

**Defense Policy in Brazil:
Bridging the gap between ends and means?**

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Abstract

This article aims to analyze the Brazilian Defense Policy in terms of its ability to reduce the gap between ends and means. Since 2003, the Brazilian defense policy has evolved along with Brazil's increased role in the international system. Sustaining this process depends on institutional, economic, and operational conditions that are yet to be fully guaranteed. They require negotiations, reforms, and strategic perspective. By identifying specific challenges emerging from the national security institutional framework, the combat capability building process, the budgetary cycle, as well as from the defense industrial base, we sought to explain their rationale and to offer concrete policy pointers to overcome obstacles. As a general conclusion, the Brazilian defense policy was strengthened by the 2008 National Defense Strategy (END) due to its clearer strategic goals. Bridging the gap between those ends and the proper means is a continuous effort for any given country, but in the case of Brazil it has been addressed with firmer steps since the END, even in the face of harder economic and political conditions.

Key words: Brazil; Defense; Doctrine; Armed Forces; Defense Industrial Base.

Introduction

Three strategic goals justify and guide the Brazilian defense policy. The first one is to sustain multilateral security commitments both regionally (*e.g.* UNASUL) and globally (*e.g.* United Nations Peace Keeping Operations).¹ The second goal is to dissuade aggression and to defend the national territory, the population, the resources, as well as the Brazilian interests abroad. Finally, the defense policy must attend additional missions provided by the Brazilian Constitution to its armed forces. Such missions go from assisting in development efforts and natural emergencies to help neutralizing violent threats to public safety and the constitutional order.

This article aims to analyze the contemporary Brazilian defense policy (2003-2015) mainly in terms of its accomplishments and challenges regarding the authors' perceived gap between the strategic goals and the capabilities built to secure them.² The country's current defense policy actually started being outlined in 1999, when the Ministry of Defense – MD – was created. Nonetheless, it truly took shape with the beginning of the Lula administration, in 2003. Two official documents embody this turning point, namely the National Defense Policy, and the National Defense Strategy (Brazil 2005, 2008).³

The National Defense Policy – PND – document was adopted to provide a conceptual and normative discourse about Brazil's place in the international system. As such, the document falls more within the realm of foreign affairs than on defense *per se* (see Alsina Jr. 2009, p. 128, Cervo and Bueno 2002, pp. 468-470). The security concept it adopts conforms to the United Nations' standard and refers to strains and threats of any kind, although it warns about the eventual escalation of disputes over land and resources capable of leading to armed conflicts in the future. In turn, the National Defense Strategy – END – is the document that outlines the middle-term plans intended to comply with the general standing proposed by the PND. An interministerial committee prepared it in 2007, but it is noteworthy that the External Relations Ministry wasn't represented among its members. As a result, the Brazilian defense strategy has shifted away from the PND's diplomatic slant but also showed more consistency between security and development requirements guiding the country's international action (Silva, 2014).

Therefore, despite some discrepancies between their normative propositions, the PND and the END can be seen as evolutionary stages in the formulation of Brazilian defense policy. Both highlight the relative importance Brazil bestow to its international status, contrasted with challenges regarding capacity building in order to neutralize external threats and reduce internal vulnerabilities. In this respect, they represent an important agreement between diplomacy and defense to steer Brazil's international relations. If conventional deterrence is a function of the cost imposed on a potential aggressor's offensive (Mearsheimer 1983), the defense policy's main goal is to expand military capabilities to ensure that cost is significant, even though the combating forces may remain considerably asymmetric (Alsina Jr. 2003a).

A common approach between the foreign relations and the defense policy communities in Brazil is particularly important due to historical tensions related with national security issues throughout the country's republican history (Cepik 2001). As a result, civil society tends to be detached from defense matters, a behavior reinforced by widespread perception of a low level of external threats and a long tradition of solving territorial disputes through diplomatic means (Burns 1977; Ipea 2011).

A more recent challenge for the Brazilian national security policymaking process is the proper institutional designing of a framework allowing the Federal government to effectively coordinate foreign policy, national defense, law enforcement, and intelligence services (Arturi, 2014). Besides, such an arrangement shall also address the question of legitimacy and

consistency with the democratic regime established after the 1988 Constitution. The literature on Brazilian politics shows varying degrees of pessimism regarding the inertial weight of the latest transition to democracy and the current status of civil-military relationships in the country (see Oliveira 1987, Cepik 2005, Fuccille 2006, Bruneau and Matei 2008).

As a democratic developing country, Brazil needs to balance efforts to provide security (with a credible conventional deterrent) and socioeconomic progress to its population. Considering the high level of trust Brazilians place in the Armed Forces as an institution, so far the institutional equilibrium resulting from this balancing act proved to be strong enough to hold (Portal Brasil 2014). However, as the economic and political landscape change, one needs to reassess ends, means, and the challenges in between.

In the remaining of this article we address four issues that are key to the general problem as stated.⁴ The next section takes stock of the Brazilian national security policymaking framework and its institutional hindrances. Then we move towards assessing the Brazilian military capabilities in light of the country's geostrategic environment, referring to the main items of the Armed Forces' inventory and the most significant acquisitions in recent times. The third section draws a profile of Brazilian defense spending, demonstrating the continuous struggle to protect priority investments from economic fluctuations and to address the problem of unbalanced budget allocation. The fourth section describes the Brazilian defense industrial base, pointing out the major companies belonging to the defense sector and the government's policies to stimulate them. Finally, the concluding section offers a summary of our findings as well as a few policy pointers.

National Security Institutions

The institutional framework of Brazilian national security may be divided into three tiers, namely: (a) the first tier, comprising the presidency, the national councils and specialized congressional committees; (b) the second tier, composed by ministries and departments of the Executive Branch; (c) the third tier, represented by the Armed Forces, law enforcement agencies, and intelligence services.

The first tier was institutionally designed by the Federal Constitution (Brazil 1988) to replace the national security decision-making structure in effect during the civil-military dictatorial regime (1964-1985). Consequently, the former National Security Council was abolished and legal prominence has been given to the President's role as Commander-in-Chief of the Armed Forces, as well as to three new bodies, the Council of the Republic, the National Defense Council, and the Government Council's Chamber of Foreign Affairs and National Defense (Brazil 1999, 2003, 2009).

Although those joint bodies' duties and organization have considerably evolved since 1988, the lack of inter-agency cooperation, or even some bureaucracy specializing in and responsive to crosswise national security issues, keeps on limiting this first tier's ability to provide assistance and support to strategic decision-making. Even the Working Groups created as *ad hoc* interaction mechanism within the Chamber of Foreign Affairs and National Defense, which are disbanded after their goals are achieved, fail precisely because of their specific, temporary, and informal nature, despite their varied scope and ability to engage many agencies (Lima 2012). In that regard, the diagnosis posited by Proença and Duarte (2003) remains pertinent: "Since 1988, the discharge of duties held by the Council of the Republic and the National Defense Council seems to have fallen short of the constitution writers' expectations regarding their role as bodies that discuss and even monitor the national activities, or yet, as forms of governance".

The same is true for activities within the Legislative Branch's two permanent commissions on Foreign Affairs and National Defense, especially considering the seat turnover of only two years, which prevents representatives and senators from specializing in defense-related topics during the course of their terms. An analysis made in 2005 demonstrated that only 5% of the work within the Senate Commission on Foreign Affairs and National Defense was dedicated to the subject of defense (Flemes 2005, p. 160). For that matter, the law (Brazil 2010) establishes that every four years starting in 2012 the Executive Branch will update the PND, the END and the LBDN and submit them to the National Congress for appraisal. The fact that in 2013 such appraisals were made instead by the Senate's commission in charge of monitoring the intelligence services is further evidence of the unfocused performance of the Foreign Affairs and National Defense committee. This adds to the already weak engagement of congressman in defense matters, affecting particularly the Legislative Branch's role as the overseer of policies carried out by the Executive Branch.

In the second tier, the importance of each ministry in national security affairs has varied significantly since 1994 pending on particular political arrangements or personal profile of different officials. This is the result of the aforementioned absence of a coordination structure in the first tier that could tie together the specific policies of different ministries under a coherent whole. An example of this lack of a clear labor division in the national security framework can be seen in the field of public order and border control, as the roles of police and military forces either overlap or give room to significant gaps.

The lack of coordination in the national security framework impacts especially the performance of the MD (Fuccille *op. cit.*). It should be noted that until 1999, the year MD was created, each service branch possessed ministerial status. As a result, the Armed Forces retained a substantial portion of their autonomy under the new ministry, a thorny reality for the Ministry of Defense in its coordinator role.

Addressing these problems, the MD has been strengthened by a gradual improvement of its organizational structure. For instance, since 2010 it has an Office of Defense Materiel tasked to centralize acquisitions and coordinate financial incentives to strategic sectors. Also, an Office of the Secretary-General was created in 2013, allowing for proper management of medium to long term programs. While these new offices represent better work conditions for the MD, their range are still limited regarding the civilian authority over the Armed Forces. This was made clear during an episode in 2015, when a presidential decree tried to delegate the presidential Constitutional authority to approve active duty officers' promotions to the MD, only to be promptly revoked after facing fierce resistance from the Armed Forces commanders (Estadão 2015).

The greatest potential for improvement to MD's coordination role lies in a middle ground between the second and the third institutional tier, namely the Armed Forces Joint Staff, created in 2010 (Brazil 2010). Its primary mission is to promote the concept of jointness among the service branches, both in planning and operational terms. Being MD's permanent advisory military body, however, the Joint Staff has also the potential to play a mediating role between the Armed Forces' needs and the political decisions affecting them (Rosty 2011). Since its establishment, the Joint Staff has been active in areas such as public order maintenance (GLO), civil defense (calamity or emergency situations), border surveillance (Ágata operations to fight transborder crime), and international peacekeeping (*e.g.* MINUSTAH, UNIFIL, MONUSCO). On the other hand, those operations cannot substitute much needed joint exercises focused mainly on training combat.

Regarding the third institutional tier of Brazilian national security structure, comprising the armed forces, the federal and state level police forces, as well as the intelligence services, for brevity we will add just two comments about the Armed Forces.⁵

The first one shall stress the point about lack of integration between Army, Navy, and Air force negatively affecting planning and operations. In fact, the Brazilian defense policy in many aspects is still the ensemble of the policies carried out individually by each service branch (Alsina Jr. 2003b, Zaverucha 2006). The MD has helped to bring the service branches together, but at the present they still act in an isolated way. An example is the departmentalized sorting of goals for each service branch in the END, specially the labor division set up for the strategic capabilities defined as priorities – cybernetic for the Army, space for the Air Force, and nuclear for the Navy. This implies that the governmental initiatives addressing each of these sectors will benefit mainly the respective service branch, nurturing unnecessary competition for budgetary resources.

Second, there have been some reforms aimed to modernize the organizational structure of the Armed Forces, specially the Army. This process mirrors the transformation already experienced by many military forces around the world toward a flattened organization comprising smaller and flexible units. Its main feature is the adoption of the combined arms brigade as the basic operational unit (Duarte 2012, p. 214), in contrast with the divisionary structure that prevailed during and after the Second World War. It also involves some downsizing, since the observable trend is to fuse operational and administrative commands (see Brazil 2014) or eliminating them altogether, keeping the Area Commands as the sole military authority over an entire geographical region. However, where the force employment scenario is prone to conventional warfare, the permanence of divisions as intermediary levels between the brigade and the Area Commands is more likely. Thus, while the Brazilian Army is clearly trying to follow the international state-of-art in military organization, it will maintain a hybrid structure for the foreseeable future.

Military Capabilities

The current Brazilian END steer the Armed Forces towards a process of developing capabilities that is not centered against specific threats. Even so, broad goals need to realistically guide such building processes. Or, as Army General Cardoso puts it, military capabilities should match force employment scenarios (Jobim et al 2010, p. 432).

From 1946 to 1985, two thirds of Army troops were deployed in the Third Army area of responsibility, headquartered in Porto Alegre, the southernmost state capital city. The remainder Army contingent was deployed mostly in Rio de Janeiro. Such state-of-affairs was tied to a threat perception heavily influenced by Cold War politics and former rivalry with Argentina. However, since 1985 the land troops are distributed in eight Area Commands, which correspond loosely to the socioeconomic division of Brazilian territory. Military units are still concentrated in the south and southeast, where the country's main demographic and industrial centers are located, but several Army units were reallocated or created in regions previously lacking significant military presence, like the Amazon basin.

Within the current defense policy, potential external threats to Brazil may be seen as coming from two separate geographic fronts. The security imperatives on the western front faces inland in the South American continent and is entirely composed of land borders with adjoining countries, plus Chile and Ecuador. The threats in this front include the remote possibility of inter-state conflict, but also more plausible severe public order instabilities associated to violent crime, separatism, and proxy wars in other countries. The eastern front

faces the Southern Atlantic Ocean and its security imperatives include the "high impact/low probability" risk of aggression by a Great Power or a coalition of regional powers from outside the continent.

The western front has been historically marked by the government's scarce presence and encompasses territories obtained via diplomatic agreements even before they were actually populated by Brazilians. The Amazon region defense has always been particularly problematic because of its distance from the country's economic hubs, located along the Atlantic coast. In that context, the Army has been an even more important asset for the Brazilian government to protect the region. In 2015, an estimated force of 20,000 military personnel was deployed in the Amazon Command (Portal Brasil 2015), covering an area comparable to half of the European Union's territory. Additionally, a North Command was created in 2013 to take charge of areas previously under the Amazon Command responsibility. While the last is mainly about border patrol and jungle operations, the former is dedicated to protecting the Amazon's natural resources and inland lines of communication.

Brazil has decided to keep the Compulsory Military Service, in part due to the economic infeasibility of greatly expanding the ranks of career soldiers, but also because of territorial and social concerns. Drafting the local population is considered a two-way bridge between Armed Forces and diverse social groups of Brazilian society. The presence of military units is also crucial to deliver social services and build basic infrastructure in remote areas. This explains why in 2006, for example, there were more conscripts than all-volunteer military in the Army (Rizzo et al 2007).

Still, given the relatively low density of military personnel per land area in Brazil (see Figure 1), even the combined efforts of reallocation and conscription have a limited impact on filling the gaps in northern territory. Thus, having an effective military presence on the western front will depend largely on monitoring capabilities to acquire situational awareness over this large area, as well as on strategic mobility to connect theaters of operations and tactical mobility to guarantee that troops can maneuver in areas where the transport infrastructure is precarious.

Figure 1 – Active military personnel per land area (sq. km), selected countries, 2015

[Insert figure 1]

There are two monitoring and control systems in charge of the western front. The first one is the Amazon Protection System – SIPAM, which consists in a wide network of sensors and communication links which collects data throughout the rainforest and puts it at disposal of several public agencies. Since its inception, SIPAM has received several critics regarding to its technologic obsolescence, as the system was conceived having radars and AEW aircrafts as its main sensors at a time when satellite sensors were already in use (Leite 2002, p. 123). Another issue is the fact that SIPAM risks suffering from informational overload, as the public agencies connected to the system lack capacity to process the bulk of the data it collects.

The second monitoring system is the Integrated Border Monitoring System – SISFRON, a project intended to reduce the porosity of Brazilian borders in the western front. At a trial stage by the end of 2015, SISFRON is a top priority for both the Army in particular and the Brazilian government in general, mainly due to its contribution in counter-drug trafficking operations and the control of illegal border activities. Therefore, it seems that further

development won't be interrupted, even if the fiscal crisis continues beyond 2016. One of SISFRON's advantages on this matter is the high rate of made-in-Brazil components, as it has an Embraer subsidiary, Savis, as its main supplier (MD 2015). This contrasts with the development of SIPAM, which was heavily dependent of foreign companies (Leite 2002).

A common challenge for both SISFRON and SIPAM is the lack of autonomous space assets. Brazilian Space Program has already climbed important steps, but it faces long lasting obstacles, like its small and undependable budget.⁶ Even so, the Brazilian Space Program shows resiliency and has recently gained new breath due to the following factors: (a) the civilian control over the development of space assets; (b) the closer relationship with private companies⁷; and (c) the cooperation with emergent powers, such as India and China. While the national space sector show solid potential, especially regarding micro and nanosatellites, the integration of national space technology into command and control systems is yet to be achieved in the future. The most important project pointing towards that direction currently is the development of a Geostationary Defense and Strategic Communications Satellite (SGDC).

With respect to strategic mobility, the KC-X Project has been declared a priority by Brazilian authorities and significant sums from the defense budget were allocated to ensure the Armed Forces have mid-size cargo airplanes with inter-theater range capability. Its final product, KC-390, is being built in collaboration by Embraer and Boeing and may represent a new generation of military planes in its own category to replace Lockheed's C-130 Hercules in the international markets. In turn, tactical mobility will be bolstered by the H-X Project, which includes the delivery of 50 transport helicopters by 2017, namely the EC-725 manufactured by Helibrás, a Eurocopter subsidiary. The first units have already been incorporated into the Armed Forces. Helicopter purchases meet border surveillance and urban operation needs, as well as previously mentioned conditions of dense vegetation and poor road infrastructure found in the Amazon region.

It should be pointed out that the waterway network in the Amazon region stand as an advantage yet to be tapped into, considering their use would allow for fast, low-cost troop transportation. River mobility and maneuver requires the acquisition of amphibian armored vehicles and small vessels equipped with anti-ship missiles, such as hovercrafts and speedboats (Oliveira *et al* 2013). A stronger joint planning and operational framework for the Armed Forces would allow the Navy to focus on the Southern Atlantic Ocean, but that priority should be balanced to avoid leaving the Army alone with additional responsibilities to defend inland lines of communication. In any case, the specific needs to defend the Amazon regions also reflect on weapons procurements (Zaverucha 2006, p. 175). Today, there is hardly any industrial development project being carried out by Brazilian companies to produce military brown-water vessels. The last vessels bought were commissioned from a Colombian yard (Plavetz 2014). On the other hand, the Safe Amazon Project is underway to create new port authorities, law enforcement stations, and agencies in the Amazon and Center-West, which are meant to increase patrol activities in the Amazon and Paraguay-Paraná River basins. The vessels to be used are mostly fast boats capable of operating along with helicopters (Vieira *et al* 2014, p. 171).

In addition to representing the main way of access to the country in the case of a conflict with a military power from outside the continent, the eastern front includes the so called Blue Amazon (in the South Atlantic Ocean), where the pre-salt oil deposits are located and through which 90% of the Brazilian foreign trade goes to and from the country. Given the enduring geopolitical importance of oil reserves and the diplomatic controversies related to Brazil's extending its sovereignty over resources located along coastal perimeters, the possibility of foreign aggression is perceived as a sort of "low probability/high impact" threat, calling for

serious planning and actions dedicated to coastal defense. The pre-salt layer is located 250 km east from the Rio de Janeiro state coastline, that is, within the Exclusive Economic Zone, and it is believed there are other deposits in areas beyond this zone, which justifies Brazil's claim to have its Continental Shelf extended up to 648 km from the coast.

A geographic advantage to be considered in the Brazilian strategy is the islands found in the area, such as the ones in the Archipelagos of São Pedro and São Paulo, Fernando de Noronha, Trindade, and Martim Vaz. The islands make it possible to expand the reach of air defense systems and interceptor aircraft. The local geology also makes it possible to build submarine bases. It should be noted that the United States, Peru and Venezuela, among other countries, have not signed the United Nations Convention on the Law of the Sea.

According to the END, anti-access measures in the sea follows a battle order that unfolds as submarines are deployed jointly with the naval aviation, which provides situational awareness from aerospace vehicles and fire support from attack aircraft. The surface fleet is considered either as tactical or strategic reserve. Accordingly, the END expressly declares that dedicated aircraft carriers are not a priority, pointing that multi-mission ships that can serve as aerodromes are a more suitable alternative under Brazilian circumstances (Brazil 2008).

These guidelines resulted in the planned increase of the number of attack submarines through the Submarine Development Program – PROSUB. The PROSUB includes a partnership between French company DCNS and Brazil's Odebrecht ⁸ in order to build conventionally propelled submarines by 2021. The Brazilian Navy also intends to develop a nuclear-propelled submarine by 2025. Meanwhile, the Acquisition of Surface Means Program – PROSUPER – follow a profile found in navies such as China's and Turkey's, prioritizing small vessels with high firepower. The program intend to equip the Navy with 11 new oceanic surface vessels, but its execution had to be postponed due to less investment resources at Navy's disposal (Exame 2015). This decision stresses the high priority given by the Navy to PROSUB in detriment of other programs. Duarte (2012, p. 75) also highlights the lacking of missile capabilities in the Brazilian Armed Forces, a crucial component of any coastal defense.

Two additional aspects should be kept in mind regarding operational capabilities. The first is related to the low number of armored vehicles Brazil has when compared to other South American countries, especially if we consider the country's size. The latest main battle tanks (MBT) delivery was completed in 2014 (the final units out of a total of 220 Leopard 1A5), with no provision for additional purchases ⁹. It is unclear how much maneuver capability might be hampered without further acquisitions of modern MBTs in the near future. The current number of armored personnel carriers (APC) is also relatively low, but the defense planning offers a more favorable scenario here. After all, 175 retrofitted Urutu APCs will be handed over to the Army by 2016, and a procurement contract has been signed with IVECO on 2,044 Guarani APCs by 2020, some of which have already been delivered. Guarani's modular setup is advantageous because it can be converted into an armored infantry fighting vehicle by having it fitted with a 30mm gun turret and a modern fire-control system.

The second aspect is related to combat aircraft. The latest project to improve Brazilian Air Force was called the F-X Project. Its inception dates back to 1995 with the first attempt to acquire 36 fourth-generation jet fighters. The interceptor fighter Mirage 2000 was chosen at that time, but manufacturer Dassault discontinued its production before the end of negotiations. To make up for the Air Force's demand, Brazil bought 12 secondhand Mirages from France in 2005. The second F-X attempt soon followed, but remained stalled for years due to competition between the Dassault Rafale (France), the Boeing F/A-18 Super Hornet

(US) and the Saab Gripen NG (Sweden). Then, in 2013 the need for new jet fighters reached a critical level due to the scheduled deactivation of the secondhand Mirage 2000.

Eventually, in December 2013 the Brazilian government chose the Saab Gripen NG, the option preferred by the Air Force. The F-X 2 long-delayed definition resulted in part from diplomatic fickleness. Preference for one of the competitors shifted throughout the years according to political circumstances, but diplomatic attrition with both France and the United States eventually strengthened the Saab's position. The most evident factor was the offer of a technology transfer package for Brazilian companies involved in the aircraft's manufacturing process. Back in 2012, Saab had bought a share of 15% of Akaer Engenharia through a loan convertible into stock that can be extended up to 40% ownership. From then on, this Brazilian company took charge of manufacturing the Gripen NG's fuselage even before the definition of a victorious bidder for the F-X 2. In October 2014, negotiations with Saab were concluded and the Brazilian Air Force eventually signed the procurement contract that formalizes the purchase of 36 units of the Gripen NG.

Defense Spending

Long-term investment in acquisitions and development of military hardware requires sustained economic effort. Brazil has a relatively small defense budget, considering its position as one of the top 10 world economies (World Bank 2016). Military expenditure since 2003 is approximately 1.5% of Brazilian annual GDP, below the world average of 2% for the period (SIPRI 2015). Two fundamentals of the Brazilian society determine this disposition. First, the country's economic stability is only 20 years old, with relatively low growth in the whole period and recurrent volatility. Second, since the 1988 Constitution and markedly after Lula's presidency, social welfare is properly a greater priority than external defense.

Besides the relatively limited amount of resources it counts on, the Federal government defense budget features a wide disparity between different types of expenses. From 1995 to 2008, personnel accounted for 80% of the defense budget totals (Brustolin 2009). Moreover, expenses with inactive personnel – pensions and various welfare programs – exceeded by far active-duty salaries, as shown in figure 2.

Figure 2 – Brazilian defense spending profile, USD million, 2008 to 2010

[insert figure 2 here]

Defense spending also lacks efficiency due to the excessive discretion by the service branches when procuring equipment. Items of the same nature such as assault rifles¹⁰ used to differ in specifications according to unilateral preferences, with little regard to criteria such as joint doctrine or gains from economies of scale. Actually, this one-sided bias of procurement policies is present in the national security framework as a whole. When we compare the isolated acquisitions of unmanned aerial vehicles by the Federal Judicial Police and the Air Force, it's hard not to notice the lost potential for interagency cooperation.

One factor contributing to this state of affairs is the Federal government procurement law (Brazil 1993), which entails inertia since it exempts competitive public bids for products already incorporated in the operational activities of a given public body. The same exemption is extended to any purchase whose secrecy can be justified for reasons of national security, a

device that has suffered heavy critics since it's often used to alienate public opinion over acquisition options.¹¹

Following the worsening macroeconomic conditions since the end of 2013, the Brazilian federal government has resorted to budgetary cuts that heavily impacted the MD. In 2014, the MD suffered by far the biggest cuts among all ministries – BRL3.5 billion, almost a quarter of its planned budget (Martello 2014). The cuts were even more severe in 2015, but this time other ministries suffered heavier losses. In 2016, the MD's planned budget represented half of its nominal value compared to 2014. While the cuts purportedly won't result in giving up of the modernization programs already in course, it's undeniable that their pace will be substantially reduced, while projects that haven't initiated yet will be reconsidered.

The financial constraints imposed on the Brazilian defense policy are hard to mitigate due to some factors. First, decreasing spending on pensions is legally barred in most cases¹². Second, while releasing the military from subsidiary roles could reduce operational costs (MD 2009 cited Brustolin 2009), such measure would leave a serious gap in the Brazilian government ability to respond to emergency situations like severe floods or viral epidemic diseases like Zika. Lastly, substantially increasing the MD's share in the federal budget is not a feasible option under current fiscal constraints and will have to be postponed until the macroeconomic situation improves.

As an approach to get around these obstacles, the government set aside in 2013 approximately BRL 14.5 billion from the second phase of its Growth Acceleration Program – PAC – to fund investment priorities (Portal Brasil 2013c). Procurements embedded in the PAC have legal precedence over other expenditures, second only to constitutional obligations and the upkeep of organs and entities. As the latest Multiannual Plan of the Union¹³ puts the PAC as one of the three government top priorities (Brazil 2016), the modernization programs mentioned in the previous section can count on a more secure financing source at least until 2019. In the case of the Navy and the Air Force the budgetary resources are linked to specific sources of revenue. In 2011, for instance, more than a quarter of the Navy's revenue came from royalties for the production of petroleum and gas, while approximately a quarter of the Air Force's revenue came from tariffs for the air traffic control (Brazil 2012c, 233-234).

As for the coordination between the service branches' procurement policies, the duo SEPROD/Joint Staff seems to be improving it, but remains to be seen how far and deep it goes. In 2010 an ordinance issued by the MD set the guidelines for the coordination of programs and projects under the Defense Deployment and Equipment Plan – PAED - shared by the Armed Forces as a whole (MD 2010). In 2011, another ordinance has created a Working Group to coordinate the needs of each service branch (MD 2011a). The PAED Working Group (WG) is led by the Joint Staff and staffed by experts and representatives of industries related to the defense sector. Hopefully the WG will include other players in the future, such as universities and other government institutions with direct stakes in the PAED success (Brick 2012).

Defense Industrial Base

It is known that in the 1980s Brazil had one of the most thriving defense industries in the development world, having consolidated a top 20 position in the major arms exporters' ranking (SIPRI 2014). Since then, the national defense sector lost much of its breath, despite signs of recovery during the last decade (Dagnino 2010). Currently, the Defense Industrial Base is one of the core instruments to fulfill the END strategic goals.

According to Imai (2011), the Brazilian defense industry may be divided into three groups: a) Federal state-owned companies; b) companies whose capital is primarily Brazilian; c) companies set up in Brazil but whose capital is primarily foreign.

To the first group, the END assigns the mission of “operating at the technological ceiling by developing technologies that regular companies are unable to profitably achieve or obtain in the short- or medium-term” (Brazil 2008). Defense state-owned companies include, for example, Emgepron, the main coordinator of naval engineering projects, as well as Amazul, a company recently created from Emgepron's spin-off in order to carry out Nuclear Propulsion Program (Brazil 2012b), and Imbel, which makes rifles and radios. Both the Emgepron/Amazul duo and Imbel are connected to the MD via Navy and Army Commands, respectively.

The second group's main example is Embraer, with 15% of its total sales in the defense sector. Embraer is the only company in the South American defense industry listed among the 100 largest in the world, ranking 62th in 2013 (Fleurant and Perlo-Freeman 2014). The Brazilian company also owns Atech, a monitoring system development company that took part in the SIPAM project. Odebrecht, one of the largest business groups in Brazil, has joined the defense industry by buying Mectron (missile, onboard radar, and simulator manufacturer)¹⁴. Odebrecht Defesa e Tecnologia was also created to participate as a builder of shipyards and submarines. Worthy of note among smaller companies are CBC (ammunition), Agrale (automotive vehicles and related accessories), the Condor group (non-lethal weapons and ammunition), Inbrafiltro (armored vehicles and personal items), Inace (shipyard), and Forjas Taurus, a handgun manufacturer and a rare case of a Brazilian company focusing on exports in this industry. Finally, there is Avibras, responsible for the Astros multiple launch rocket system.

Most national capital companies, state-owned or otherwise, are grouped into industry associations. The main ones including Brazilian Association of Defense and Security Materials Manufacturers – ABIMDE, Association of Brazilian Aerospace Manufacturers – AIAB, National Association of Defense Materials Manufacturers – IMDE, São Paulo State Federation of Industries' Department of the Defense and Security Industry – COMDEFESA\FIESP, Defense and Security Business Forum of the Rio de Janeiro State Federation of Industries – FIRJAN and Forum of Defense Material Manufacturers of the Rio Grande do Sul State Federation of Industries' – FIERGS.

In the third group, which encompasses foreign capital companies, the main examples are Helibrás, a subsidiary of Airbus Helicopters, Daimler Chrysler do Brasil (automotive vehicles), Siem Consub (maritime logistic infrastructure), GE Celma (turbines), Iveco (a Fiat subsidiary, armored vehicles), and Turbomeca (turbines).

The potential for recovering lies in combining two different approaches. First, matching the national companies' capacity to attend the Armed Forces' demands. Second, invest in gains from economies of scale coming from expanding the business to regional or global markets. A study by Schmidt & Assis (2013) shows that most of MD's spending on defense material in terms of value goes to companies belonging to sectors of medium to high technology. However, the possibility for these companies entering international markets of high-tech defense products is very limited because of established oligopolies. This may explain why the internationalization of Brazilian companies of the defense sector remains discrete and why such internationalization could benefit from an additional focus in lower technologies with higher competitive potential in global markets (*id.*).

The Brazilian government has been improving the defense industry's regulatory framework over the years, which already contains legislation on purchasing, contracting, and

development of defense products and systems in the country. In 2005, the MD introduced the National Defense Industry Policy and created the Center of Certification, Metrology, Standardization, and Industrial Development of the Armed Forces (MD 2005a, 2005b, 2006). Both frameworks aim to improve the quality control and standardization of defense products according to rules and regulations set forth by law or stemming from international requirements. Their purpose also includes boosting the international trade of Brazilian defense products.

In 2011, the MD established for the first time an official set of standards to organize the registration and sorting of industry manufacturers that will be the target of public incentive policies (MD 2011b). Immediately, the standards make it possible to accredit Strategic Defense Contractors, approve Defense Strategic Products, and map the industry's production chain. The standards also encourage Technology, Manufacturing, and Trade Offsets and help to develop the Defense Industrial Base's national content, mainly by increasing the number of defense products exported. In 2013, the MD granted the first Strategic Defense Contractor certificates, and the 26 companies certified now enjoy fiscal and tax benefits, in addition to being given priority in calls for proposals that involve defense products (Portal Brasil 2013a).

From 2012 onwards, a new law and regulating decrees established the Special Tax Regime for the Defense Industry (Brazil 2012a, 2013a, 2013b). It offers advantages for Brazilian exporting companies even though the product exported may be 25% more expensive than its foreign counterpart. The new framework allows Brazilian companies to offset the costs involved in going into the defense industry, which involve adapting their lines of production to the specifications required by the military use. In addition, for the first time, arms procurements will have the legal basis to adopt criteria that go beyond prices and technical specifications to consider strategic aspects as well. Also regarding governmental incentives to the defense industry, the possible creation of a Defense Trading Company was discussed by a Working Group set up jointly by the MD and the Ministry of Development, Industry and Foreign Trade (MD and MDIC 2013).

In 2013 the project Inova Aerodefesa selected 91 business plans in the aerospace and defense industries to provide incentives to research, development, and innovation. Four agencies jointly launched this project, namely the Studies and Projects Funding Agency – Finep, a Brazilian state-owned company connected to the Ministry of Science, Technology and Innovation, in addition to the BNDES development bank, the MD, and the Brazilian Space Agency (Finep 2014). Inova Aerodefesa's allocated BRL 2.9 billion to the selected projects, way below the BRL 10 billion total sum originally sought by the business applicants (Portal Brasil 2013b).

Additionally, offset has become an important medium for technological transfer when procuring with foreign companies, as demonstrated by the Grippen NG case. However, as Schmidt and Assis (*op. cit.*, p. 58) point out, the efficacy of offset measures come up against the limited capacity by Brazilian R&D centers' in absorbing the new technology. Besides, industrial counter-espionage is not under the specific purview of any government agency, although it fits vaguely into counter-intelligence actions carried out by ABIN and other agencies in the Brazilian Intelligence System.

Conclusion

In this article the current predicament of Brazilian defense policy was observed through the lens of a continuous effort to match ends and means. First, one shall interpret the PND, END, and LBDN as political and conceptual improvements. By keeping focus on building skills and

defending the country's territory, sovereignty, and strategic interests, Brazil was able to leave behind a planning approach inherited from the civil-military regime (1964-1985). However, given newer and clearer goals, building adequate means (capabilities) becomes a challenge in itself (Santos and Duarte 2014). Such challenge was observed from four distinct angles.

First, we have looked into the national security institutional framework. The lack of a permanent and functional coordination structure at the highest level creates a strategic decision-making vacuum. It reverberates throughout all institutional levels and generates dysfunctions such as overlapping responsibilities, inefficient budget allocation, resistance to reform, and parochial bureaucratic turfs. A viable solution may come through the strengthening of one of the already existing national councils, or through the creation of a body with ministerial status responsible for tying together the national security.

The lackluster performance of the Legislative Branch's Commissions on Foreign Affairs and National Defense is another institutional factor hindering the full implementation of the END. Improving it requires appointing Congress members better qualified for the job, well supported by staff and Legislative services.

In the second institutional tier, the MD's political authority over the Armed Forces improved in the last decade, but there's a long way ahead to attain the commendable level for a consolidated democracy. Despite the importance of providing the MD with proper organization and authority, nowadays retired and active duty military officers predominantly fill them. Therefore, further improvement depends on having much more civilian staff knowledgeable and keen working along with them on the highest level of professionalism and mutual respect.

The Joint Staff also represents a yet untapped potential to improve civil-military relations within the MD system. It also gives unprecedented conditions to develop the concepts of interoperability and jointness between the service branches. In practice, however, the Joint Staff has acted more as an interagency hub closer to the MD than to the commanders of the service branches. A hard but necessary step would be to give the chief of the Joint Staff hierarchic precedence over the single force commanders.

In the third institutional tier, the changes in the Army's organizational structure share many resemblances with the model experienced by NATO countries, but with significant modifications in order to adapt it to Brazilian traits, such as the intention of maintain the Mandatory Military Service. As a matter of fact, conscription remains indispensable for the country in order to keep and strength the permeability of the Armed Forces to all social strata in a very unequal country. Also, the END bets on it as an augmentation citizen's force relevant under potentially asymmetric conflict scenarios.

Regarding military capabilities, we saw that the END puts great emphasis in monitoring and mobility as an alternative approach to actual widespread military presence in a country like Brazil. This emphasis was matched by objective actions carried out by Brazilian government, even more considering the government financial constraints. In monitoring, the major achievement is the activation of SISFRON. If we consider the recent implementation of "C2 em Combate", Army's new operations management software, there's reason to believe that Brazilian military is climbing solid steps toward net-centric operations capabilities. In mobility, the development of KC-390, the Army's new transport/tanker aircraft, brings more flexibility to the employment of land forces since it reduces the need for actual military presence and allows the concentration of troops in some strategically-placed nodes.

Both SISFRON and KC-390 projects show that the END's approach of defining top priorities has achieved remarkable success. Most of all, they also show that the performance of the MD,

with all its difficulties, made possible the national development of large-scale projects. A good part of the core modernization programs started in the last decade are at advanced development stage. It's true that their pace will slow down as long as the economic crisis remains, which mean fewer units, delivered over a longer span. But so far they are not under a significant risk of being cancelled.

In the case of the naval modernization, for quite some time now the Navy put greater emphasis on the development of nuclear-propelled submarines. The explanation is to ensure depth to naval operations in the Atlantic sea. In our opinion, however, Brazil should seriously consider to prioritize anti-access/area-denial capabilities, following the path threaded by other navies, China's being the most well-known example (Valladão 2012). This recommendation takes in consideration the great width and advantageous geology of the Brazilian Atlantic coast, well suited for the application of the principle of mass/saturation. In this sense, instead of relying upon a small fleet with increased operational range and stealth capability, a combination of conventionally powered submarines, frigates with guided-missiles, coastal anti-ship missile batteries, and land based air force interdiction capabilities could provide a stronger deterrent at an equivalent cost.

The federal government fiscal adjustment represents an acid test for the defense budget. Without counting on an increase of the MD's budget, the only way to get around the financial constraints is improving the management of resources applied to national defense. While the new MD's offices are important achievements, a real evolution requires a more qualified performance by the Legislative Branch in the defense budget formulation and oversight. An important contribution may come also from the Joint Staff in allowing for shared benefits between the service branches deriving from the same allocated resources, thus diminishing redundant expenses and the competition for budgetary resources. A related measure, even more difficult to implement, would be creating proper constabulary forces that would render unnecessary to transfer public order maintenance missions – and the expenses that come with it – to the military. Finally, maintaining targeted investments under the PAC's coverage is a prerequisite for their sustainability.

As an important part of the END, building the Defense Industrial Base and the associated R&D capabilities are significant challenges. The first step should be to improve the strategic planning and to review the incentive structures. The current approach adopts the national development of high technology as the main criterion for financial incentives. We think more importance should be given to factors such as competitive advantages in regional and international markets, and the collateral positive impacts in the whole productive chain. This might imply changing the criteria and the recipients of government funding. Two additional factors hamper defense related R&D in Brazil. First, the formal mechanisms to protect defense product innovation, such as patent deposits need to be improved. Second, offset measures may fail at absorbing technology because of the lack of proper interface between universities, Armed Forces and the private sector.

By analyzing the gap between ends and means, one realize that Brazilian defense policy is not only about defending the Brazilian portions of the Amazon region and Southern Atlantic Ocean, but also providing regional security in a cooperative way. UNASUL requires continuous support from Brazil to build trust, reduce tensions and coordinate the foreign and defense policies of South American countries (UNASUL 2008, Rezende 2015).

In sum, the prospect for the Brazilian defense policy was made better thanks to the clear definition of what are the core strategic goals since the issuing of the END. Brazil has increased the investments in the defense sector while maintaining the guiding principle of prioritizing social welfare over external defense. It proved to be possible to carry out

modernization projects without overstressing the Federal government budget. Nevertheless, practical challenges emerging from such capability building efforts shall also prompt a continuous adaptation of intermediate goals, as demonstrated in this article.

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NOTES

- ¹ Unless otherwise indicated, all acronyms and abbreviations used in this article follow the Portuguese extension designation.
- ² This temporal horizon matches the tenure of the government led by the Worker's Party broad coalition. However, it is not our subject here to evaluate Mr. da Silva or Mrs. Rousseff performances during their respective terms as Presidents.
- ³ There is also the National Defense White Paper – LBDN. It is an important document on defense, providing official information on the Brazilian strategic-related attributes and its vision on international security. The writing of the White Paper counted on unprecedented engagement of civilian groups. However, since its content is essentially informative, it won't be adopted as an element of our analysis. See Brazil (2012c) for the English translation of the document.
- ⁴ This particular approach builds loosely on the framework of analysis proposed by Proença Jr. and Diniz (1988).
- ⁵ For the current situation of intelligence in Brazil, see Brandao and Brito (2014), as well as Cepik and Ambros (2014). For police institutional reforms in Brazil, see Willis and Prado (2014).
- ⁶ For a thorough evaluation of the Brazilian Space policy, see Machado (2014).
- ⁷ In 2016 EMBRAER declared its intention of expanding its share in the space sector (AEB 2015).
- ⁸ In 2016, the government cut half of Odebrecht's funding destined to the development of PROSUB (Exame 2016).
- ⁹ In 2016, the company KMW established its first subsidiary outside German soil in Santa Maria, the main base for MBTs in Brazil.
- ¹⁰ The new IA2 assault rifle, manufactured by the MD-owned company Imbel, was chosen by the Joint Staff to equip all service branches (Brazil 2012c). Although already employed by some Army units, its adoption by the Navy and the Air Force wasn't officially confirmed by the time we finished this article.
- ¹¹ The most famous case being the development of SIPAM (see Silva 2004, pp. 81-86).
- ¹² Expenses with pensions will slowly shrink as changes in military retirement plan already in force will affect the younger generations of officers.
- ¹³ The Multiannual Plans of the Union establish guidelines, goals and targets of the federal public administration for the period it is in force. The plan was instituted by the 1988 Constitution as a way to bring back mid-term governmental planning into the country.
- ¹⁴ As a consequence of recent financial and legal troubles, Odebrecht has divulged the intention of selling its respective share in Mectron.