Brazilian National Defence Policy: foreign policy, national security, economic growth, and technological innovation

Leandro Bolzan de Rezende, Paul Blackwell & Marcos Degaut

Published online: 19 Oct 2018.

Submit your article to this journal

View Crossmark data

Check for updates

Brazilian National Defence Policy: foreign policy, national security, economic growth, and technological innovation

Leandro Bolzan de Rezende[a], Paul Blackwell[a] and Marcos Degaut[b]

[a]School of Mechanical, Aerospace and Civil Engineering, The University of Manchester, Manchester, UK;
[b]Department of Political Science, University of Central Florida, Orlando, FL, USA

ABSTRACT

With the world's ninth largest economy and comprising nearly 60% of South America's GDP, 47% of its territory, and 49% of its population, Brazil has become a regional power and an important actor in world affairs over recent decades. This scenario has led the government to re-evaluate its role in the world order, resulting in the enactment of the National Defence Policy, whose objective was to consolidate the country as a regional power while at the same time addressing national security issues, promoting economic development through a series of defence programmes, restructuring the defence industrial base, fostering innovation through technology and knowledge transfer to Brazil, and indigenous research and development. However, the policy's implementation suffers from several challenges discussed in this article, which may test the capability and competence of Brazilian policymakers, military, industrialists, and other individuals and organisations involved in its implementation.

Introduction

Brazil has become a regional power in South America and an influential actor on the world stage over recent decades. Regionally, it accounts for almost 60% of South America's GDP,[1] 47% of its territory, and 49% of its population.[2] Globally, Brazil was the ninth largest economy in 2016 and is recognised as a rising power alongside other emerging countries.[3] In addition, a sentiment of grandiosity has always been present in the Brazilian national strategic culture, wherein the country regards itself as destined for greatness and a more influential role in world affairs.[4]

In order to fulfil its "destiny," Brazil – a long-time supporter of the principles of sovereignty, self-determination, and non-intervention – has historically advocated the use of soft power capabilities to advance its foreign policy priorities and promote changes in the international scenario conducive to its interests. Yet, despite Brazil's traditional preference for non-confrontational politics, non-coercive strategies, and ideational resources of leadership – such as consensus building and persuasion – relatively recent changes regarding how Brazilian policymakers understand the legitimacy of the use of power to pursue foreign policy objectives seem to be gaining momentum.

CONTACT Leandro Bolzan de Rezende ✉ leandro.rezende@manchester.ac.uk

The basis for this new strategic mindset seems to be the widespread perception among the Brazilian politico-military establishment that the use of soft power resources without the support of strong hard power capabilities might be insufficient to accomplish Brazil's objectives. This perception, in turn, reflects a growing understanding that no country has been able to acquire global power status without a solid military power to complement its diplomatic and economic credentials; thus informing the gradually increasing reliance of recent Brazilian defence and foreign policies on hard power capabilities rather than on ideational factors alone. Implicit in this new stance is the premise that if Brazil is to increase its international standing and be recognised as a major stakeholder not only in its region, but also in global affairs, the country needs to be prepared to embrace responsibilities that surpass mere diplomatic action and rhetoric. Above all, it needs to be able to flex its muscles and display military and power projection capabilities and resolve.

Far from indicating that this strategic framework implies the adoption of an aggressive or warlike international behaviour, Brazilian defence and foreign policies highlight diplomatic actions as the primary instrument for conflict resolution and takes a strategic position based on the readiness and credibility of military capabilities that would lead to a dissuasion effect.[5] Such deep interconnection between foreign policy and national defence policy helps to forge a narrative that confirms Brazil's identity as a pacifist country, while simultaneously substantiating and strengthening its claims to recognition as a major actor in the international system, ultimately paving its way to attaining a permanent seat on the United Nations Security Council (UNSC).

Such shifting perceptions would appear to have more contemporaneous origins with the creation of the Brazilian Ministry of Defence in 1999, an institution charged not only with the task of uniting the Army, the Navy and the Air Force, but also with the responsibility for formulating the basis of a national defence policy, as well as the doctrine, policy and military strategy of defence.[6] The introduction of the National Defence Policy (NDP),[7] the National Defence Strategy (NDS),[8] the Brazilian White Paper[9] and the Defence Articulation and Equipment Plan,[10] which together form the Brazilian defence policy framework, seems to have provided the groundwork through which this trend flourished. An additional consequence has been the allocation of the necessary attention and investments to the defence sector, with the intention of rebuilding Brazil's military capabilities and restructuring its defence industrial base up to the level of the 1980s; when the country possessed one of the most booming defence industries in the developing world and was the fifth largest global exporter of defence hardware.[11]

Despite some important conceptual changes taking place in the Brazilian strategic framework, there has been an apparent scarcity of research regarding its defence sector. Nevertheless, among the different researches involving the Brazilian defence sector,[12] an important debate has been carried out over defence politics and the role of institutions and actors in the sector, especially civilian control of the military after the creation of the Ministry of Defence and the enactment of the NDP.[13] This paper, however, moves away from that perspective and focuses on policy rather than politics, adding a different viewpoint to the debate through an analysis regarding the NDP and its objectives in terms of foreign policy, national security, economic growth, and technological innovation. Moreover, the periodical revision[14] of the NDS and the end of the Labour Party ruling era in Brazil in late 2016; after 13 years in power, provides a perfect interval for an analysis of

these legal instruments from a retrospective angle, highlighting objectives, achievements and failures.

Therefore, this article is structured as follows: The first section introduces what constitutes defence from the Brazilian perspective, laying the foundation for the ensuing discussion. Following this, the second section frames the discussion in the context of South America's geopolitics, discussing defence as a foreign policy instrument. The third section presents national security issues in the Brazilian defence and security environments. Subsequently the Brazilian defence industrial base and the NDP are presented as mechanisms to foster economic growth and expand foreign trade. In the fifth section, the use of defence investments as a way to increase technological innovation is discussed. Finally, potential implications and limitations of this research will be presented and examined.

Defence from a Brazilian perspective

The concept of "national defence" varies greatly between countries. For operational purposes, this paper will adopt the definition proposed by Aben[15] as a baseline: "defence consists in the capability to implement, in any time, in any circumstance, the means to prevent, deter or fight any form of aggression in order to guarantee the integrity and safety of the nation's interests." From this definition, it follows that every country either has defence capabilities or fundamentally needs to develop them. Moreover, "in any time" and "in any circumstance" imply an enduring attitude regarding defence as opposed to a temporary or reactive disposition towards an imminent threat or situation. Likewise, the notion that permanent defence capabilities can be used to "prevent, deter or fight" stresses the different levels of engagement that can be adopted, which include preventing a conflict, holding an official protest, demonstrating power for purposes of dissuasion, conducting a pre-emptive attack to defend oneself, and engaging in massive retaliation. The mention of "any form of aggression" also expands the spectrum of possibilities, from defending territorial integrity, sovereignty or people, to defending other interests such as economic and technological ones. Finally, "guarantee the integrity and safety" of a state means that defence capability must be sufficient to secure the whole of the country's interests and produce a sentiment of tranquillity to its people.

The Brazilian definition of defence was presented in the NDP[16] as a "set of State measures and actions, with emphasis in the military expression, to ensure the defence of the territory, sovereignty and national interests, preponderantly against foreign threats, potential or manifest." This definition touches on three important aspects that require discussion. The first is related to the statement "with emphasis in the military expression"; this implies that defence actions are not limited only to military expression, but should also incorporate other national power expressions such as the political, economic, psychosocial, scientific, or technological; even if in a limited way. The second aspect relates to the recognition that not only territory and people should be defended, but also the country's sovereignty and national interests, considerably amplifying possibilities for action. Finally, the third aspect highlights that the threats against Brazil would be preponderantly foreign, so defence capabilities should be primarily focused on this scenario.

Therefore, defence from a Brazilian perspective is focused on, but not limited to, maintaining the integrity and safety of Brazilian interests against foreign threats from other

countries or organisations. This definition of defence, though not as well elaborated as that presented by Aben,[17] draws attention to some important features that have led to the development of a series of defence programmes aimed at reorganising the Brazilian Armed Forces. Moreover, these programmes represent both the basis for restructuring the Brazilian defence industrial base and a key element in fostering technological innovation based mostly on indigenous technology. Similar to other emerging countries – such as India and China – Brazil adopts a definition of defence that implies a discourse logic which combines security and development, while addressing issues related to foreign policy, national security, economic growth, and technological innovation,[18] as illustrated in Figure 1.

In summary, the Brazilian view of defence, and by consequence its defence policy and strategy, appears to be designed with the objective of consolidating the country's position as a regional power and gaining more influence in the world through the use of both soft and hard power capabilities with greater confidence. The government seeks to implement this strategy through several programmes that not only intend to deliver the defence capabilities needed to reposition Brazil as an important power, but also wants to foster technological autonomy and economic development. Such evaluation shaped the formulation of the NDP, which, as Cepik and Bertol[19] argued, "provides 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 defence per se."

Geopolitics in South America

The post-Cold War decades were marked by the shift of power from a unipolar to a multipolar world in which traditional US hegemony seems to be gradually declining.[20] Despite apparently having the power to shape the world after its own interests diminished, the USA remains a major force in South America and has implemented several plans to
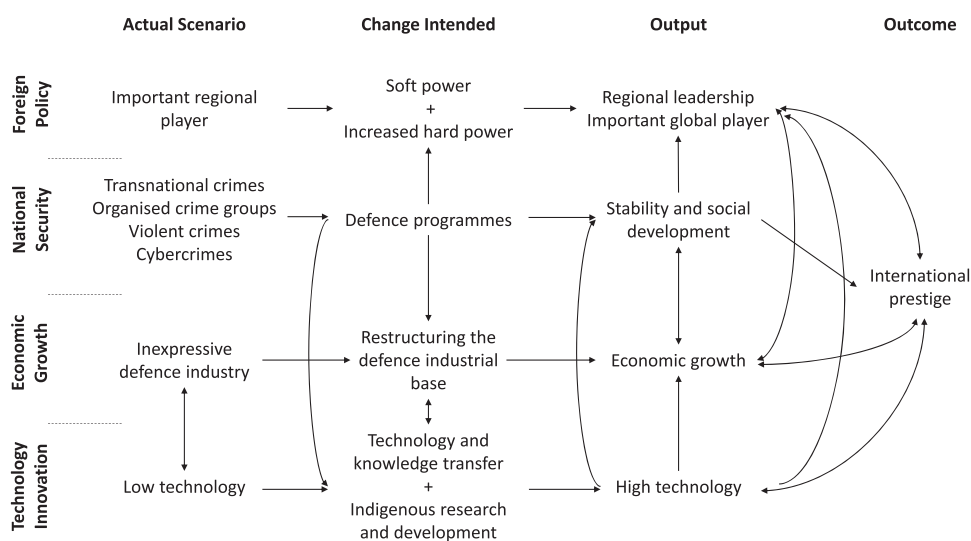
Figure 1. Brazilian National Defence logic.

increase its influence in the region. These include Plan Colombia, Plan Mérida, re-launching of the US Fourth Fleet, US training programmes for Latin American military personnel, and active bases and personnel in South America; including the construction of a new military base in the north of Argentina, bordering Brazil and Paraguay, where US military forces will work with the Drug Enforcement Agency (DEA), the Federal Bureau of Intelligence, and the Department of Homeland Security (DHS) arguably to improve addressing issues of terrorism and drug-trafficking in the Triple Border area, besides other minor initiatives. At the same time, the need for the European Union, another Western power, to focus its agenda on domestic challenges – such as the Greek debt crisis, the disagreement among its member states regarding the strategy for addressing the refugee crisis, Brexit,[21] and the Catalan referenda – has checked the momentum for expanding the regional integration model.

Meanwhile, old players such as Russia and China have started to challenge the established world order, the former challenging Europe and NATO regarding sovereign Ukrainian territory, and the latter regarding the control of islands in the South China Sea.[22] Russia also sought to re-establish closer relations with Latin America not only to increase its commercial presence in the region and forge a more solid cooperation in the defence sector, but also to gain "access to ports and airfields in the region so as to support Russian military operations in the vicinity of the United States,"[23] particularly in Cuba, Nicaragua and Venezuela.

The Chinese strategy regarding Latin America, however, is more aggressive and twofold. On one hand, it seeks to present itself to the region as an alternative to the West by using its economic power to offer loans and funds that have contributed to preserving allied regimes in Venezuela, Ecuador, and Bolivia; making investments in infrastructure projects and to gain access to natural resources, while also signing bilateral free trade agreements with Chile and Peru as members of the Asia-Pacific Economic Cooperation (APEC).[24] On the other hand, China expands its military influence in the region by offering educational and training programmes with the People's Liberation Army and increasing the offer of arms and equipment from Chinese companies.[25] Furthermore, through the launching of its "Belt and Road" initiative, an ambitious development project estimated in over USD 1 trillion, China seeks to expand its influence by boosting trade, providing massive funds for infrastructure building, and stimulating economic growth mainly, but not only, along the centuries-old Silk Road. The Chinese initiative, which parallels the Brazilian and Russian support, seems to know no geographic boundaries, and includes Latin America. All these changes in the global order have given rise to a new multipolar world dominated by tier-one powers such as the USA, China, the European Union, and Russia.

Alongside the changes in the global order, India, Brazil, and South Africa (IBSA) have apparently emerged as intermediaries – regional or tier-two powers – given their role in their region and their ability to work as intermediaries between tier-one powers and the remaining countries in their immediate region of influence.[26] The growing economic importance of China, Russia, and the IBSA countries has led them to form the BRICS, in 2006, despite significant political divergences. The co-operation among these countries has grown in a number of significant areas, particularly concerning global economic governance. Such strategy focuses on the establishment of working groups to strengthen commercial initiatives and capital market in order to boost economic growth, accelerate

the internationalisation of sovereign currency for a better international monetary system, reduce institutional and conceptual barriers to accelerate their technological and financial development,[27] and eventually establish their own rating agency. Moreover, Brazil has demonstrated that it intends to obtain technology from developing and emerging countries rather than exclusively from mature economies, even in areas of advanced technology.[28]

At the continental level, power dynamics are shaped by regional integration efforts such as the Common Market of the South (MERCOSUL) and the Union of South American Nations (UNASUL). The MERCOSUL, an imperfect customs union composed of Argentina, Brazil, Paraguay, Uruguay, and Venezuela, was created in 1991 and focuses primarily on economic and commercial subjects. In contrast, UNASUL, composed of Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, and Venezuela, was created in 2008 and tends primarily to political and defence issues[29] – although regional integration is also a long-term objective. Brazil still seems to follow a two-fold strategy to project its influence over neighbouring countries and to position itself as a regional leader with the capacity to not only build a common South American identity, but also to strengthen the region aspirations to greater geopolitical relevance. On one hand, Brazil has sought, in recent years, to deepen its South-South co-operation strategy while, simultaneously, trying to reinforce its role and presence in multilateral forums and institutions, exercising its agency within the G20, IBSA Dialogue Forum, South American-Arab Countries (ASPA), and BRICS summits.[30] On the other hand, within the UNASUL's South American Defence Council (CDS), Brazil seeks to project power and exert its hard power through combined training (within the framework of the South American School of Defence and existing defence schools), the joint development of defence product projects (e.g. the Gaucho light combat vehicle and KC-390 military transport aircraft), and leading UN peacekeeping operations.[31] Moreover, Brazilian leadership in the United Nations' Stabilisation Mission in Haiti (MINUSTAH) was crucial in highlighting its role in peacekeeping efforts and strengthening its credentials to assume greater responsibilities in the governance of the international order and to meet increasingly higher UN collective security requirements worldwide.

The importance of any of these diplomatic initiatives should not be overestimated, however, and must be put in a proper perspective. To some scholars,[32] MERCOSUL has so far failed to live up to its ambitions of integrating the region, as it has experienced disappointing growth of trade within the bloc, which has fallen since 1998 – and up to 2016 – as a share of members' total trade. Integration will likely be further stifled as MERCOSUL countries insist on falling back on protectionist policies and display reluctance toward creating value-added supply chains, or regional production hubs. Likewise, Brazil's initiatives to establish and maintain a superficial and "relatively toothless"[33] UNASUL under its leadership have been met with some distrust, and have led some countries in the region to seek alternatives to any Brazilian would-be hegemony, whilst others have openly "started balancing and constraining an increasingly ambitious Brasília."[34] Several countries, such as Colombia, Peru and Chile, have signed free-trade agreements with the USA, and prefer to pursue a special relationship with the global superpower. Along with Mexico, these Andean countries also established the Pacific Alliance in 2012; a dynamic trade bloc created to counterbalance the weight of the Brazilian-led MERCOSUL – in itself an increasingly dysfunctional, divided and emptied

organisation which endures numerous threats of abandonment by its smaller and less satisfied members, Paraguay and Uruguay. Further, Colombia's withdrawal from UNASUL in August 2018 left the bloc on the edge of virtual collapse, particularly when one considers that Argentina, Brazil, Chile, Colombia, Peru, and Paraguay had already suspended their UNASUL membership in April 2018 due to ideological disputes with Caracas' left-leaning allies. As for MINUSTAH: despite Brazilian leadership in the mission is generally considered as a role model, the mission itself has been marred by controversy involving allegations of sexual abuse and human rights violations. Likewise, while the mission is credited with stabilising the country, there has been harsh criticism regarding the excessive use of force in the restoration of law and order. The mission's most controversial legacy, however, relates to the outbreak of cholera in 2010. It is now estimated that around 10,000 Haitians have died and over a million have been infected as a result of the disastrous outbreak. At the end, MINUSTAH contributed to signal "Brazil's commitment to international accords and to demonstrate that it had sufficient commanding skills to be considered a so-called global player or emerging power" and to integrate defence and foreign policies by increasing the role of the Armed Forces in foreign affairs and peacekeeping policy making, but it failed to modify doctrine and training, serving mainly as training ground for pacification strategies, reinforcing internal warfare traditions used in the country's slums and urban settings and going on the opposite way of outward-looking missions as stated on the NDP.[35]

In brief, the geopolitics of South America is shaped by not only the influence of major powers such as the USA and China, but also regional efforts to present South America as an independent geopolitical region in which Brazil is the main regional player. In that context, three strategic goals are presented as guiding the NDP: (i) to support multilateral security commitments both in the region and globally; (ii) to increase the country's dissuasive capabilities; and (iii) to be able to use its Armed Forces in a number of intrinsically different missions, ranging from "assisting in development efforts and natural emergencies to help neutralizing violent threats to public safety and the constitutional order."[36] Some argue, however, that one objective behind the NDP agenda was to gain geopolitical leverage, increasing Brazil's capability to negotiate with tier-one powers and eventually project its influence over weaker countries.[37] According to this perspective, an upgrade in Brazil's international status could be developed through stronger, more modern military capabilities that would be demonstrated through technology independence and leadership competence. The combined and balanced use of its increased hard power and its traditional soft power would be the means used by the Brazilian foreign policy to present itself as a player with an important voice in global affairs. However, a country's status in the global order goes beyond its hard and soft power capabilities to encompass, among others, aspects such as its political, security, and sovereignty stability; its economic, scientific and technological capabilities and resources.

National security issues in Brazil

South America is a relatively peaceful region in terms of interstate conflicts,[38] although some long-standing territorial and border disputes still remain unresolved; among them, the border disputes between Peru and Chile, Colombia and Venezuela; and Venezuela and Guyana, as well as territorial disputes between Bolivia and Chile, the

Antarctician territorial dispute between Chile and Argentina, and the disputes over the Falklands Islands between Argentina and the United Kingdom.[39] Brazil has no disputes regarding territories with neighbouring countries, nor has it been involved in conflicts in recent decades.[40] The last conflict which the country was involved was the Second World War, and the last regional conflict was the Paraguayan War in 1870. Besides that, some of Brazil's neighbouring countries have some minor border tensions without implications for Brazil.[41]

Besides interstate conflicts, South America is also confronted with domestic crises in many countries, as well as transnational security threats, which have helped to increase violence in the region. The security agenda in South America is, therefore, multidimensional and involves distinct systemic levels, which clarifies why it is necessary to analyse the region from domestic, bilateral, and regional perspectives.

The main threats in the region have come from transnational and organised crime such as drug trafficking, violent crime – assault, burglary, motor vehicle theft, robbery, sexual crimes, and theft – and cybercrimes, rather than foreign states.[42] Drug trafficking involving Brazil is related mainly to cocaine and cannabis products, both for consumers and sellers. The consumption of cocaine has increased in the country from 870,000 users in 2008 to 1,307,000 users in 2016, placing it second in the Americas, ranked only below the USA, which has 4.7 million users.[43] Moreover, Brazil is the most important transit country in the global drug trade, as evidenced by cocaine seizures in Africa,[44] Europe, and Asia,[45] which indicate that the country has become an important route for the export Colombia-produced cocaine (775,910 kg of cocaine leaf and 297,120 kg of cocaine base, paste, and salts were seized in 2015), as presented in Figure 2.[46] Further, international organised crime groups have increasingly exploited Brazilian territory to identify transit points for cocaine shipments from Colombia, Bolivia, and Peru to Europe.[47] The cannabis market has multiple players in the region. Most countries in South America – notably Brazil, Argentina, Uruguay, and Chile – cite Paraguay as the main source of cannabis resin found in their market; Paraguay was also responsible for 59% (5900 tons) of cannabis herb production in South America in 2008[48] and, more recently, 36% of South American Marijuana herb seizures (510 tons) in 2015.[49] The use of cannabis products in Brazil increased with the rising availability of cannabis products from Paraguay.[50] Additionally, the legalisation of cannabis production, distribution, selling, possession, and use in Uruguay was viewed as unsuccessful by Argentinian and Brazilian authorities, especially after "statements from police officials in Uruguay indicate[d] that cannabis trafficking has remained unchanged and that organized criminal groups may have benefitted in the initial period before establishment of the retail pharmacy system."[51] The use of the country as an important drug trafficking route and its status as a major drug market have limited the ability of defence and security forces in Brazil to control its borders against drug-related threats, which is the subject of much discussion in Brazilian politics.

Venezuela, Colombia, and Brazil are countries with high murder rates, and there "appears to be a strong relationship between the high rates of violence and the drug trade" in the region.[52] In Brazil, 62,517 homicides were reported in 2016,[53] with a high proportion linked to drug trafficking.[54] The number of homicides stabilised in the Southeast and Central-West of Brazil, although it increased in the rest of the country, especially in the North region. To grasp the meaning of the number of homicides in Brazil, it is necessary to compare it with other countries. For instance, there were more homicides
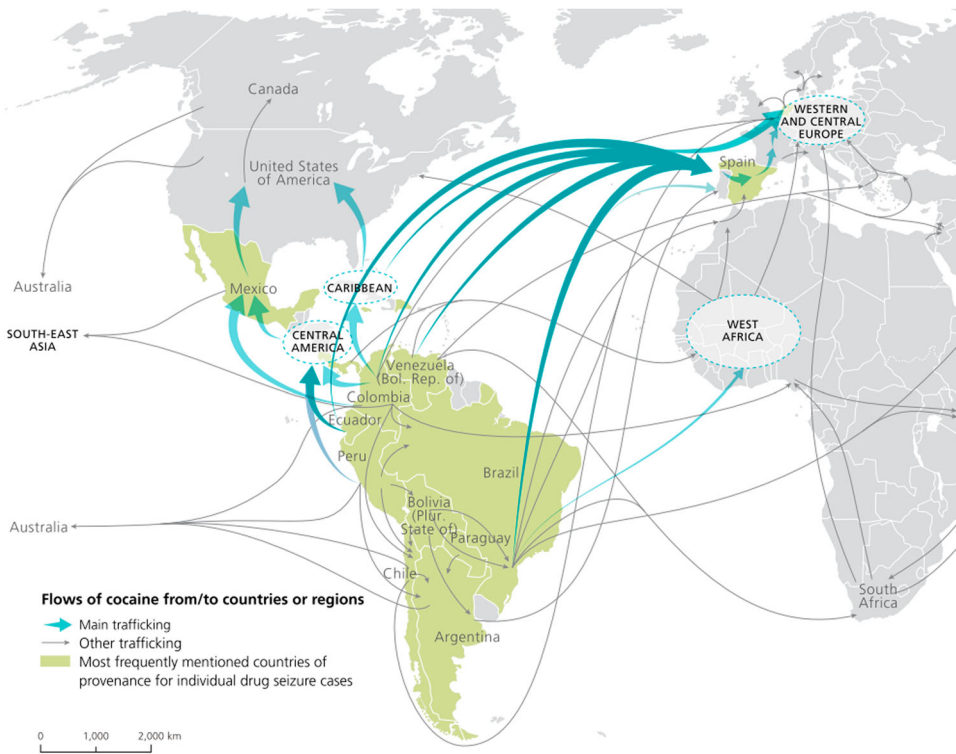
Figure 2. Main trafficking flows of cocaine. Source: UNODC, "Drug Seizures Report."

in Brazil by far than anywhere else in the world over the last years; India trailed behind, accounting for 41,623 in 2014, and Mexico followed with 20,762 homicides in 2015. The number of homicides in Brazil is more than three times greater than other BRICS countries such as Russia (16,232 in 2015), China (10,083 in 2014), and South Africa (18,673 in 2015); this increases to 54 times when compared to France (1017 in 2015), which accounts for the greatest number of homicides in Europe. In a matter of fact, the level of violence faced in Brazil exceeds what is observed in some conflicts such as the recent Syrian War – that in 2015 registered 46,643 battle-related deaths[55] – so it is possible to state that Brazil fights a domestic war against criminal organisations. Thus, the high number of homicides and their links with drug trafficking organisations consume nearly the entire human-resources capacity of the security forces, while the use of highly lethal weapons on the part of the criminals renders security forces vulnerable to attacks and occasionally leads to the domestic deployment of the armed forces to fight such organisations, reinforcing the police-soldier model and driving the armed forces away from outward-looking missions.

Brazil also faces high rates of other types of crimes, as presented in Table 1. Because of its size, Brazil leads the ranking of criminal activities in South America when considering the number of occurrences. But when the crime rate is measured per capita, countries such as Guyana (in assault), Chile (burglary, motor vehicle theft), Argentina (robbery), Paraguay (sex crimes), and Uruguay (theft) lead the ranking, while Brazil usually ranks third (assault and motor vehicle theft) or fourth (burglary and theft).[56] The high crime

Table 1. Crimes by country.

Country	Assault	Burglary	Motor Vehicle Theft	Robbery	Sexual Crime	Theft
Crime count						
Argentina	181,321.00	NA	37,189.00	443,033.00	16,114.00	271,921.00
Bolivia	7,426.00	NA	5,613.00	14,411.00	4,824.00	5,200.00
Brazil	661,494.00	256,418.00	228,936.00	1,012,504.00	56,254.00	1,784,745.00
Chile	15,966.00	118,910.00	31,949.00	106,476.00	11,769.00	184,070.00
Colombia	86,897.00	43,595.00	35,023.00	101,349.00	21,737.00	144,944.00
Ecuador	7,430.00	14,695.00	12,843.00	90,736.00	3,024.00	24,300.00
Guyana	9,269.00	259.00	52.00	1,463.00	380.00	5,171.00
Paraguay	685.00	4,929.00	4,004.00	21,060.00	4,964.00	38,025.00
Peru	24,778.00	3,992.00	16,501.00	82,950.00	5,702.00	94,480.00
Suriname	NA	2,183.00	40.00	NA	NA	13,597.00
Uruguay	466.00	8,372.00	16,350.00	19,423.00	1,582.00	104,443.00
Crime rate per 100,000 population						
Argentina	417.63	NA	85.66	1,020.42	37.11	626.30
Bolivia	72.53	NA	54.82	140.75	47.12	50.79
Brazil	323.85	125.54	112.08	495.70	27.54	873.76
Chile	88.96	662.52	178.01	593.24	65.57	1,025.57
Colombia	180.18	90.39	72.62	210.14	45.07	300.53
Ecuador	46.72	105.21	80.76	570.56	19.02	152.80
Guyana	1,208.34	33.76	6.78	190.72	49.54	674.11
Paraguay	10.32	74.24	60.31	317.21	74.77	572.74
Peru	78.97	13.76	52.59	264.37	18.17	301.12
Suriname	NA	446.14	8.17	NA	NA	2,778.80
Uruguay	13.58	251.86	476.46	566.01	46.10	3,043.61

Source: UNODC, "Crime and Criminal Justice Report."

rate in Brazil puts more pressure on the security forces, and the occurrence of some of these crimes next to the borders also puts pressure on the armed forces, given that they have authorisation to act through preventive and repressive operations in a 150 km-wide land strip along the 15,719 km of the Brazilian border.[57]

Another crime affecting Brazilians – predominantly women and transgender people – is human trafficking for sexual exploitation in European countries such as Spain, Italy, Portugal, France, the Netherlands, Germany, Austria, and Switzerland. The victims mainly originate from Amazonas, Pará, Roraima, and Amapá; poor communities in the north of the country, and usually travel through European-administered territories to reduce the risk of being intercepted in Europe. Human trafficking in Brazil involves groups of European and Asian criminal organisations and, in the case of trafficking women to Spain and Portugal, Russian groups dominate.[58] Human trafficking usually involves the federal security forces, primarily the Federal Police, but the armed forces also consider it a threat to defence given their responsibility regarding transnational crimes occurring in the border region.

Cybercrime is another threat that has been the subject of considerable attention on the part of the Armed Forces, law enforcement units, and other government organisations. The term is used broadly to

describe criminal activity in which computers or computer networks are a tool, a target, or a place of criminal activity and include everything from electronic cracking to denial of service attacks. It is also used to include traditional crimes in which computers or networks are used to enable the illicit activity.[59]

It involves a wide range of activities, such as cyber stalking, hacking, hacktivism, phishing, espionage, sabotage, information warfare, fraud, identity theft, trafficking in intellectual property, child pornography, and even terrorism. The number of cyber incidents has dramatically increased since 1999, especially in recent years, where Brazil has hosted some major events such as the United Nations Conference on Sustainable Development: Rio +20 (2012), the FIFA World Cup (2014), and the Olympic Games (2016), as illustrated in Figure 3. In 2016, 647,112 attacks were reported in Brazil, most of which originated in Brazil (55.49%), followed by the USA (12.23%), China (5.63%), and other countries (less than 2% each).[60] Moreover, in 2015, Brazil suffered the most attacks in Latin America and was listed as third in the world in which attacks originated.[61]

The types of attack registered in Brazil are mostly scams (59.33%), followed by fraud (15.87%), denial of service (DoS) (9.34%), web (8.57%), worms (4.37%), invasions (0.26%), and others (2.27%).[62] Attacks cost victims in Brazil USD 831 on average – a figure much higher than the global average of USD 298 – resulting in an overall cost of USD 8 billion to the Brazilian government. In addition to their financial cost, these attacks threaten sensitive information, such as in the cases of the attack on the Brazilian Ministry of Foreign Affairs in 2014, in which hackers accessed confidential information and messages of 1500 Brazilian diplomats, and the attack against Brazilian Army personnel systems in which information of 7000 soldiers was leaked by hackers.[63] The growing concern about cybercrime in Brazil has led the federal government to include the cyber
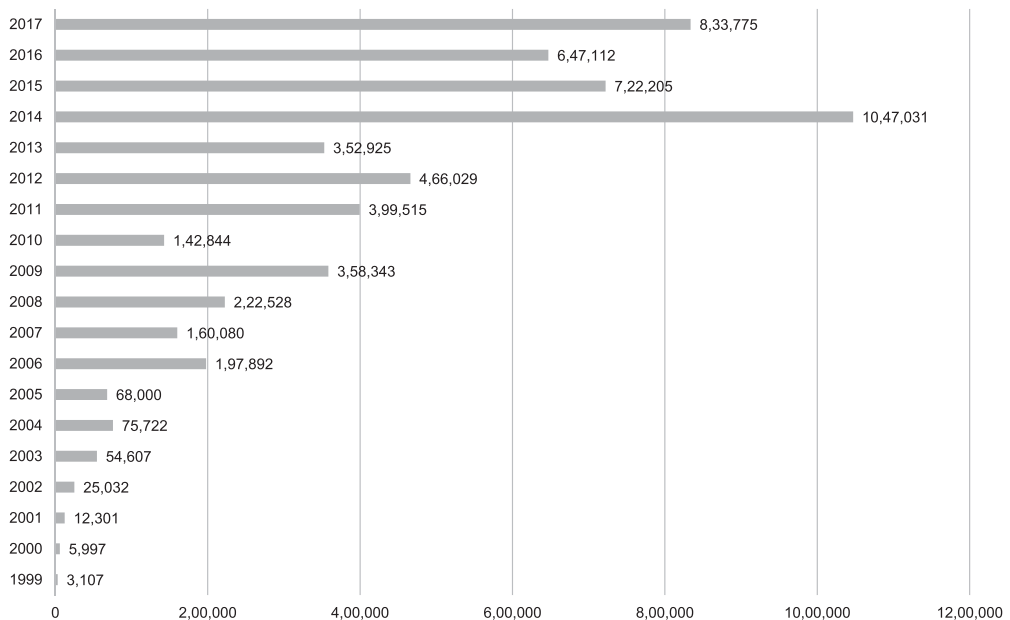
Figure 3. Cyber incidents reported to CERT.br by year. Source: CERT.br, "Estatísticas Dos Incidentes Reportados Ao CERT.Br" [Statistics of incidents reported to CERT.Br].

sector as a strategic sector for national defence and order the Brazilian Army to coordinate cyber defence and security efforts in the country, resulting in the creation of the Cyber Defence Centre in 2012 and the Cyber Defence Command in 2014.[64]

In addition to multifaceted illicit activities, the country also faces conflicts involving indigenous populations and land reform groups against the government. Incidents between indigenous groups and the government usually occur due to disputes related to autonomy and resources. Conflicts over land reform, usually led by the Landless Workers' Movement (MST) and the Homeless Workers' Movement (MTST), occur to disperse highway blockades and during actions to reinstate farms and buildings invaded by those groups in states such as São Paulo, Paraná, and Goiás.[65] These conflicts usually demand the use of the security forces to restore order, but also occasionally involve the Armed Forces, especially in the case of conflicts with indigenous groups.

In summary, the minor border issues among Brazil's neighbour countries are not enough to escalate and threaten the country; therefore, the main concerns in the region are transnational and domestic organised crime groups, especially their actions in the border region and their consequences to the major regions of the country. Other violent crimes, such as assault, burglary, motor vehicle theft, robbery, sex crimes, and theft, as well as social protests, put more pressure on security forces, occasionally leading to the use of the Armed Forces as security forces. Moreover, cybercrime has required the Armed Forces to create specialised organisations to combat and coordinate national efforts against it. This scenario implies a different perspective on defence issues in Brazil that varies from the use and development of traditional defence capabilities to those focused on law and order enforcement. Therefore, although the NDP drives the Armed Forces organisation toward outward-looking missions, the national security scenario drives the Armed Forces to focus more on inward-looking missions, creating a dilemma regarding NDP intentions and reality.

Brazilian defence industrial base

One factor driving the development of the NDP is the restructuring of the Brazilian defence industrial base, under the premise that it would foster economic growth. From a governmental perspective, this process began with the classification and registration of companies and products by the Ministry of Defence. With the introduction of protectionist policies such as Decrees 7.970/13 and 8.122/13, the implications of such classifications are that companies can now participate in exclusive procurement processes and benefit from fiscal exemptions.[66] However, despite the existence of 16 defence companies and 68 strategic defence companies, 22 of which are allowed to benefit from fiscal exemptions,[67] none have received tax reductions or special treatment during procurement processes. In practice, government procurement officers have no incentive to implement the protectionist policies put in place to restructure the Brazilian defence industrial base. For instance, the restricted procurement process is optional, so the decision is made by the procurement officer, who can later be held accountable and fined by the Federal Court of Accounts (TCU) because of higher prices created by the lack of competition. Similarly, fiscal exemptions are bureaucratic; there are no clear guidelines, and customs officers have no interest in reducing tax income.

On the industrial side, the narrative used to restructure the Brazilian defence industrial base is the potential contribution of this sector to the Brazilian economy. The arms sales by the top 100 arms-producing and military services companies in the world are around 31.86% of their total sales.[68] In Brazil, this share is even lower – around 15% – which encourages most companies to develop products and technologies that can be applied in other sectors.[69] This aspect was incorporated in the NDS, which emphasises the need to develop a military–academic–industrial complex able to develop technologies, products, and services with both military and civilian use,[70] forming a concept of intense co-operation known as the Triple Helix. Therefore, the defence industrial base is usually studied based on the defence–security productive complex.[71] An analysis of the socioeconomic importance of the Brazilian defence–security productive complex revealed that it was responsible for an economic impact of USD 85.847 billion in 2014, corresponding to 3.7% of Brazilian GDP, as illustrated in Figure 4.[72] In 2014, defence and security activities comprised USD 46.74 billion; the main industries that supply them and related primary and tertiary activities produced USD 3.44 billion, USD 5.31 billion, and USD 30.34 billion, respectively.[73]

A portion of the products and components produced by the Brazilian defence industrial base is exported to other countries, as presented in Figure 5. From 2000 to 2017, most Brazilian arms exports were to countries in South America (USD 281 million), the Middle East (USD 144 million), and Africa (USD 89 million). The main commercial partners
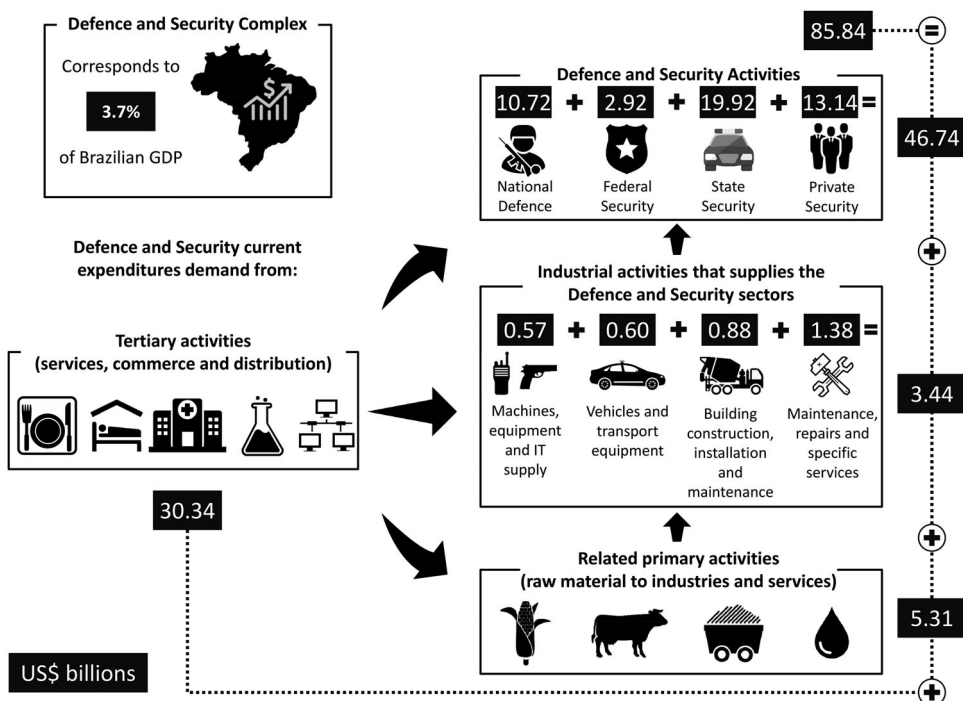
Figure 4. GDP of the defence and security complex. Source: FIPE, "Cadeia de Valor e ImportâNcia Socioeconômica Da Indústria de Defesa e Segurança No Brasil" [Value chain and socioeconomic importance of the defence and security industry in Brazil].
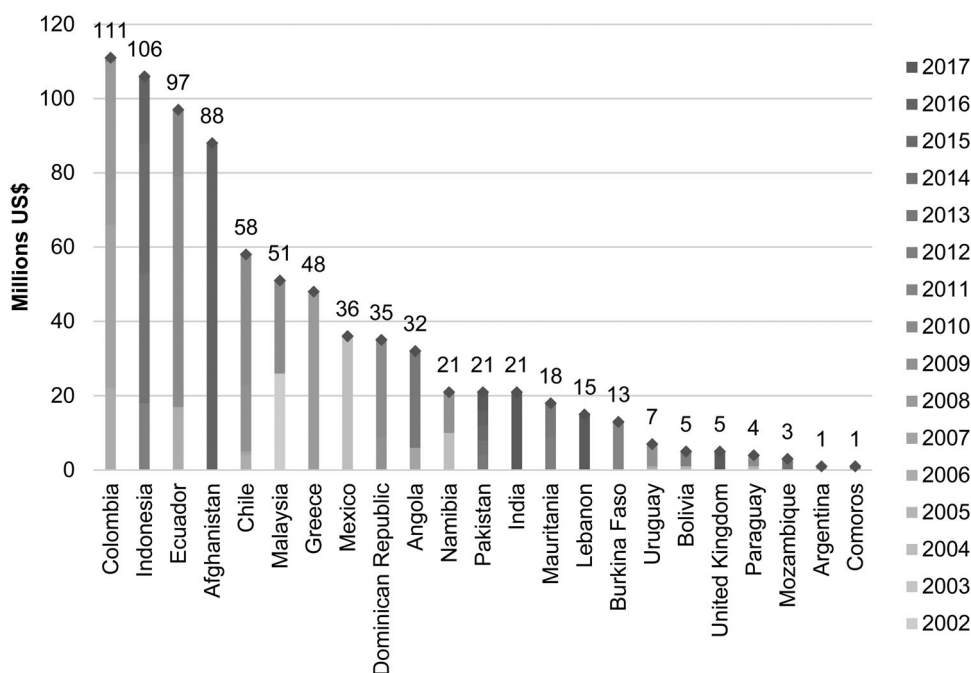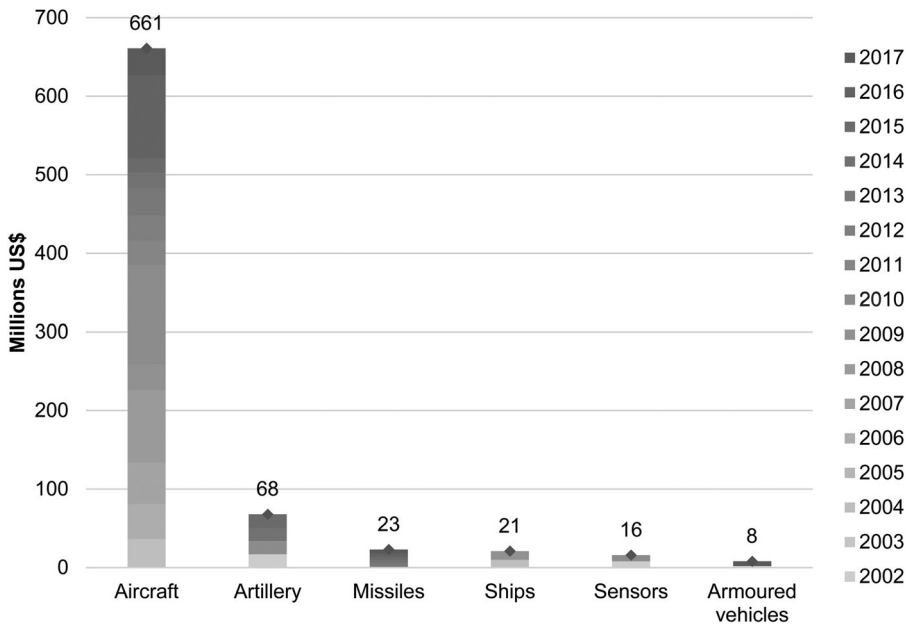
Figure 5. Brazilian arms exports by country (2000–2017). Source: SIPRI, "SIPRI Arms Transfers Database."

were Colombia (USD 111 million), Indonesia (USD 106 million), Ecuador (USD 97 million), Afghanistan (USD 88 million), and Chile (USD 58 million). During that period, the average annual export value was around USD 46.88 million while imports reached USD 226.58 million, representing a significant trade deficit in the sector.[74] Moreover, their low export level makes Brazilian defence companies heavily dependent on Brazilian defence programmes with a high local content. The incentive to develop and use indigenous technologies and products is a key element of the NDS,[75] although in order to develop a sustainable defence industrial base Brazilian defence companies need to focus on different sectors (civilian and military) and markets (national and foreign). The Brazilian defence industrial base committed a major mistake in the 1980s by focusing on a single regional market, when 80% to 95% of total production was exported to Middle Eastern countries (mainly because of the Iran–Iraq war) and no other market (including the Brazilian Armed Forces) was able to absorb that production after the end of that conflict.[76] The only major companies that survived in that period were Embraer and Avibras, who had succeeded in the civilian market, thus highlighting the importance of diversifying clients and products bases.[77]

Nearly all weapons exported from Brazil were aircraft (accounting for USD 661 million), with some artillery systems (USD 68 million) and minor exports in other categories, as presented in Figure 6.[78] The main exported products were the EMB 312 Tucano and EMB 314 Super Tucano aircrafts – both produced by Embraer, the 86th top arms-producing and military service company in the world[79] – and the artillery saturation rocket system (ASTROS) produced by Avibras. Other aircraft models were also exported by Embraer, and some aircraft (fixed and rotary wings) and ships were

Figure 6. Brazilian arms exports by weapons category (2000–2016). Source: SIPRI, "SIPRI Arms Transfers Database."

transferred between countries. The recent defence programmes intended to develop indigenous new products have begun to appear in arms exports statistics: this has been the case for the KC-390 transport aircraft, which, though an unfinished project, has already been ordered by Colombia and the Guarani armoured vehicle, ordered by Lebanon.[80] Nevertheless, the variety and volume of arms exported remains low, highlighting the need to create new products in different weapon categories. This situation contrasts with the industry in the 1980s, when the country produced "virtually all categories of hardware and a wide array of arms in the four main weapons classifications of missiles, airplanes, armoured vehicles and ships."[81]

In addition to diversifying its product and client bases, the Brazilian defence industrial base needs to enter the market in an advantageous position. In the 1980s, Brazilian companies adopted a successful niche strategy to avoid direct competition with major weapon producers by focusing on bottom-end high-technology hardware. Neto[82] explains that this strategy consisted of "providing tropicalised technology, customising products, offering on-site technical assistance, providing export credits, maintaining flexibility in compensatory agreements, and having no strings attached." Along with its design flexibility and product toughness and reliability, this strategy contributed to the success of the industry at that time.[83] Nowadays, competition is much greater with many traditional and new defence producers willing to make concessions and offering complete packages.[84] Moreover, the gap between supply and demand for weapon systems similar to those produced by Brazilian companies has reduced over recent years, putting additional pressure on suppliers.[85]

The answers to the present challenges faced by Brazilian companies may be in lessons from the past, when the Brazilian government and defence companies worked together to

strengthen commercial links with other countries. In the 1980s, Brazilian companies established several licensing agreements and joint ventures with other – predominantly European – firms, allowing the companies to enter the global defence market, acquire new technologies, and learn sales techniques. Partner companies, on the other hand, used Brazilian companies to sell their products, enter the Brazilian market, and export to developing countries.[86] Nowadays, the Brazilian defence market is more integrated with the global defence supply chain,[87] with foreign companies participating either directly in defence programmes (as in the case of the Italian Iveco/Fiat within the Guarani armoured vehicle programme) or through partnerships with Brazilian companies, such as the Brazilian Andrade Gutierrez and the French Thales partnership, the Brazilian Norberto Odebrecht and the Russian Technologies State Corporation partnership, and the Brazilian Embraer and the American Boeing partnership.[88]

In summary, the defence industrial base is composed of several companies that supply not only weapon systems and components, but also products that support defence and security activities. Some mechanisms have been designed to "protect" these companies, supposedly helping them to be more competitive and develop new and relevant products, but none of them have been used. The lack of competitiveness and the dependence on defence programmes financed by the Brazilian government are evident from the low diversity and volume of arms exports. Recent investments based on indigenous technology appear to have shown their first results in terms of arms exports (KC-390 and Guarani), with some orders placed even before the products' final version. However, it is too early to determine whether these investments can develop a sustainable product like Embraer's aircrafts or have a multiplier effect on the country's overall exports as it had in the past.[89] What is certain, however, is that the current defence market is highly competitive and Brazilian companies must both be flexible to meet buyers' needs and integrate more the global defence supply chain, in order to have strong partners and overcome barriers. Moreover, the Brazilian government needs to learn from past experience and support those companies through active commercial diplomacy abroad and offering financing packages to buyers, an important strategy in major acquisitions.[90] Therefore, it is possible to state that so far, the NPD points toward positive results from its economic growth perspective, however it is still too early to ascertain if these signs will lead to long-term and sustainable results.

Brazilian defence technological innovation

The NDP defined that the reorganisation of the Brazilian Armed Forces and restructuring of the defence industrial base should be based on indigenous technology as a way to foster technological innovation in the country.[91] In order to achieve this goal, several agreements have been signed with major contractors of defence programmes to transfer technology to Brazil. Moreover, indigenous research and development efforts have been encouraged by government organisations through funding agencies. Combining both strategies, the demand for negligible local content during the procurement phase forced competitors to invest in transferring technology and production to Brazil or local development of the products. The supersonic air fighter F-X2 programme illustrates the importance given by the Brazilian government to technology transfer, as

authorities chose the Sweden Gripen NG project over competitors with superior and existing capabilities.[92]

As discussed in the previous section, the first strategy for fostering the development of indigenous technology was transferring and licensing technology from partner countries. International partnerships are a common strategy among emerging countries such as Brazil, India, and China for achieving technology independence and helping them to advance decades of research and development in defence technology.[93] This strategy was already tested in Brazil during the 1980s and was successful for both parties; Brazilian companies and organisations received technologies that helped them develop new products and processes, while sellers profited from licencing fees.[94] The use of offset agreements has become a widespread practice in major defence contracts, with governments around the world demanding compensation from their sellers. Naturally, offset agreements are an additional cost to buyers (albeit usually not explicitly), varying between 7% and 10%.[95] Nevertheless, these practices create opportunities to gain access to technologies and knowledge that would not be otherwise available or that could not be afforded by a research and development project. Moreover, these practices demand that the Brazilian government and defence companies be ready to receive such knowledge and technologies, first negotiating proper and feasible technology agreements then building a strong business case to make use of such assets. Later, Brazilian defence companies will also have to develop a model for transferring technology and knowledge to their clients as they become more integrated in the global supply chain for defence.

In addition to transferring technology and knowledge, research and development (R&D) was the second strategy defined to foster indigenous defence technology. Despite the best of intentions and efforts, Brazil is extremely inefficient in terms of innovation, occupying the 69th position among 127 countries in the Global Innovation Index 2017.[96] This can be partly explained by the few investments made in research and development by private companies, which perceive them as extremely expensive. Therefore, in Brazil, most of the R&D investments are made by the government, in contrast to many developed countries.[97] This situation led the Brazilian government in 2013 to develop an initiative called "Inova Aerodefesa" – a USD 1.5 billion programme that aims to fund R&D efforts related to the defence and aerospace industries.[98] This initiative and efforts from the Air Force Technology Centre, the Army's Technology Centre, and the Navy's Research Institute are the main sources of R&D in defence technology in Brazil. It is soon to conclude, although these Brazilian R&D initiatives will soon face the question of whether they have been able to develop truly innovative defence technologies rather than merely extend the life cycle of outdated defence technologies.[99] India, for example, was not able to develop high technology systems as robust as those of Western countries, and the technology gap remains after technology transfer agreements and local research and development efforts.[100] Moreover, the increasing trend of using off-the-shelf innovations and technologies may shift the focus from product innovation to integration and process innovation, changing the competencies and capabilities needed to cope with this new process.[101] In order to cope with the Brazilian R&D scenario, research organisations need to focus their efforts on genuinely feasible and necessary technologies and products, otherwise these "innovations" may never leave the laboratory.

In summary, Brazil's strategies for developing indigenous defence technology are focused on transferring and licencing agreements and R&D efforts. The first strategy is

to use bargaining power during large defence acquisitions and advance the country's technological development, gaining access to more advanced technology. The second strategy focuses on R&D initiatives, mainly in military research centres, and could complement the first strategy. The main barriers to innovation in the defence industry are the "lack of qualified people, the shortage of funding sources, the excessive economic risks and high costs of innovation."[102] The strategies discussed here tackle some of these issues, although a more comprehensive and coordinated effort to promote the development of defence technology in Brazil is needed. Critics such as Dagnino[103] argue that the spin-off effect defended by the enthusiasts of the development of indigenous technology may not occur given the level of technology developed by Brazilian companies and their belief that foreign technology is better than Brazilian technology; although, lessons from the past show that these kinds of strategies may work, as they did for Embraer.[104] Therefore, it not possible to ascertain if the NDP produced any relevant case of technology innovation in the Brazilian defence industrial base, given that most defence programmes are still under development and it is still early to notice any spin-off effect from them.

Conclusions

In present times, the strengthening of dissuasive capabilities seems to be one of the most viable strategies to resolve conflicts in peacetime; but its effectiveness depends on actions in other power dimensions. For instance, investments in research and technology development, as well as on human capital certainly help to improve those capabilities. In the economic and geopolitical fields, the world's political establishment is defined by pressure from international organisations over national and regional interests, sometimes with hidden agendas behind their narratives. In this context, the NDP was analysed herein as an instrument formulated to address issues related to foreign policy, national security, economic growth, and technological innovation.

The findings highlight that geopolitics in South America is shaped mainly by major powers such as the USA and China, but also by regional efforts to reposition the region as geopolitically independent, with Brazil as the leading regional power. In this context, the NDP was designed as an instrument to strengthen Brazilian hard power, combine its soft power skills, project power over its neighbours, and consolidate itself as the regional leader, even though more than 10 years after its enactment, defence capabilities were not sufficiently developed and articulated to promote the desired results. From the national security perspective, the main threats in the region are cybercrimes and transnational and organised crime groups, especially their actions at the border region and their consequences to the major regions of the country.[105] Accordingly, the NDP has led to the development of defence programmes that focus on controlling the border and protecting Brazilian cyberspace in addition to those focused on developing conventional defence capabilities such as tanks, aircrafts, missiles, vessels, submarines, and weapons in general. However, the duration and complexity of such programmes have not delivered sufficient capabilities, if any, to face the country's main security issues. The economic growth aspect of the policy is driven by the execution of major defence programmes that would lead to the restructuring of the Brazilian defence industrial base. In this matter, some protectionist mechanisms have been created to "protect" the defence industrial base and make it more competitive, although none of them were actually used.

Moreover, the defence industrial base is highly dependent on the defence programmes financed by the Brazilian government and there are low diversity and volume in arms exports, despite the initial orders placed by foreign countries for the KC-390 transport aircraft and the Guarani armoured vehicle. Therefore, the restructuring of the defence industrial base seems far from successful in developing sustainable companies and products. From the technological innovation perspective, the NDP has worked mainly as a channel through which investments in major defence programmes had created compensation agreements to transfer technology and knowledge to the country. The policy has also contributed to the creation of some funding programmes to invest in indigenous research and development, although both the defence and technological innovation strategies had been poorly implemented and very inefficient.

It is possible to conclude that the objective of the NDP was to consolidate the country as a regional power and present itself as an important player in the world while simultaneously addressing some national security issues, promoting economic development through a series of defence programmes, restructuring the defence industrial base, and fostering innovation through technology and knowledge transfer to Brazil and indigenous research and development. However, implementation has suffered from several challenges discussed in this article, which may test the capability and competence of Brazilian policymakers, military, industrialists, and other individuals and organisations involved. Therefore, it seems appropriate to offer recommendations based on this research. From the standpoint of foreign policy, it is important to highlight that increased power is only effective when properly exercised, integrated and aligned to foreign policy objectives, so the Brazilian government needs to become involved in activities that allow it to show capability in terms of military leadership, doctrine, weapon systems, diplomatic problem solving, and so on. Peacekeeping missions, combined military exercises, war games, military student exchanges, and an active voice in international forums seem to be appropriate ways to do this without causing regional instability. From a national security perspective, managers in charge of implementing the NDP need to formulate defence programmes that address the main threats to Brazil. Some defence programmes regarding border surveillance and cyber defence appear to do it, but the complexity of the defence and security scenario demands solutions based on efforts from multiple government agencies and organisations, not only the defence sector. Therefore, defence and security capabilities need to be developed across several organisations, and concerns regarding sharing defence programme budgets need to be set aside. The economic growth aspects of this policy seek to develop a more competitive industry but focus on the wrong solutions. The policy created restricted procurement processes under the argument that this would "protect" the industry: however, it creates barriers to entry and an oligopoly dominated by a few national champions who can lobby without competition for specific programmes, technologies, or prices that may not be in Brazil's and tax payers' best interests. Points concerning this matter in the policy should be revoked, and the government and the industry should learn from the past and focus on strategic partnerships at the global defence supply chain with potential to develop the sector and transform it into a more competitive, dynamic, and internationalised industry. In the same way, the creation of a bureaucratic tax exemption process only helps those companies that have infrastructure or that are "friends" of the government to endure the process. Thus, tax exemptions or cuts that try to make Brazilian defence products and services more competitive in terms of

price should be made accessible to all defence companies without condition or process by simply reducing or eliminating taxes on these kinds of products and services. Furthermore, companies within the Brazilian defence industrial base need to learn from the past and diversify their products and markets in order to develop a sustainable portfolio and be independent of single clients or markets. Finally, the technological innovation efforts from the NDP need to be better co-ordinated, and a clear vision of what is necessary needs to be defined in order to transfer the right technologies, knowledge, and research and develop effective projects. In this matter, a comprehensive plan should be developed with clear objectives, roles, responsibilities, actions, and deadlines. In summary, the NDP objectives can only be effective if the policy succeeds in each perspective discussed, creating a synergistic effect that leads to a sustainably increased national power. However, it appears the clear and ambitious vision created during the NDP formulation was lost during execution, as a result of its poor coordination by the Ministry of Defence, and the combination of high complexity and low delivery capacity regarding the defence projects developed by the armed forces branches.

This research is limited by the data available for analysis and its research scope, therefore, it would be fruitful to pursue further research on derivative questions: For instance, how do the developed defence programmes target the threats present in the Brazilian defence and security environment? To which countries would Brazilian hard power be comparable after the implementation of the NDP? Will it be enough to fulfil the Brazilian vision for power? Which mechanisms could help to restructure the Brazilian defence industrial base? A possible direction for addressing such questions is a series of in-depth analyses and discussions regarding the defence industry and programmes in Brazil.

The findings and conclusions of this article have implications for scholars, scientists, industrialists, military and government officials, and civil society. Scholars can use the findings and join the conversation, conducting further research regarding these topics. Scientists can define key technologies and knowledge necessary to properly develop defence programmes. Industrialists can use some of the findings and follow recommendations to increase their competitiveness and avoid repeating the mistakes of the past. Military and government officials can focus on the challenges and suggestions identified herein to solve issues regarding the implementation of the Brazilian National Defence Policy. Finally, civil society – particularly Brazilian citizens – can enter the debate regarding the defence policy to ensure the correct use of public funds.

Notes

1. World Bank, 'World Bank Database', 2018, https://goo.gl/jchxes.
2. Marcos Degaut, 'Brazil's Military Modernization: Is a New Strategy Culture Emerging?', *Rising Powers Quarterly* 2, no. 1 (2017): 271–97, https://goo.gl/4tSrad.
3. World Bank, 'World Bank Database'.
4. David R. Mares and Harold A. Trinkunas, *Aspirational Power: Brazil on the Long Road to Global Influence* (Washington, DC: Brookings Institution, 2016); Degaut, 'Brazil's Military Modernization'.
5. Ministério da Defesa, 'Portaria Normativa Nº 899/MD, de 19 de Julho de 2005' (2005), https://goo.gl/rUqzPn.

6. Édson Skora Rosty, 'The New Structure of Brazilian Ministry of Defense: Challenges and Opportunities', Strategic Research Project (Carlisle, PA, 2011), http://www.dtic.mil/dtic/tr/fulltext/u2/a560255.pdf.

7. Brasil, 'Decreto Nº 5.484, de 30 de Junho de 2005' [Decree No. 5,484, 30th June 2005] (2005), https://goo.gl/MsYPhV.

8. Brasil, 'Decreto Nº 6.703, de 18 de Dezembro de 2008' [Decree No. 6,703, 18th December 2008] (2008), https://goo.gl/cBY8XG.

9. Ministério da Defesa, 'Defense White Paper' (2012), https://goo.gl/8vVjoD.

10. Ibid.

11. Ethan B. Kapstein, 'The Brazilian Defense Industry and the International System', *Political Science Quarterly* 105, no. 4 (1990): 579, https://doi.org/10.2307/2150936; Raul De Gouvea Neto, 'How Brazil Competes in the Global Defense Industry', *Latin American Research Review* 26, no. 3 (1991): 83–107, http://www.jstor.org/stable/2503665; Raul Gouvea, 'Brazil's New Defense Paradigm', *Defense & Security Analysis* 31, no. 2 (April 3, 2015): 137–51, https://doi.org/10.1080/14751798.2015.1038452.

12. João Paulo Soares Alsina Jr., 'O Poder Militar Como Instrumento Da Política Externa Brasileira ContemporâNea', *Revista Brasileira de Política Internacional* 52, no. 2 (December 2009): 173–91, https://doi.org/10.1590/S0034-73292009000200010; Melike E. Bildirici, 'Militarization, Economic Growth and Petroleum Consumption in Brazil, Russia, India, China, Turkey, South Africa and Mexico', *Economic Computation and Economic Cybernetics Studies and Research* 51, no. 2 (2017): 249–66; Antonio Henrique Lucena Silva, 'Globalização Militar, Segurança e Desenvolvimento: Comparação Entre as Indústrias Aeroespaciais de Defesa de Brasil, Índia e China' [Military globalisation, security and development: Comparison of aerospace defence industries of Brazil, India and China], *Papel Politico* 15 (2010): 667–90; Alex Lôbo Carlos and Regina Maria de Oliveira Leite, 'Struggling for Survival and Success: Can Brazil' Defense Industry Help Foster Innovation?', in *Management and Engineering Innovation* (Hoboken, NJ: Wiley, 2013), 127–54, https://doi.org/10.1002/9781118733202.ch5; Gouvea, 'Brazil's New Defense Paradigm'; João Paulo Soares Alsina Jr., 'A Síntese Imperfeita: Articulação Entre Política Externa e Política de Defesa Na Era Cardoso', *Revista Brasileira de Política Internacional* 46, no. 2 (December 2003): 53–86, https://doi.org/10.1590/S0034-73292003000200003; Paloma Ribeiro dos Santos, Rocio Soledad Gutierrez Curo, and Mischel Carmen Neyra Belderrain, 'Cognitve Mapping Applied to Brazilian Aerospace Decision Problem', *Journal of Aerospace Technology and Management* 3, no. 2 (2011): 215–26, https://doi.org/10.5028/jatm.2011.03021211; C.R. Correa and C.H. Cagnin, 'Prospective Games for Defence Strategic Decisions in Brazil', ed. Effie Amanatidou, *Foresight* 18, no. 1 (March 14, 2016): 4–23, https://doi.org/10.1108/FS-07-2014-0047; Neto, 'How Brazil Competes in the Global Defense Industry'; Kapstein, 'The Brazilian Defense Industry and the International System'; Gamaliel Perruci, 'The North-South Security Dialogue in Brazil's Technology Policy', *Armed Forces & Society* 21, no. 3 (April 16, 1995): 371–94, https://doi.org/10.1177/0095327X9502100304.

13. Linwood Ham, 'Brazil's National Defense Strategy – A Deepening of Civilian Control' (Carlisle, 2009), http://www.dtic.mil/dtic/tr/fulltext/u2/a510838.pdf; Thomas C. Bruneau and Scott D. Tollefson, 'Civil–Military Relations in Brazil: A Reassessment', *Journal of Politics in Latin America* (2014): 107–38, https://journals.sub.uni-hamburg.de/giga/jpla/article/view/764/762; Tristan Dreisbach, 'Civilians Get a Foot in the Door: Reforming Brazil's Defense Ministry, 2007–2010' (Princeton University, 2016), https://goo.gl/VmL1E6; Renato Dagnino, 'A Política de Defesa Brasileira: Nem Racionalismo, Nem Incrementalismo' [The Brazilian Defense Policy: Neither Rationalism nor Incrementalism], *Revista Brasileira de Ciências Sociais* 24, no. 70 (June 2009): 61–74, https://doi.org/10.1590/S0102-69092009000200004.

14. Dreisbach, 'Civilians Get a Foot in the Door'.

15. Jacques Aben, *What Realms for Defence Economics?*, *The Evolving Boundaries of Defence: An Assessment of Recent Shifts in Defence Activities*, 2014, https://doi.org/10.1108/S1572-832320140000023001.

16. Brasil, 'Decreto nº 5.484, de 30 de Junho de 2005'.
17. Aben, *What Realms for Defence Economics?*
18. Lucena Silva, 'Globalização Militar, Segurança e Desenvolvimento'.
19. Marco Cepik and Frederico Licks Bertol, 'Defense Policy in Brazil: Bridging the Gap between Ends and Means?', *Defence Studies* 16, no. 3 (July 2, 2016): 229–47, https://doi.org/10.1080/14702436.2016.1180959.
20. Joseph S. Tulchin, 'Regional Security in Latin America after US Hegemony', in *Power Dynamics and Regional Security in Latin America* (London: Palgrave Macmillan UK, 2017), 27–51, https://doi.org/10.1057/978-1-137-57382-7_2; Brigitte Weiffen and Rafael Duarte Villa, 'Re-Thinking Latin American Regional Security: The Impact of Power and Politics', in *Power Dynamics and Regional Security in Latin America* (London: Palgrave Macmillan UK, 2017), 1–23, https://doi.org/10.1057/978-1-137-57382-7_1.
21. Ibid.
22. Tulchin, 'Regional Security in Latin America'.
23. Evan Ellis, *The New Russian Engagement with Latin America: Strategic Position, Commerce, and Dreams of the Past* (Carlisle Barracks, PA: US Army War College Press, 2015), https://goo.gl/gkzSt7.
24. Tulchin, 'Regional Security in Latin America'; Weiffen and Villa, 'Re-Thinking Latin American Regional Security'.
25. Ibid.; Lucena Silva, 'Globalização Militar, Segurança e Desenvolvimento'.
26. Alsina Jr., 'O Poder Militar Como Instrumento Da Política Externa Brasileira Contemporânea'.
27. W. Wen and L. Ying, 'The Engine for New Globalization: Increase BRICS Financial Cooperation' (Beijing, China, 2017).
28. Ministério da Defesa, 'Defense White Paper'.
29. Weiffen and Villa, 'Re-Thinking Latin American Regional Security'; Andrés Rivarola Puntigliano, '"Geopolitics of Integration" and the Imagination of South America', *Geopolitics* 16, no. 4 (October 2011): 846–64, https://doi.org/10.1080/14650045.2010.549863; Bruneau and Tollefson, 'Civil–Military Relations in Brazil'.
30. Weiffen and Villa, 'Re-Thinking Latin American Regional Security'; Tulchin, 'Regional Security in Latin America'; Degaut, 'Brazil's Military Modernization'; Detlef Nolte and Leslie E. Wehner, 'Geopolitics in Latin America, Old and New', in *Routledge Handbook of Latin American Security* (Routledge, 2015), https://doi.org/10.4324/9781315867908.ch2; Leslie E. Wehner and Detlef Nolte, 'Role Theory and Geopolitical Thinking in South America', in *Power Dynamics and Regional Security in Latin America* (London: Palgrave Macmillan UK, 2017), 101–20, https://doi.org/10.1057/978-1-137-57382-7_5; Dana De la Fontaine and Jurek Seifert, 'The Role of South-South Cooperation in Present Brazilian Foreign Policy: Actors, Interests and Functions', Stockholm: Institute of Latin American Studies, 2010, https://goo.gl/nLkREy.
31. Roberto Dominguez, 'Security Governance in Latin America', in *Power Dynamics and Regional Security in Latin America* (London: Palgrave Macmillan UK, 2017), 53–76, https://doi.org/10.1057/978-1-137-57382-7_3; Rafael Duarte Villa, 'Security Community or Balance of Power? Hybrid Security Governance in Latin America', in *Power Dynamics and Regional Security in Latin America* (London: Palgrave Macmillan UK, 2017), 77–99, https://doi.org/10.1057/978-1-137-57382-7_4; Correa and Cagnin, 'Prospective Games for Defence Strategic Decisions in Brazil'.
32. Mark Petersen and Carsten-Andreas Schulz, 'Setting the Regional Agenda: A Critique of Posthegemonic Regionalism', *Latin American Politics and Society* 60, no. 1 (2018): 102–27, https://doi.org/DOI: 10.1017/lap.2017.4; Andrés Malamud, 'Foreign Policy Retreat: Domestic and Systemic Causes of Brazil's International Rollback', *Rising Powers Quarterly* 2, no. 2 (2017): 149–68, http://risingpowersproject.com/wp-content/uploads/2017/07/vol2.2-Andres-Malamud.pdf; Sean W. Burges, 'Revisiting Consensual Hegemony: Brazilian Regional Leadership in Question', *International Politics* 52, no. 2 (February 12, 2015): 193–207, https://doi.org/10.1057/ip.2014.43.

33. Oliver Stuenkel, 'Brazil, South American Regionalism and Re-Defining the "Atlantic Space"', in *Laying the Brics of a New Global Order. From Yekaterinburg 2009 to Ethekwini 2013*, ed. Francis A. Kornegay and Narnia Bohler-Muller (Petroria, South Africa: Africa Institute of South Africa, 2013), 480.
34. Burges, 'Revisiting Consensual Hegemony'.
35. Arturo C. Sotomayor, *The Myth of the Democratic Peacekeeper: Civil-Military Relations and the United Nations* (Baltimore, MD: Johns Hopkins University Press, 2014).
36. Cepik and Bertol, 'Defense Policy in Brazil'.
37. Dagnino, 'A Política de Defesa Brasileira'.
38. Alsina Jr., 'O Poder Militar Como Instrumento Da Política Externa Brasileira ContemporâNea'.
39. Degaut, 'Brazil's Military Modernization'; Daniel Flemes and Michael Radseck, 'Creating Multilevel Security Governance in South America' (Hamburg, Germany, 2009), https://goo.gl/tmp8nc.
40. Bruneau and Tollefson, 'Civil–Military Relations in Brazil'.
41. Degaut, 'Brazil's Military Modernization'.
42. Villa, 'Security Community or Balance of Power'.
43. UNODC, 'The Threat of Narco-Trafficking in the Americas' (Vienna, 2008), https://goo.gl/jWCrzB; UNODC, 'Annual Prevalence, General Population – Cocaine' (Vienna, 2018), https://data.unodc.org/; US Census Bureau, 'US Census: Age and Sex Composition' (Washington, 2010), https://goo.gl/FxKFzU; IBGE, 'Censo Demográfico' [Demographic census] (Brasília, 2010), https://goo.gl/TCYhd3.
44. UNODC, 'The Threat of Narco-Trafficking in the Americas'.
45. UNODC, 'World Drug Report' (Vienna, 2016), https://goo.gl/dgGoA7.
46. UNODC, 'Drug Seizures Report' (Vienna, 2017), https://data.unodc.org/.
47. UNODC, 'The Threat of Narco-Trafficking in the Americas'.
48. Ibid.
49. UNODC, 'Drug Seizures Report'.
50. UNODC, 'The Threat of Narco-Trafficking in the Americas'.
51. UNODC, 'World Drug Report'.
52. UNODC, 'The Threat of Narco-Trafficking in the Americas'.
53. IPEA, 'Atlas Da Violência' (Rio de Janeiro, 2018), http://www.ipea.gov.br/portal/images/stories/PDFs/relatorio_institucional/180604_atlas_da_violencia_2018.pdf.
54. UNODC, 'Estimating Illicit Financial Flows Resulting from Drug Trafficking and Other Transnational Organized Crimes' (Vienna, 2011), https://goo.gl/KaQDdD; UNODC, 'Crime and Criminal Justice Report' (Vienna, 2017), https://data.unodc.org/.
55. World Bank, 'Battle-Related Deaths (Number of People)', 2018, https://data.worldbank.org/indicator/VC.BTL.DETH?locations=SY.
56. UNODC, 'Crime and Criminal Justice Report'.
57. Brasil, 'Lei Complementar Nᵒ 136, de 25 de Agosto de 2010' [Law No. 136, 25th August 2010] (2010), https://goo.gl/fEpTqx; Brasil, 'Lei Complementar Nᵒ 97, de 9 de Junho de 1999' [Law No. 97, 9th June 1999] (1999), https://goo.gl/t6ofra; Ministério da Justiça, 'Segurança Pública Nas Fronteiras: Diagnóstico Socioeconômico e Demográfico' [Public security on boarders: Socioeconomic and demografic diagnosis] (Brasília, 2016), https://goo.gl/3gs1A1.
58. UNODC, 'The Globalization of Crime: A Transnational Organized Crime Threat Assessment' (Vienna, 2010), https://goo.gl/u6DBQS.
59. V. Karamchand Gandhi, 'An Overview Study on Cyber Crimes in Internet', *Journal of Information Engineering and Applications* 2, no. 1 (2012): 1–5.
60. CERT.br, 'Estatísticas Dos Incidentes Reportados Ao CERT.Br' [Statistics of incidents reported to CERT.Br], 2017, https://goo.gl/Km8d3K.
61. Marcos Aurelio Guedes de Oliveira et al., *Guia de Defesa Cibernética Na América Do Sul* [Guide to cyber defence in South America] (Recife: UFPE, 2017).
62. CERT.br, 'Estatísticas Dos Incidentes Reportados Ao CERT.Br'.
63. Oliveira et al., *Guia de Defesa Cibernética Na América Do Sul*.

64. Brasil, 'Decreto nº 5.484, de 30 de Junho de 2005'; Brasil, 'Decreto nº 6.703, de 18 de Dezembro de 2008'; Ministério da Defesa, 'Política e Estratégia Nacional de Defesa' [National defence policy and strategy] (2012), https://goo.gl/w8g2PF; Oliveira et al., *Guia de Defesa Cibernética Na América Do Sul*.

65. HIIK, 'Conflict Barometer' (Heidelberg, 2016), https://goo.gl/zfZjU4.

66. Brasil, 'Decreto Nº 7.970, de 28 de Março de 2013' [Decree No. 7,970, 28th March 2013] (2013), https://goo.gl/7ynvgX; Brasil, 'Decreto Nº 8.122, de 16 de Outubro de 2013' [Decree No. 8,122, 16th October 2013] (2013), https://goo.gl/oEzrPX.

67. Ministério da Defesa, 'Relação Geral de Empresas Credenciadas Como ED & EED' [List of companies certified as ED & EED] (Brasília, 2016), https://goo.gl/ZxUrM2.

68. SIPRI, 'SIPRI Arms Industry Database', 2015, https://goo.gl/cvkmGY.

69. Eduardo Siqueira Brick, 'O Perfil Das Empresas Da Associação Brasileira Das Indústrias de Materiais de Defesa e Segurança – ABIMDE' [The profile of the companies of the Brazilian Association of Defence and Security Materials Industries – ABIMDE] (Rio de Janeiro, 2014), https://goo.gl/kNGEXq.

70. Brasil, 'Decreto nº 6.703, de 18 de Dezembro de 2008'; Ministério da Defesa, 'Defense White Paper'.

71. FIPE, 'Cadeia de Valor e ImportâNcia Socioeconômica Da Indústria de Defesa e Segurança No Brasil' [Value chain and socioeconomic importance of the defence and security industry in Brazil]' (São Paulo, 2015), https://goo.gl/ToHgu6; ABDI, 'Diagnóstico: Base Industrial de Defesa Brasileira' [Diagnosis: Brazilian defence industrial base]' (Brasília, 2011), https://goo.gl/xjLiR7; ABDI, 'Mapeamento Da Base Industrial de Defesa' [Mapping of the defence industrial base] (Brasília, 2016), https://goo.gl/Rd6E92.

72. FIPE, 'Cadeia de Valor e ImportâNcia Socioeconômica Da Indústria de Defesa e Segurança No Brasil'.

73. Ibid.

74. SIPRI, 'SIPRI Arms Transfers Database', 2018, https://goo.gl/tJfqtk.

75. Brasil, 'Decreto nº 6.703, de 18 de Dezembro de 2008'.

76. Neto, 'How Brazil Competes in the Global Defense Industry'.

77. Lucena Silva, 'Globalização Militar, Segurança e Desenvolvimento'.

78. SIPRI, 'SIPRI Arms Transfers Database'.

79. SIPRI, 'SIPRI Arms Industry Database'.

80. SIPRI, 'SIPRI Arms Transfers Database'.

81. Neto, 'How Brazil Competes in the Global Defense Industry'.

82. Ibid.

83. Ibid.; Kapstein, 'The Brazilian Defense Industry and the International System'.

84. Gouvea, 'Brazil's New Defense Paradigm'.

85. Dagnino, 'A Política de Defesa Brasileira'.

86. Neto, 'How Brazil Competes in the Global Defense Industry'; Perruci, 'The North-South Security Dialogue in Brazil's Technology Policy'.

87. Patrice Franko, 'The Defense Acquisition Trilemma: The Case of Brazil', *Strategic Forum*, 2014, http://ndupress.ndu.edu/Portals/68/Documents/stratforum/SF-284.pdf.

88. Gouvea, 'Brazil's New Defense Paradigm'.

89. Neto, 'How Brazil Competes in the Global Defense Industry'; Gouvea, 'Brazil's New Defense Paradigm'; Dagnino, 'A Política de Defesa Brasileira'.

90. Kapstein, 'The Brazilian Defense Industry and the International System'.

91. Brasil, 'Decreto nº 5.484, de 30 de Junho de 2005'; Brasil, 'Decreto nº 6.703, de 18 de Dezembro de 2008'.

92. Lucena Silva, 'Globalização Militar, Segurança e Desenvolvimento'.

93. Ibid.

94. Kapstein, 'The Brazilian Defense Industry and the International System'.

95. Carlos and de Oliveira Leite, 'Struggling for Survival and Success'.

96. Cornell University, INSEAD, and World Intellectual Property Organization, 'Global Innovation Index', 2017, https://goo.gl/ZUTmQK.

97. Carlos and de Oliveira Leite, 'Struggling for Survival and Success'.
98. Gouvea, 'Brazil's New Defense Paradigm'.
99. Ibid.
100. Lucena Silva, 'Globalização Militar, Segurança e Desenvolvimento'.
101. Gouvea, 'Brazil's New Defense Paradigm'.
102. Carlos and de Oliveira Leite, 'Struggling for Survival and Success'.
103. Dagnino, 'A Política de Defesa Brasileira'.
104. Perruci, 'The North-South Security Dialogue in Brazil's Technology Policy'.
105. Ministério da Justiça, 'Segurança Pública Nas Fronteiras'.

Disclosure statement