be effectively enforced in 1986, through UN Resolution number 591, extending the terms of the embargo and being enforced by the Security Council (BRZOSKA, 1991).

Other mechanisms used to circumvent the arms embargo involved the distinction of armaments produced in South Africa under license, emphasizing those conceived before the resolutions: this guaranteed the supply of Mirage F1 fighter jets from France and Impala I and II light combat aircrafts from Italy (TERRILL, 1984, p. 5). South African defense production structure also specialized in overhauling and upgrading existing material (ROGERSON, 1990, p. 244): given the advantage the

country had in face of its neighbors, the last generation of products was not necessary to achieve the political-strategic goals.

With the end of the Apartheid, the military expenditures diminished and South African defense industries, organized under the umbrella of DENEL, had to deal with a shrinking defense budget and unclear strategic objectives. From this moment on, industries pursued strategies of diversification and conversion through joint-ventures and spin-offs.

South African defense industries remains integrated to global markets via European groups, such as BAE Systems, Thales and EADS, consolidating its position on aerospace products. Denel, however, registered a series of losses and the current acquisition system is plagued with corruption charges (DUNNE; LAMB; NIKOLAIDOU, 2019; MATTHEWS; KOH, 2021).

### **INDIA – US EMBARGOES AMONG REGIONAL COMPETITORS**

India is a very important case to be analyzed. Ranked as one of the most populous countries in the world and having nuclear capabilities, the arms embargoes suffered from the United States in 1965 and 1971 helped legitimate the push for autonomy in its region (KINSELLA; CHIMA, 2001). The embargoes coincided with the Indo-Pak wars, where Pakistan had a formal alliance with the United States, scenario that drove India into searching for alternative suppliers and policies of self-sufficiency.

India has a history of military disputes with its neighbor countries that must be taken into account while explaining its defense industry. The rivalry with Pakistan about the Kashmir and the rivalry with China about Himalaya are the most important aspects while observing the Indian impetus for defense self-sufficiency and a greater degree of autonomy in its region. Not only the geopolitical tension explains the preference for certain policies, but also the types of equipment that India will seek autonomous production.

With the partition of British Colonies, India retained the territory in which the Ordnance Factories was installed (HOU, 2009). Even with this advantage, the state retained its bureaucracy, without reforming the personnel that responded to the British Empire. These difficulties are reinforced by India notably pacifist stance on international relations, especially during its foundation and the role of Mahatma Gandhi. The military sector predominance would be prejudicial to a pacific coexistence with neighboring countries and to the process of resource allocation (MATTHEWS, 1989, p. 408).

This fear of the emergence of a military-industrial complex and of the capture of foreign policy delineated the initial characteristics of the Indian defense industrial sector, restricting the manufacturing of defense goods to public enterprises. Private industries only joined the defense effort in the late 1980s, restricted to products with low aggregate value and having little to no agency on policy formation (COHEN; DASGUPTA, 2010, p. 157; MATTHEWS, 1989, p. 416).

One must remember that the arms embargoes imposed in 1965 and 1971 were applied to India and Pakistan as a way to push the belligerent countries to a cease-fire. In doing so, the embargoes enforced India's quest for autonomy and strengthened Sino-Pakistani relations, dated from the 1960's and still evident for Indian security policymaking, given initiatives such as the China-Pakistan Economic Corridor – CPEC, featured on Chinese Belt & Road strategy and that would cross the disputed territory of Kashmir (RANJAN, 2015; SIAL, 2014).

India is a case study for arms embargoes on the other way around. The regional rivalries, the size of the domestic market and the need for uninterrupted supply are perceived as central for the Indian state, but the country has a centralized agency for acquiring military equipment and conducting R&D: the Defense Research and Development Organisation – DRDO. Besides coordinating R&D through more than 50 laboratories, the DRDO is also responsible for articulating the 8 Defense Public Sector Undertakings - DPSUs with the Armed Forces (DRDO, 2020; ROSSITER; CANNON, 2019).

The strategy of supplier diversification is commonly pursued by India. This rationale seeks to diminish dependence and the impact of eventual arms embargoes. It also intends to provide inflows of foreign technology into the national innovation system, but requires an efficient assessment to guarantee interoperability and readiness (ROSSITER; CANNON, 2019; HOYT, 1996, p. 101). India has serious bureaucratic issues on delivery schedules and meeting the requisites, as demonstrated on the project of the Tejas light combat aircraft, but successful initiatives on the BrahMos missile, jointly developed with Russia and the Agni intercontinental ballistic missile family (BARCELLOS, 2019).

Russia is, historically, India's biggest supplier. This partnership evolved through the Cold War and given the manufacturing structure that India developed, has helped the country in developing solutions to maintain and overhaul old Soviet equipment, opening new market niches among partners that operate those systems (JHA, 2016; ROSSITER; CANNON, 2019). In Narendra Modi's government, the pursuit for autonomy was deepened: through the *Atmanirbhar Bharat* initiative, translated as self-reliant India, the country is imposing embargoes on acquisition processes, in an effort to internalize production.

The initiative was announced in August 2020, and contains a list of 101 systems whose imports will be gradually forbidden, in order to push for domestic production through 2020 to 2024. This radical measure raises questions about the meeting of requirements, the budgetary funds used for domestic or external acquisitions, the quality of local products and the ability of the country to surpass its needs for critical components (COWSHISH, 2020; KAUSHIK, 2020; RAGHUVANSHI, 2020).

### **TURKEY – US EMBARGO AS A TRIGGER FOR DOMESTIC MOBILIZATION**

Of the four analyzed countries, Turkey must be the most nuanced. The country joined NATO in 1952 after the Korean Wars but, despite being a part of the collective security agreement, claimed the Northern Cyprus territory in 1974, which led to an arms embargo from the United States in 1975. This was anticipated since 1964, with a letter from former United States President, Lyndon Johnson, to the Prime Minister of Turkey, İsmet İnönü, fearing for the Soviet involvement on the conflict (KURÇ, 2017).

Proclaimed in 1923, the Turkish Republic was a project of the Armed Forces. The military assumed a role of “protectors” of the territorial integrity that would only have changed in the 2000’s, with the rise of the Justice & Defense Party – AKP. However, civil-military relations remain unresolved. This is best demonstrated by the competition between SSM (now called Presidency of Defense Industries), subordinated to the civilian Ministry of National Defense, and the TSK (Turkish Armed Forces) (KURÇ, 2017 p. 12)

Turkey remains in an environment of “territorial anxiety”: the country seeks to retain its territorial integrity while having the constant fear of abandonment for its international alliances: these processes derive from the fragmentation of the Ottoman Empire and the adoption of international rules and norms that weakened the domestic authority. Not coincidentally, Turkey retained an isolationist international stance until the end of World War II and frequently used its geographical position to antagonize the Soviet Union. Nowadays, the country retains the idea of being a bridge between the Western and the Islamic worlds (BILGIN, 2005; YEŞİLTAŞ, 2013).

The acceptance of Turkey into NATO in 1952 had ambiguous effects on domestic defense mobilization: the country now had access to modern military equipment and financial aid, but this halted indigenous efforts of defense industrialization in favour of the collective security arrangement. Turkey, however, had a history of military coups and government overthrows, what happened in the

1960s and deteriorated the international public opinion about Turkey's claims on Northern Cyprus (KURÇ, 2017; ÖZER, 2017).

The embargo exposed the deficiencies on acquisition procedures and maintenance of existing equipments. Turkey retaliated the embargo by closing US military bases on its territory and adopting a policy of incentive for its defense industry, in a process that Réal-Pinto (2017) calls the "turkification" of defense industry. Unlike other countries that, in the 1960's and 1970's increased the state participation, Turkey's private sector took the lead of the process, owning the companies and creating class entities.

Along with the rapprochement with the United States, the decade of 1980 saw a rise on turk-american joint-ventures, such as TAI – Turkish Aerospace Industries and FNSS, destined to build advanced combat vehicles. The country also saw the emergence of companies in electronics, batteries, ammunition, software and missile technology. These companies are often subcontracted and respond for the biggest incomes on Turkish defense exports, supplying allies, countries with little to no industrial defense structure and responding to the strategy of binding with Persian and Arab countries (BAĞCI; KURÇ, 2017; RÉAL-PINTO, 2017).

Turkey explicitly uses its defense industrial capacity as an international power resource. The country actively promote the sector in international organizations, establish bilateral defense agreements and have little to no interference on the choices of the firms. A more detailed analysis of these characteristics points us to the main problems of defense industries not responding to state objectives: civil-military relations are blurry, assessing external needs diminish endogenous innovation and the emulation of capabilities may not respond to the country's security imperatives.

As a way of internalizing more advanced technologies, Turkey uses a strategy of supplier diversification. The measure works as a way to circumvent commercialization restrictions, but also may weaken indigenous R&D. Products as the main battle tank Altay are widely dependent on German and Austrian components for its power unit. This kind of dependency restricts the possibilities of defense export of this products, given that Turkey will be hostage of critical components manufacturers until it does not reach enough know-how (ÖZER, 2017, p. 85).

Despite being integrated into NATO and assuming a key role in supplying unmanned aerial vehicles for the Russian-Ukrainian War, Turkey retains its own territorial interests, with its acceptance into the European Union always in sight. This is a problem given the historical rivalries with Greece over islands in the Aegean Sea, the continental platform, air space and Cyprus (GÜRSOY, 2018), questions that render NATO reluctant into commercializing or installing missile shields on Turkey's

territory and led to the exclusion of the country from the F-35 program after the country signaled the acquisition of Russian S-400 systems.

## **BRAZIL – THE ABSENCE OF EMBARGOES AND THE SPACE FOR INSERTION**

Of the four analyzed cases, Brazil is the only one that had no arms embargoes during the development of the indigenous defense industries; also, the country is the one with the oldest defense production structure of the four, with more than 200 years on artillery foundations. The push for industrialization, however, were concomitant with the other cases, happening mostly on the decade of 1970. Another particularity of the Brazilian case is the export-led defense industrialization, with a relatively small domestic market, unable to absorb its indigenous production.

Defense industry became a component of Brazilian foreign policy during the developmental paradigm, between 1930 and 1989 (SOUZA, 2012, p. 53). This linkage binds the sector to the broad import substitution process that the government was undertaking, and, even with the pacifist stance that distinguished Brazil in the international scenario, arms transfers were seen as a way to benefit the Armed Forces and deepen commercial linkages, benefitting from the relatively low regional competition and the influence from the transversal United States presence (AVILA, 2009, p. 296).

After participating in the World War II effort, Brazil had access to modern weapons systems from the great powers. From 1940 to 1964, the country structured its military research centers in the three branches of the armed forces and the motto of defense and development. As the country was undergoing a process of heavy industrialization, the defense sector appeared as one more area where the knowledge and manufactured output could be used (ANDRADE *et al.*, 2016, p. 14).

During the military dictatorship (1964-1984), Brazilian defense industry emphasized domestic innovation and saw the dominance of the military on the processes of R&D, acquisition and resource allocation to limit civilian agency. The period also saw a favorable international market, with growing demand for products that fulfilled objective goals without being cutting-edge: Brazil rose as an alternative for western-aligned countries that couldn't afford the political costs of buying soviet equipment (CONCA, 1992).

Domestically, the predictability of the sector, especially on budgets, access to internal markets, export-led policies and protectionism built the incentives for the firms to diversify into – and pressure for – defense industrial activity. The export-led defense industrial policies faced the resistance of the pacifist Ministry of Foreign Relations (MRE), arguing that the sector would provide international prestige and

cash inflows. Companies as Engesa and Avibras sought to increase their markets and supply countries in the Middle East and Northern Africa, using energetical security as an argument for the legitimation of the trade deals (DE MORAES, 2021).

This whole context changed with the re-democratization and the collapse of the Soviet bloc: the international market shrunk and the domestic politics saw military activity with big distrust. Even if Armed Forces retained their constitutional role of guarantors of law and order, just like the autonomy over their R&D projects, defense investment was seen as a big setback in face of the economic crisis and the other problems that Brazil faced from late 1980's to early 2000's (CEPIK; LICKS BERTOL, 2016; CONCA, 1992, p. 151).

According to Ferreira da Silva (2015, p. 66), there are five moments that helps us understand the Brazilian drive for defense industrialization in the 21<sup>st</sup> century: the creation of the Ministry of Defense, in 1995, hierarchically above the branches of the armed forces; the National Policy for the Defense Industry, first published in 2005; the National Defense Strategy, first published in 2008; the creation of the Bureau for Defense Products – SEPROD, in 2011; and the White Book of National Defense, first published in 2012. (BRASIL, 2012)

Fernando Henrique's government, from 1995 to 2002, was heavily focused on currency stabilization and, with the parity between US Dollar, the Brazilian Real made the domestic industry lose its international competitiveness. Lula, despite being a left-wing politician, ascended with the blessings of the Armed Forces, given his compromises to restructure and modernize the military. The National Defense Strategy from 2008 stated the government intentions to reorganize defense production among three strategical sectors: nuclear energy, cybernetics and space (FERREIRA DA SILVA, 2015; FUCCILLE, 2006; MAGALHÃES, 2016).

Even with these efforts, the defense industrial sector suffered with poor policy designs through PAED – Plan of Articulation and Defense Equipment, with unrealistic budget expectations. The weakening of civilian control, the rise of military presence on public bureaucracy seen since 2016 and corruption charges also contributed for the suspicion of public opinion about the sector (AMORIM, 2012; LIMA; SILVA; RUDZIT, 2021; MORCEIRO; TESSARIN, 2020).

The country, however, manage to sustain its defense industry mainly through Embraer. The company, that acquired most of its know-how through offset policies, has a consolidated position in international aircraft market and keeps selling the light combat aircraft Super Tucano. The recently launched KC-390, now called C-390 Millennium, also fulfills an important role in the international market among military carriers, built in collaboration with countries such as Argentina, Portugal and Czech Republic, having Embraer as its systems integrator (ANDRADE *et al.*, 2016, p. 20).

Avibras and the ASTROS II – Artillery Saturation Rocket Systems has also been one of the greatest cases of success of Brazilian defense products. The original system has been exported and given maintenance since 1983, mostly to middle-western countries. The updated version, ASTROS 2020, seeks to give the system more accuracy and develop a Tactile Cruising Missile. In this sense, Brazil must be very careful in observing the Missile Technology Control Regime, adopted in 1995 (ZABORSKY, 2003) and international opinion while promoting the exports of the equipment and designing technology transfer strategies (GOUVEA, 2018, p. 347).

## **CONCLUSIONS**

Arms embargoes were widely used to intervene in domestic politics. By denying strategic customary interactions, the sanctions on arms trade are a well-documented tool to force changes in the implementation of policy choices or international alignments. The empirical evidence suggests that, right after the imposition (or even the rumors) of an arms embargo, countries start re-allocating resources in order to maintain their capabilities and power projection resources. The table below summarizes the scenario of arms embargoes in each analyzed case:

Table 1: International arms embargoes among selected cases:

Country	<b>SOUTH AFRICA</b>	<b>INDIA</b>	<b>TURKEY</b>	<b>BRAZIL</b>
Imposing entity	United Nations	United States	United States	No embargo
Year of Embargo	1964, 1977 and 1986 (UN Resolutions 181, 418 and 591)	1965 and 1971	1975	-
Motivation	Apartheid regime and regional destabilization policies	Indo-Pakistani Wars	Regional disputes with Greece and the Cyprus question.	-
Domestic response	Raising defense expenditures, adopting production licenses and smuggling.	Supplier diversification and structuration of R&D agencies.	Private sector involvement and bureaucratic changes.	-
Domestic Specializations	Aerospace systems and integration with European groups.	Maintenance and upgrade of soviet systems; missile technology.	Aerospace and electronics.	Rocket systems and light combat aviation.

Source: Authors own elaboration.

This, however, seems to be truer in regions where there are pronounced historical rivalries, such as those seen in Turkey and India today. There are a lot of security considerations in those countries that must be taken into account while evaluating the responses to arms embargoes triggered internally and would need more time and opportunities to be evaluated. Also, there is a big research field on the restriction of arms transfers based on critical components and the interest of countries with higher technological capabilities that was not evaluated here.

The current international distribution of power and the dynamics of competition between United States and China are a useful context to evaluate the impacts of imposing arms embargoes. The war in Russia and Ukraine, especially considering that Russia is one of the biggest suppliers of defense material worldwide, makes the topic relevant, given that NATO would hardly be reluctant into imposing embargoes on those who may be opposite to the collective security arrangement.,

In each of the cases, the domestic scenario is way more nuanced than what could be presented here. The internal cleavages play a crucial role in shaping political decisions and the Gourevitch's reversed second image is a very useful framework to understanding the defense industry in this context and civil-military balance. There also a lot of case studies for the impact of broad economic sections, including arms embargoes, on Great Power competition: Russia and China must be taken into account for providing a credible alternative for the United States and having the power to retaliate constraints.

These are issues related to Great Power competition, but this paper addressed a different object. Even if emerging countries now face different international constraints from those verified during the Cold War, the study of arms embargoes proved itself useful to identify the measure as a condition for defense mobilization to take place or a faster pace, as was the case in South Africa and Turkey. These two countries, despite being socialized into the Liberal World Order, emphasized their regional security objectives and used the embargoes to legitimize domestic policies of defense industrialization.

India, despite suffering embargoes during the Indo-Pakistani war, now is using the tool of embargoes domestically to restrict imports and bolster its own defense industry: this may cost the reliability, rate of delivery and the meeting of requirements, but is still a policy to be properly evaluated and compare with previous import-substitution policies. For Brazil, arms embargoes are not a historical problem, but the country must be aware of the trading regimes that regulate its defense exports and on the consequences of its non-alignment in the global scenario.

In other senses, the recent war between Russia and Ukraine may force Brazil into positions of alignment with one of the blocs. Despite identifying with Russia on trade and development affairs – being both countries part of the BRICS – Brazilian main battle tank, the Leopard 1A5, built by German company Rheinmetall, is being supplied to Ukraine by allied NATO countries. Even with the Brazilian refusal to supply the MBTs and shells (GIELOW, 2023), analysts must maintain a cautious position observing the conflict and its turnovers for Brazilian defense readiness and the industrial production.

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