

Arms for export? A reappraisal of the Brazilian arms industry

Diego Lopes da Silva

Diego Lopes da Silva is a Researcher, SIPRI Arms and Military Expenditure Program, Stockholm International Peace Research Institute (SIPRI), Stockholm, Sweden. He can be reached at diego.lopes.silva@outlook.com.

Abstract

There is a near-consensus among scholars and policymakers that the principal factor leading to Brazil's arms industry crisis was its dependence on exports. However, the diffusion of the arms export-dependence argument contrasts with the lack of empirical support for it. Currently, there are no recent studies consistently estimating the overall size of Brazil's arms production nor its reliance on external markets. Without a proper measurement of Brazil's domestic procurement capacity, any assessment of its external dependence is only partial. To address this issue, this article uses data on domestic procurement previously introduced by the author to re-evaluate Brazil's dependence on arms exports. While certainly important, the export-dependence argument has been overstated. Indeed, a fall in demand in the late 1980s led to a major decrease in Brazilian arms exports. However, the state managed to absorb a significant part of the production until mid-1990s. The data on domestic procurement sheds new light on institutional explanations for Brazil's arms industry crisis.

In 1986, Peter Lock wrote "Brazil: Arms for Export", providing a comprehensive overview of one of the biggest arms exporters at that time. The title itself clearly expressed the important role that external markets had in the development of Brazil's arms industry.²

Just a few years after the publication, the Brazilian arms industry entered a period of stagnation that finally led to its crisis in the mid-1990s. Once a thriving producer of armored vehicles, Engesa went bankrupt in 1993. Embraer, the country's greatest arms company, was privatized in 1994 to cope with financial losses. Avibrás, responsible for the commercial success of the Astros II multiple launch rocket system, did not make a single export between 1993 to 1999. There is a near-consensus, among scholars and policymakers, that the principal factor leading to this arms industry crisis was its dependence on faltering exports.³

In the 1980s, the arms export-dependence argument led Brazil to a rather loose commitment to arms exports control. In an interview given in 1979, a Brazilian general argued that if a government "knocks on our door looking for guns and we, for whatever political reasons, refuse to supply, what will happen? It will look for

another [supplier]". This "if-not-us-someone-else-will" rationale ultimately led to Brazilian arms being found in the hands of unauthorized third parties without end-user certificates. An example is the use of Brazilian-made Urutu and Cascavel armored vehicles by the Guatemalan government against the Guatemalan National Revolutionary Unit during the civil war. In the 2010s, Brazil displayed a somewhat hesitant position toward the Arms Trade Treaty (ATT)—which can largely be attributed to its perception that the treaty would limit the number of foreign markets. Both the Ministry of Defense and the Ministry of Foreign Affairs expressed concerns that the restrictions imposed by the ATT could jeopardize Brazil's efforts to rebuild its arms industry.⁴

The export-dependence argument is at the heart of Brazil's recent efforts to regain its former status in the arms trade. Since the early 2000s, the Brazilian government has led the effort to rebuild the country's arms production capacity. Military spending grew substantially alongside an emerging policy apparatus to foster the sector. The enactment of the National Defense Strategy in 2008 and its later revisions regard exporting arms as a crucial step toward the industry's recovery. The

document asserts that “the Brazilian state will help to gain foreign clients for the national defence material industry”. The state-backed export offensive has also been framed as helpful to the country’s economy, linking it to Brazil’s economic and technological development.⁵

The diffusion of the arms export-dependence argument among scholars, as well as its use for policy making, contrasts with the lack of empirical evidence supporting it. Without a proper measurement of Brazil’s domestic procurement capacity, any assessment of its external dependence is only partial. To address this issue, this article uses data on domestic procurement introduced by Lopes da Silva (2018) to analyze Brazil’s dependence on arms exports. While this issue has been briefly addressed in Lopes da Silva (2020), here the discussion is extended, comparing the estimates provided in Lopes da Silva (2018, 2020) with previous studies. The contribution of this article is twofold. First, it addresses a gap in the arms production literature, namely estimates of domestic arms procurement. Second, by doing so, this article aims to inform the policy debate regarding Brazil’s dependence on arms exports.

Brazil and the arms trade

Foreign markets are considered to be crucial for arms industries. Exporting allows the scaling up of production in order to mitigate the fixed production cost burden. Securing foreign markets is therefore often a priority for emerging arms producers. Kurç (2017) discusses the active role the Turkish state has taken in promoting arms sales abroad as a means of improving production capabilities. Brazil is no different, with the role of exports dominating explanations for both the rise and demise of its arms industry. Lock’s (1986, p. 81) account of the Brazilian arms industry identifies arms exports as the main factor driving the sector.⁶

Libya was Brazil’s first important arms recipient with Brazil filling a gap left by the United States and the United Kingdom (who halted exports to Libya after Muammar al-Qaddafi’s rise to power in 1969). Brazilian armored vehicles, such as the Urutu and Cascavel, served Qaddafi’s plans to increase Libya’s combat capabilities.

This article questions the near-consensus that Brazil’s arms industry collapse in the 1990s was due to faltering export markets. Examining domestic procurement, in addition to exports, weakens the export-dependence argument and weakens those seeking state support for the industry as well as those seeking arms export expansion.

The outbreak of the Iran-Iraq war in 1980 was deeply tied to Brazil’s arms industry. Arms exports to Iraq fueled the industry’s growth and the conflict became a showcase for Brazilian-made military equipment. Throughout the war, arms exports became increasingly concentrated in Iraq—the country received 28.1 per cent of all arms exports from Brazil between 1975 and 1988. By the mid-1980s, Brazil had 0.65 percent of the world total arms exports, a very small figure compared to established exporters, yet higher than other emerging arms producers. However, when the conflict ended in 1988, Brazil was lost its main recipient.⁷

While other aspects certainly had a role, like the transition to democracy, there is a near-consensus in the literature that export dependence was the principal factor leading the industry’s crisis in the 1990s. Gouvea (2015, p. 138), for instance, argues that the sharp decline in demand for military hardware in the late 1980s exposed Brazil’s heavy dependence on exports. Financial constraints are said to have limited Brazil’s ability to absorb its indigenous production.⁸

The export-dependence argument moved beyond academic circles into the very core of policymaking. The necessity to export is frequently voiced in official documents and is the cornerstone of Brazil’s arms industry revitalization process. Magalhães (2018) discusses how the military sector has used Brazil’s arms export-dependence to lobby for larger fiscal incentives and a more active role of the state in promoting military sales abroad. The enactment of the Special Tributary Regime for Defense Industry (RETID in its Portuguese acronym) in 2012 relieved the sector from several taxes, setting forth special rules for procurement, contracting and product development.⁹

Furthermore, Brazil’s dependence on foreign markets has been used to justify a rather loose arms export control policy, leading to occasional divergences with the

country's peace-promoting foreign policy guidelines. By overemphasizing the benefits of exporting arms, such as economic returns or the very existence of an indigenous production capacity, commitments to international norms are diluted. Ávila (2011) highlights the irreconcilable predicament of Brazil's arms trade policy: On the one hand, Brazilian foreign policy regards itself as peace promoting, whereas on the other, it aims to regain its place as one of the main arms exporters in the world. These two objectives are often in stark disagreement, if not mutually exclusive at times. Nevertheless, they coexist in a strange paradox justified by the alleged absolute necessity to export arms.¹⁰

Arms for export? Examining a narrative

Albeit compelling, the export-dependence argument demands a proper assessment. Surprisingly, it has not been confronted with data on domestic procurement; thus, there is no systematic empirical account of the Brazilian case supporting the predominance of foreign markets vis-à-vis domestic demand. To some extent, the absence is justified by the scarcity of data. Currently, neither the arms trade nor the arms industry databases provided by the Stockholm International Peace Research Institute (SIPRI) include data for domestic procurement.

Recently, the need for data on domestic procurement has received due attention. Brzoska (2019) compares three different methods to estimate overall arms production. His aim is not to provide actual figures, but rather to discuss different possible ways to calculate output. Previously, Bove and Cavatorta (2012) tried to estimate domestic procurement in financial values using military expenditure data. An indirect approach is seen in Smith and Tasiran (2010), which tries to measure domestic production capability as the unobserved effects it may exert on arms imports propensity.¹¹

This article makes use of the dataset introduced in Lopes da Silva (2018), restricted only to the Brazilian case. It provides a feasible and straightforward strategy to build a consistent time series on domestic arms production, where arms production equals domestic procurement plus arms exports.

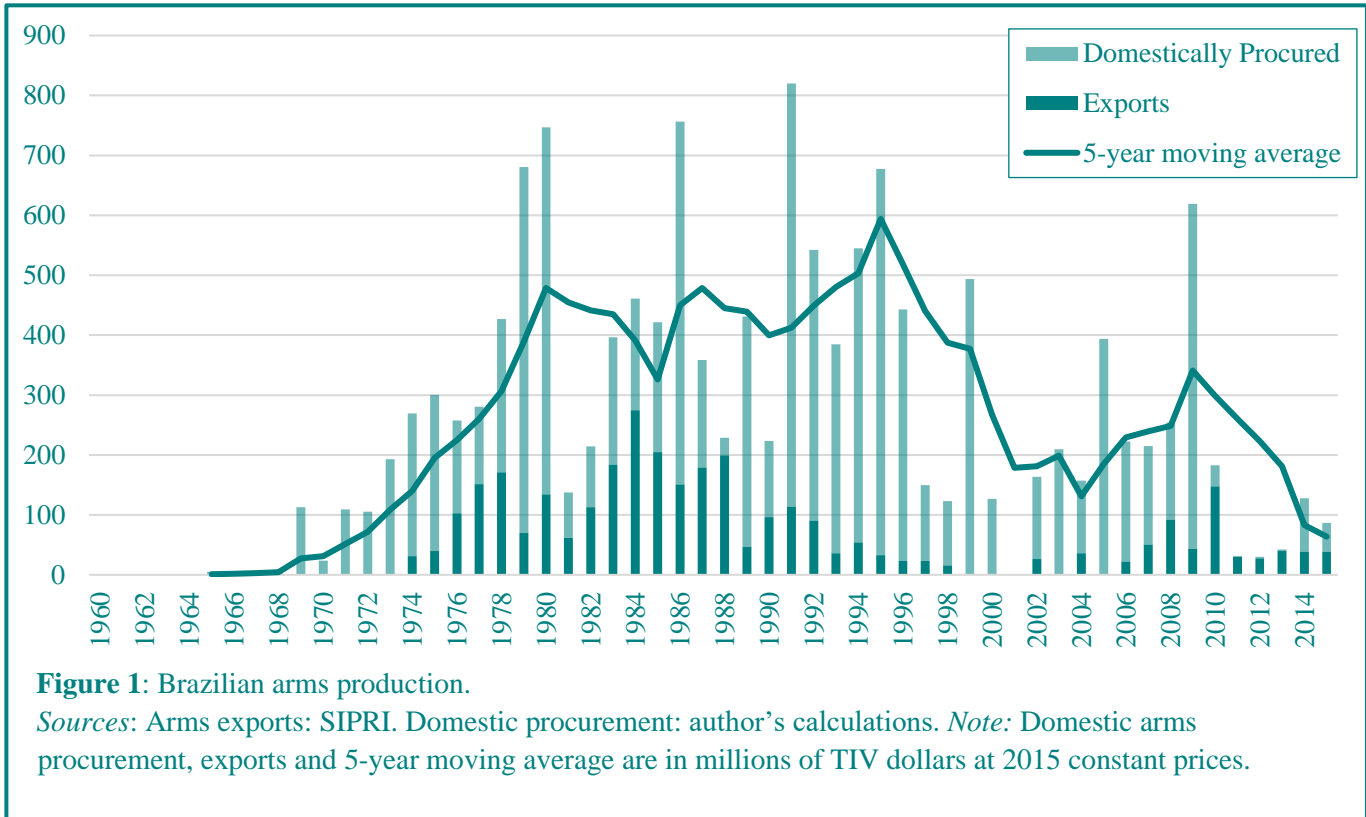
Using Trend Indicator Values (TIVs), Lopes da Silva (2018) tracks domestic acquisitions for South America. By using TIVs, an estimate of total arms production can be achieved by adding exports to domestic purchases (excluding equipment not locally produced or assembled). TIVs are based on the known unit production costs of a core set of weapons and represent a transfer of military resources rather than financial values. This method intends to provide a standard unit to allow the measurement of trends in the flow of arms to countries and regions over time.

Figure 1 shows Brazil's military spending and total arms production in TIVs, disaggregated by domestic procurement and exports. The inclusion of domestic procurement leads to a reappraisal of foreign markets and a revision of some estimates used in the literature. To illustrate Brazil's reliance on arms exports, Moraes uses (2012) data from Krause (1992, p. 164) on Brazilian exports of military equipment as a share of total production in the mid-1980s, ranging between 70 to 80 per cent. This estimate is close to the data in Figure 1. However, given that estimates for an extended time-series were unavailable, Moraes (2012) generalizes the predicament, assuming the share of exports would be roughly the same for other years. Figure 1 challenges that assumption.

Maldifassi and Abetti (1994) present data of domestic arms procurement in Brazil between 1969 and 1988 based on a Minimum Costs per Soldier criterion. Domestic arms production levels are based on Dollars Per Soldier (DPS), which is given by:

$$DPS = \frac{\text{military budget} - \text{arms imports}}{\text{number of military personnel}}$$

For the 20-year period covered, the minimum DPS value found was assumed to represent the minimum possible expenditures per soldier that would allow the armed forces to operate. The authors assume that when DPS was at its lowest point, military spending concerned only arms imports, minimum operational expenses, personnel costs, and infrastructure maintenance—thus excluding domestic arms procurement. Anything above



that minimum would be attributed to domestic purchases.

Table 1 compares Maldifassi and Abetti (1994) estimates with those built using data from Lopes da Silva (2018). One of the main differences between the two methods is that, whereas Maldifassi and Abetti use only military spending figures, Lopes da Silva registers individual arms deliveries. Also, measurement units are distinct, as the latter uses Trend Indicator Values. To make both estimates comparable, a share of overall arms production is used.¹²

Before discussing the data, some caveats are necessary. Using TIVs to track domestic procurement has clear advantages in comparison to other methods. It builds on a consolidated methodology and, for that same reason, it is comparable to SIPRI's arms trade database. Yet there are limitations, including the considerable shortcoming of disregarding changes in production costs of the same equipment over time. In addition, it was mentioned earlier that TIVs are not financial units. In that sense, their use alongside other variables such as military spending or gross domestic product in econometric analysis is limited.¹³

Also, although the dataset for Brazil's domestic procurement is consistent, it is not complete. However, it is argued that unregistered purchases are small and so do not alter the conclusions presented here. Furthermore, the figures presented here are a preliminary exploration into Brazil's reliance on domestic procurement. Future studies are needed to disaggregate these data to account for variation across sectors. Brazil's naval industry is primarily oriented toward domestic procurement, whereas the majority of armored vehicles are exported. As TIVs for ships are higher, this inflates domestic procurement figures. While the presented aggregate measures are valuable, these concerns need to be borne in mind.

Both the Maldifassi and Abetti, and Lopes da Silva estimates seem coherent regarding the timing of main events: Exports began in the mid-1970s, increasing in importance in the 1980s. For some years, estimates are close; in 1978, 1981, 1984, and 1986 they differ by just a few percentage points. Maldifassi and Abetti, however, are less consistent, with significant jumps between years; the tenfold increase in exports as a share of total arms

Table 1 – Comparison of Brazilian arms production estimates

to

	<i>Lopes da Silva (2018)</i>				<i>Maldifassi and Abetti (1994)</i>			
	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
1969	113	0	113	0	2555.7	0	2555.7	0
1970	23.6	0	23.6	0	3967	0	3967	0
1971	109	0	109	0	4377.2	0	4377.2	0
1972	105.3	0	105.3	0	4440	0	4440	0
1973	192.7	0	192.7	0	5007.3	0	5007.3	0
1974	237.9	31.3	269.2	11.6	5698.2	0	5698.2	0
1975	260.7	39.6	300.4	13.2	6053.5	131.5	6185	2.1
1976	154.7	103.0	257.7	40	2119.9	333.7	2453.6	13.6
1977	129.4	151.1	280.4	53.9	1939.3	80.5	2019.8	4
1978	256.2	170.9	427.1	40	422	329.8	751.8	43.9
1979	610.4	70.2	680.6	10.3	0	333.7	333.7	100
1980	612.5	134	746.5	17.9	498.6	388.7	887.2	43.8
1981	75.8	61.6	137.4	44.8	596.7	429.9	1026.6	41.9
1982	101.2	112.9	214.1	52.7	2051.2	1607.6	3658.8	43.9
1983	212.4	184	396.4	46.4	1332.8	298.4	1631.1	18.3
1984	186.7	274.5	461.3	59.5	1048.2	1436.8	2485	57.8
1985	216.4	205	421.3	48.6	1220.9	773.4	1994.3	38.8
1986	605.2	150.9	756.1	20	2037.5	565.3	2602.8	21.7
1987	179.6	179	358.6	49.9	2308.3	1217	3525.3	34.5

Notes: A = Domestic procurement, B = Exports, C = Total production (A+B), D = Exports as a share of total production.

Source: Lopes da Silva (2018) provides figures in SIPRI Trend Indicator Values (TIVs) expressed in millions of dollars at 2015 constant values. Maldifassi and Abetti (1994) figures are in millions of dollars at 2015 constant values.

production from 1977 to 1978 is particularly notable. The main divergence between the datasets concerns domestic procurement in the late 1970s. According to Maldifassi and Abetti, domestic procurement slowed down between 1976 and 1982, reaching zero in 1979. In contrast, Lopes da Silva finds that, domestic procurement has, in the main, increased in the same period (led by the acquisition of armored vehicles such as the Cascavel and the Urutu). Maldifassi and Abetti missed these purchases because the baseline value used

estimate the minimum Dollars Per Soldier (\$3,929 in 1979) already included the acquisition of domestically produced equipment. That is, the assumption that the minimum value of Dollars Per Soldier for their time series covered only basic costs of maintenance and operation was flawed, something that the authors themselves had anticipated as a possibility.¹⁴

It is of note that both sets of estimates are similar in not overstating the role of exports. As an average, both are very similar: 24.4 per cent in Maldifassi and Abetti,

and 26.8 for the TIV-based calculations. Thus, neither estimates provide support for the overstatement of Brazil's arms export dependence. Certainly, as with other arms producers, Brazil's reliance on foreign markets is an important feature of its arms industry; nevertheless, its importance has been overstated. This finding does not invalidate the role played by arms exports; however, it is sufficient to reassess its importance and to strengthen alternative explanations of Brazil's arms industry. Kapstein (1991), for instance, states that the Brazilian arms industry was not established as an export sector from its inception. Instead, its primary goal was to meet the domestic requirements of the military. This article's findings also strengthen Conca's (1997) institutional explanation of the industry crisis as the erosion of the arms industry's supporting coalition after redemocratization.

Conclusion

Arms export dependence must be analyzed cautiously. Without a proper assessment, it can ultimately justify hesitant commitments to arms trade regulations. The demise of Brazil's arms industry has been attributed to its alleged overwhelming reliance on external markets. Nevertheless, studies have mostly relied on anecdotal figures for domestic procurement vis-à-vis exports. Thus, conclusions have been presented without a solid empirical basis. One must be aware that this narrative is convenient for those who wish to expand the influence of the arms industry while seeking greater support from the state for their enterprises.

Using data from Lopes da Silva (2018), Brazil's reliance on arms exports is examined. The figures on domestic procurement do not debunk the role of exports in maintaining Brazil's arms industry, but it does reappraise its importance. The export-dependence argument has been overstated. While the end of the Iran-Iraq war did, indeed, lead to a major decrease in Brazilian arms exports, the state managed to absorb part of the production until the mid-1990s. Recent data indicates that, despite Brazil's efforts to rebuild its arms industry, output is still significantly smaller than that achieved in the 1980s. The data on domestic procurement gives

grounds for reconsidering Brazil's current strategy to rebuild its arms industry. It also sheds new light on alternative explanations for Brazil's arms industry crisis, such as those provided by Conca (1997) and Kapstein (1991).

It is beyond the scope of this article to discuss the intricacies between domestic procurement and arms exports. Indeed, state demand can vary depending on how external markets behave. Albeit that this demands attention, the goal of this article is to discuss figures for domestic procurement and compare them with previous estimates. A proper assessment of how these two elements interact (for example, if the expectation of increasing exports affects domestic procurement) would require a specific in-depth study. Such a task would greatly benefit from the estimates presented here.

The method used here to calculate Brazil's domestic arms procurement, and thus its overall arms production output, is promising. Recently, Brzoska (2019) compares different methodologies with the same purpose and concludes that, despite the substantial effort required, estimates using TIVs are likely to produce valid results. Nevertheless, one must be aware of the limitation of using TIVs. Brazil does not have a unified report on arms exports or domestic procurement. Thus, data collection is demanding and likely to overlook smaller trades. Likewise, as mentioned in Brzoska (2019), TIVs measure weapons systems, excluding small weapons. This is an especially significant problem as Brazil is a world-leading small arms producer. For that reason, a TIV-based method leads to underestimation by excluding this part of the industry.¹⁴

Future research can benefit from comparing Brazilian estimates for domestic arms procurement to other arms producers. Comparative studies could provide interesting insights on the role of state demand. Also, when data is available, adapting the Trend Indicator Value to small arms could improve the accuracy of estimates while also providing a more comprehensive toolkit to measure the arms trade. Expanding TIVs to small arms is a challenging task, however. Frequently, data is not available, making comparisons problematic—however, a case-by-case approach could lead to

insightful results.

Notes

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1. Lock (1986).
2. Maldifassi and Abetti (1994); Franko, (1998); Dagnino (2010).
3. Quote: within Avila (2009, p. 309). Brazilian armored vehicles in Guatemala: Avila (2011). Brazilian position on ATT: Magalhães (2018).
4. The National Defense Strategy 2008: [PR] (2008). Economic and technological development: [MD] (2012).
5. Scaling up production to mitigate fixed costs: Hartley and Sandler (2003); Kurç and Neuman (2017); Neuman (1984); Neuman (2006); Sandler and Hartley (1995). The rise and demise of Brazil’s arms industry: Gouvea (2015); Franko (2014); Kapstein (1991).
6. Showcasing Brazilian-made military equipment: Dagnino (1989).
7. Transition to democracy: Conca (1997); Principal factor: Brigagão (1986); Dagnino (1989); Dagnino (2010); Franko-Jones (1991); Moraes (2012). Absorbing indigenous production: Lock (1986); Dagnino (1989); Dagnino (2010); Moraes (2012).
8. Arms industry revitalization: Dagnino (2010); Dagnino and Campos Filho (2007).
9. Justifying loose arms export control: Magalhães (2018, p. 272).
10. On domestic procurement: Brzoska (2019); Hartley (2018); Lopes da Silva (2018).
11. For the remainder of this section “Maldifassi and Abetti” refers to Maldifassi and Abetti (1994), and “Lopes da Silva” refers to Lopes da Silva (2018).
12. Lopes da Silva (2018) discusses the shortcomings of TIVs in more detail.
13. Maldifassi and Abetti (1994, p. 167).
14. Dreyfus et al. (2010)

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