The RUSI Journal

ISSN: 0307-1847 (Print) 1744-0378 (Online) Journal homepage: www.tandfonline.com/journals/rusi20

Latin America in Step with Global Defence Offset Phenomenon

Monica Herrera & Ron Matthews

To cite this article: Monica Herrera & Ron Matthews (2014) Latin America in Step with Global Defence Offset Phenomenon, The RUSI Journal, 159:6, 50-57, DOI: 10.1080/03071847.2014.990815

To link to this article: https://doi.org/10.1080/03071847.2014.990815

Published online: 23 Dec 2014.

THE RUSI JOURNAL

LATIN AMERICA IN STEP WITH GLOBAL DEFENCE OFFSET PHENOMENON

MONICA HERRERA AND RON MATTHEWS

Offset has been a feature of the international arms market for decades, and seems likely to remain so for the foreseeable future. Monica Herrera and Ron Matthews examine the phenomenon in Latin America, where growth in national income has driven accelerated defence industrialisation and leveraged a plethora of local country offset programmes.

In an increasingly economically connected world, the idea of a reciprocal investment is not new. In the defence sector, this process is termed 'offset' and it kicks in when countries procure big-ticket military equipment from defence contractors and in return seek compensatory benefits, such as demanding that equipment should be assembled or produced locally so that the contracting countries can expand their own defence industrial capabilities. The reason states are able to do this is that the number of arms-supplier companies exceeds that of buyer countries – a market imbalance that gives buyer states the leverage to extract concessions from seller companies.[1]

This buyers' market is unlikely to change soon because of emerging economies in South Asia, East Asia, the Middle East and South America where increasing military expenditure is fuelling offset demand. As a result, the offset phenomenon is set to grow in importance. Already, it is near-impossible to sell major weapon systems to both rich and poor countries without attracting demands for offset. Compared to the handful of countries in the 1970s that had rudimentary offset guidelines, there is now a growing list of around seventy-five to eighty countries specifying rigorous and comprehensive conditions.[2] Indonesia launched its first offset policy in November 2014 and other countries, such as Argentina, are likely to follow suit in 2015.

Offset provides opportunities for boosting local defence industrialisation

Offset has been around since the nineteenth century, when Japan's off-the-shelf procurement of the 'first-of-a-series' British warships was contingent upon the remainder of the series being produced in Japan; yet contemporary policy interest only took off after the end of the Cold War. The absence of an open enemy led to the collapse of defence and acquisition budgets, transforming the sellers' market of the Cold War – where limited numbers of defence contractors operated at full capacity – into a buyers' market. Despite the slowdown due to the global economic crisis of the late 2000s, and the ensuing austerity cuts to public budgets, real defence spending has now recovered to the levels enjoyed in the late 1980s.[3] Two factors account for this trend. First, continued high oil prices, combined with relatively strong economic growth, have meant that several Middle Eastern and Asian countries have substantially increased their defence acquisition budgets, emerging as the rising stars of the offset market. Second, while defence spending in both Europe and the US has begun to decline, for the developing economies, budgets have not only held up; they have increased in some cases.[4]

Offset is important for developing states because it provides opportunities for boosting local defence industrialisation. The advanced countries, however, have moved from ambivalence to aggressively eradicating offset. At one end of the spectrum are countries like Russia, which enjoys near self-sufficiency in arms production and for which, therefore, given the absence of overseas weapons acquisition, offset has never been an issue.[5] Somewhere in the middle of the spectrum is the US. It categorically denies that it has an offset policy, but the 'Buy American' legislation looks very much like such a policy under a different guise.[6] At the other end of the spectrum are states like Australia, which abandoned its formal offset policy in the late 1990s, arguing that it did not work; similarly, the EU's 2009 European Procurement Directive led to the virtual elimination of offset across the twenty-seven European states.[7] Therefore, whilst the advanced countries have moved against offset, the world's developing regions are relying on it; they have the defence dollars, are mostly located in strategically tense environments, and are ambitious in promoting their military-diplomatic status through enhanced domestic defence-industrial capabilities.

 DOI: 10.1080/03071847.2014.990815

Military expenditure has peaked in rich countries, and the US and European defence contractors are shifting their focus away from home markets to the international stage.[8] Exports are seen as the mechanism for achieving scale and maintaining sales growth and profit. This is especially the case in the UK, following the Ministry of Defence's recent policy push to rigorously promote defence exports.[9] Thus, marketing and business development executives have become even more conscious that the innovativeness of offset packages is one of the factors – and sometimes, the key factor – that is likely to seal a deal. Even China, which replaced the UK in 2012 as the fifth-biggest defence exporter, taking 5 per cent of the world's share of arms sales, recognises the need to become savvy in the complexities of offset, aware that its remarkable surge in arms sales will be unsustainable in the absence of accommodating buyer-country demands for offsetting investment.[10]

The world's defence contractors are always looking out for new market opportunities and on the horizon is Latin America. The region is interesting, given that high and sustained growth rates are powering procurement and related offset demands, particularly because South American authorities view the offset phenomenon as a vehicle for defence and civil technological transformation.[11] Yet little is known about the region's offset policy and performance. The purpose of this article is to address the nature and impact of offset in major Latin American countries. The article first outlines the dynamics of the global arms market, highlighting the reasons behind the global defence contractors' growing interest in the Latin American defence market. It then examines the region's offset experiences, as well as the differing policy frameworks pursued by constituent states. It analyses recent offset deals to highlight the scope of the defence and civil programmes underway. However, the analysis comes with the caveat that whilst significant progress has been achieved, offset is not the 'win-win' formula often touted by policy-makers and contractors alike. Offsetting investment may be necessary to support local development efforts, but invariably it is insufficient. To fully exploit offset opportunities, recipient countries should possess the appropriate technological infrastructure to secure long-term, dynamic and viable development.

Brazil announced its decision to procure thirty-six JAS-39 Gripen E multirole fighter aircraft from Sweden's Saab in December 2013. *Courtesy of AP Photo/Johan Nilsson.*

Latin America: The Last Frontier

The evolving structure of the demand for global arms means that this market is now targeting countries like the UAE, Saudi Arabia, Oman, and even Iraq and Libya in North Africa and the Middle East, and India, Singapore, South Korea, Indonesia and an ever-more assertive Japan in Asia.[12] However, increasingly, Latin America is beginning to attract defence contractors. Fuelled by historically high rates of economic growth, Latin American countries are engaging in or planning major acquisition programmes, and therefore are either honing existing offset policies or launching new ones. Countries such as Brazil, Argentina, Chile, and even Peru and Colombia are suddenly in the sights of offshore vendors seeking to sell expensive weaponry and security systems.[13] In particular, GDP growth in Argentina, Peru and Chile is driving the expansion in military expenditure (MILEX).[14] Argentina's growth in MILEX across 2009–12 is remarkably high at 4.9 per cent.[15] However, while its military

Table 1: Latin America's Defence Offset Strategies.

Country	Policy Launch Year	Objectives	Direct or Indirect	Flexibility	Threshold (US$)	Quota	Multipliers
Argentina	No formal policy	Unclear, but the aim is to revitalise defence industry through technology transfer	Emphasis on direct	Flexible	Case-by-case	100%	Case-by-case
Brazil	2002	Improve production capability of indigenous arms industry. Focus on research and development	Direct, though security and aerospace are also priorities	Flexible	5 million over a 12-month period	100%	Case-by-case
Chile	2002	Weapons capability, with offset a second priority	Both	Prescriptive	1 million	100%	1.3–1.7 dependent on regional investment
Colombia	2004	Defence and security equipment the priority	Both	Flexible	1–5 million; the latter for perishable items	100%	3–5 on technology transfer and investments
Peru	2010	Offset provides an opportunity to broaden the economic base and reduce reliance on mining	Both	Case-by-case basis	7.5–15 million; the latter for perishable items	100%	Case-by-case, but range from 0.5 to 5 based on strategic importance

Source: IHS Jane's, 'Offset and Procurement Compensation Policies: Defence Markets', August 2013.

budget has expanded by over 140 per cent since 2003, almost 90 per cent of that growth is related to personnel costs – a situation reflected in the country's low level of arms imports, worth US$110 million across 2009–12.[16] Colombia is an exception to the region's high MILEX expansion. Whilst it enjoyed economic growth of over 3.68 per cent across 2009–12, its 0.64 per cent growth in MILEX is more than seven times slower than that of Argentina.[17] Peru experienced an impressive 5.45 per cent growth in MILEX across the same period, but spent a meagre US$162 million on arms imports.[18] Brazil stands out as by far the biggest economy in the region, with a GDP nearly five times that of Argentina, the second-largest economy in Latin America. Moreover, Brazil's population of 199 million, its military expenditure of US$33.1 billion, and arms imports of US$1.2 billion are all substantially larger than those of other Latin American countries.[19] Given Brazil's regional military and economic dominance, it is surprising that its 1.72 per cent MILEX growth is so low, although it needs to be acknowledged that this growth is based on a much higher value base.[20] Notwithstanding Brazil's comparatively tardy MILEX growth, the country is forecast to have one of Latin America's more dynamic defence markets in the years ahead.[21]

New Defence Markets, New Offset Challenges

The growth in offset demand in Latin America is comparable with trends in the Middle East and Asia, in that it is the result of expanding military expenditure and foreign arms acquisition.[22] In fact, as shown in Table 1, most Latin American countries have had offset policies in place since the early 2000s, with Peru joining the club as late as 2010. Argentina is the one exception to the rule. It still lacks a formal offset policy, although since the 1970s, the government has required foreign defence contractors to provide reciprocal investment benefits.

Offset is a delicate balancing act

Offset is always and everywhere a sensitive issue, not least because the design of attractive and creative offset packages provides defence contractors with a competitive advantage when bidding for major acquisition programmes. Of course, contractors are aware that they must offer technology to be compliant with offset demands, but they must carefully manage its

release to maintain both in-company technological competitiveness and global brand reputation. The sensitivities associated with this balancing act explain the reluctance of defence firms to divulge information, leading to scarcity of literature on the policy and practice of Latin America's offset experience. Yet what is clear is that governments in this region have long perceived offset as a mechanism for promoting defence-industrial capacity.

For instance, Argentina employed offset in the 1980s and 1990s as a means of facilitating defence industrialisation, promoting supply chains, and progressing towards the wider goal of import substitution. It also sought to develop local research and defence (R&D) capacity, but progress was stultified by a series of constraints, including the peso's collapse, constant fiscal distress, and the country's inability to adequately fund increases in the defence and acquisition budget.[23] In contrast, Brazil's efforts to foster local defence-industrial capacity proved especially successful. The strategy focused on technology transfer through offset. Aircraft manufacturer Embraer, via licensed production, was the principal recipient of relatively advanced 'key technologies', such as fuselage and systems integration, gaining autonomy in its business, importing and integrating components as necessary.[24] The central feature of Brazil's development model is its civil-military focus. Thus, when demand for weapon systems dried up after the end of the Cold War, Embraer survived because of its ability to diversify into civil aviation. Today, Embraer's defence programmes are turning around, driven by the Brazilian Ministry of Defence's strategic aeronautics acquisition programmes. Here, in both the civil and military spheres, offset has played a critical role in stimulating local R&D capability and generally increasing high-skill and high-value production and systems-integration capability.

Investment Sustainability

Although offset has the potential to create technological capability, the real challenge is to ensure it will be sustainable over the long run. It is clearly in the interests of both the offshore vendor company and the recipient offset authority to achieve continuity of offset-induced industrial capacity beyond the programme period. None of the stakeholders to the agreement benefits if the manufacturing facility closes once the offset programme is completed.

Latin American states are aware of this challenge and also of the fact that they operate at different levels of defence-industrial development; thus, their country strategies are nuanced to match technological imperatives. The strategies have focused on, for instance, revamping capacity (Argentina), creating capacity (Chile, Colombia and Peru), and consolidating and deepening capacity (Brazil). Brazil, moreover, seeks the development of both its defence-industrial base and commercial, high-technology capacity, possessing both the historical and cultural heritage and contemporary technology absorptive capacity to ensure that offset will be effective.[25] Although Brazil's technological advantages make it a frontrunner for viable and sustainable offset partnerships, this has not deterred other South American countries from approaching offset agreements with enthusiasm to extract the best deals, as well as a determination to make them work.

Latin America's offset policies are characterised by flexibility

The region's policies are characterised by flexibility, especially in Argentina and Peru, resting on a case-by-case approach. This is arguably the optimal offset model, whereby offset packages are 'tailored' according to vendor capability, rather than the arbitrariness of policy *dictat*. In some senses, this model is similar to Australia's post-offset approach, whereby investment in the local defence sector is based on partnership, not coercion. Headline quotas for the Latin American states are commonly specified at 100 per cent, but for most states under review, this likely represents an offset ceiling rather than a floor. Moreover, most states view offset as a secondary consideration, with the priority firmly on the capability and performance of the military system being procured. Nevertheless, there is no doubt that vendors will be under intense pressure to ensure that all aspects of the product-surround are competitive, including credit terms, training, through-life support and, of course, offset.

Latin America's arms-supply structure is multinational in orientation, with the major suppliers coming from the US, the UK, Europe, Scandinavia, Russia and China. During 2008–12, the US dominated the market, accounting for 78.8 per cent of arms imports.[26] Although American defence contractors dominate the region's high-value imports, there remain opportunities for proven, competitive, niche arms suppliers. Argentina, for instance, imports advanced defence equipment from Russia, Spain, China, Brazil and Austria, as well as, of course, from the US.[27] Brazil imports from the US, but also from numerous European countries.[28]

Offset Programmes, Present and Potential

Brazil is seeking offset agreements tied to several major impending procurement programmes, including: four conventional submarines, a licence deal for a further ten submarines, and the construction of a new dockyard; eleven offshore patrol and logistic support vessels; an integrated surveillance network, including vessels, sensors and satellites covering the Brazilian coastline; and fighter aircraft, unmanned aerial vehicles (UAVs), frigates and even an aircraft carrier.[29] BAE Systems, for instance, is already involved in the Brazilian KC-390 medium light aircraft acquisition programme for the Brazilian Air Force. This was a US$1.3 billion contract signed with Embraer in April 2009.[30] BAE agreed to deliver commercial flight-control electronics and active side sticks for this aircraft.[31] The related offset deal was announced in November 2013, and will entail Brazil-based software-development training, maintenance, repair and overhaul services for the KC-390 control system. The various offset projects comprising the comprehensive 2013 offset programme will be both short- and long-term in duration and will cover

the entire offset obligation. Brazil has other ongoing air force offset programmes amounting to US$4 billion.[32] These offset deals are with EADS CASA, Airbus, Elbit Systems and Eurocopter; the latter being Brazil's first joint (air force, army, navy and intelligence) acquisition, involving local production of fifty EC-725 helicopters (HX-BR programme), and incorporating twenty-two separate industrial co-operation projects.[33] Significantly, there are a further eighteen defence acquisition and offset agreements under negotiation, including the FX-2 fighter.[34]

This major fighter programme evolved from the earlier FX-1 competition and attracted bids from a varied group of contractors. The European consortium bid its Eurofighter Typhoon, France bid the Rafale, the US offered the F-35 Lightning, F/A-18E/F Super Hornet and the F-16BR, the Russians promoted their Sukhoi SU-35 fighter and the Swedish, the JAS-39 Gripen E fighter. The competition was intense, with Brazil highlighting the importance of several factors, including low cost, a proven track record in terms of contractual compliance, a lack of political baggage and generous technology-transfer provisions. The offset packages offered had to be innovative. Boeing, for instance, had reportedly lined up 130 Brazilian small- and medium-sized enterprises to create a local supply-chain offset package linked to the F/A-18E/F Super Hornet fighter bid.[35]

However, after nearly ten years of discussions, Brazil announced in December 2013 that it would procure thirty-six JAS-39 Gripen E multirole fighter aircraft from Sweden's Saab (a contract worth US$4.5 billion up to 2023).[36] Brazil's decision to procure the Gripen was based on several considerations, including cost (almost half the price of its competitors), performance and technology transfer. Saab's attractive offset package, valued at 175 per cent of the contract value, was an important factor in the competition decision, as it would have contributed to Brazil's national strategic goal of progressively modernising as well as indigenising its aerospace and defence sector.[37] Saab committed to transfer 100 per cent of Gripen's technology to Brazil, setting up the latest Gripen NG model in both Sweden and Brazil, in partnership with Embraer.[38] Some 80 per cent of the fighter structure will be built in Brazil, including the rear fuselage, wings, doors and undercarriage; and so will the avionics, by AEL Sistemas, a subsidiary of Israel's Elbit System Ltd.[39] Finally, an interesting aspect of this Gripen deal is Brazil's preparedness to include a 'deferred counter-contract' in the offset arrangement; this being Sweden's future intent to buy from Brazil several Embraer KC-390 and Super Tucano trainer/light attack aircraft.[40]

Colombia has also recently emerged as a growth market for military equipment. The guerrilla threat has dramatically receded and this has led to greater political stability and increased local and foreign investment and economic growth. Bogota's tax coffers have therefore swelled, creating the funds for belated military modernisation programmes. Major acquisitions include aircraft, missiles, armoured personnel vehicles, maritime integrated technology systems, electronic-warfare simulation and training, and perimeter security protection and surveillance systems. The Offset Authority is located in Colombia's Ministry of National Defence and it has gained experience managing numerous offset programmes. For instance, the EADS CASA offset project linked to Colombia's acquisition of the CN235 aircraft includes the creation of an Airworthiness Department, an expansion in metrology capacity, the launch of a maintenance centre for hydraulic mechanical components, the design and manufacture of UAVs, the development of multimedia training for C-295 aircraft and technology transfer to the Ministry of Health for medical research.[41] More recently, there has been offset investment by the US-owned company Sikorsky Aircraft, following the March 2013 induction of five S-70 multi-mission Black Hawk helicopters. This offset programme is aimed at launching Latin America's first Black Hawk Training Centre and will be located at the Colombian Air Force Base in Melgar.[42]

Thales has also been active in Colombia through its sale of radars for an Integrated Traffic and Maritime Surveillance system, leading to offset-related investment in a System Maritime Activity Simulation Centre, as well as co-operation in a Technology Centre in Villavicencio. An interesting dynamic of Thales' offset strategy is its attempt to embrace Colombian universities within the Thales global university network. This network has branches in the Middle East, Southeast Asia and the US, offering bespoke training and educational courses and also engineering scholarships to young and capable students from offset recipient states for study at some of France's top universities.[43]

Chile and Peru also benefit from a wide array of offset projects. Chile's offset policy dates back to 2002 and is thus mature in its provision of offset-related investments in what is one of Latin America's most developed defence-industrial bases. Chile's defence capacity has improved owing to offset projects linked to the acquisition of American F-16 combat aircraft, Franco-Spanish Scorpene submarines, British Type 23 frigates and Brazilian Super Tucano trainers.[44] Santiago plans further high technology defence procurements and whilst civil offset is possible, such as in the promotion of biotechnology and electronics, the policy priority will be on raising indigenous defence-industrial capability.[45]

It is difficult to be definite regarding offset's contribution to development

In contrast to Chile's relative maturity in offset implementation, Peru is the 'new kid on the block'. Its defence industry is at an embryonic stage but Lima is, nevertheless, urgently establishing its credentials. Russia, for instance, is proposing to create a servicing and maintenance centre in Peru for the existing sixteen Mi-25 and Mi-35P helicopters, as well as the twenty-four Mi-171 helicopters (worth approximately US$406.8 million) to be delivered across 2014–15.[46] There will also likely be offset arrangements following Peru's 2013 acquisition of two Italian C-37J air-lifter tactical aircraft and an earlier contract for four Eurocopter EC145 helicopters for the Peruvian police. Moreover, as a

result of Peru's deal to 'jointly' produce twenty South Korean KT-1 trainer aircraft, there is now discussion on the potential for Peru to license-produce ten Korean coast guard and patrol vessels.[47]

Although Latin American states have clearly made important strides in the implementation of diverse offset programmes, it is difficult to be definitive regarding the contribution they have made to industrial and technological development. Through careful planning and management, offset can act as a catalyst to generate work packages, even though their sophistication will depend on the recipient country's level of industrial development. Advanced states stand a greater chance of securing skilled production work, R&D investment, opportunities for innovation and – as a means of fostering exports – access to the supply chains of foreign original equipment manufacturers, although such benefits are not guaranteed. The challenges are more daunting for developing countries, with empirical work on Saudi Arabia, Malaysia and South Africa suggesting that offset-induced development has been disappointing.[48] In particular, job creation has proved elusive.

Conclusion

Offset in Latin America has become a hot topic because the region's policy-makers believe, perhaps myopically, that it holds the potential for accelerated indigenous technological development. Argentina, Brazil, Chile, Colombia and Peru are in step with the global offset phenomenon, but as with most other countries, they are likely to face obstacles impeding viable and sustainable outcomes. First, high-value technology transfer is not guaranteed – after all, global defence and aerospace companies are understandably opposed to giving away their technological edge and in turn their commercial competitiveness. Second, Latin America's relatively low skill base and paucity of high-quality production capacity threatens dilution of an offshore vendor's kitemark brand, bringing no benefit to either of the contracting parties. Third, although Latin American defence budgets have been increasing, local scale and procurement spends are still modest by international standards, making it difficult to economically justify local production. However, the principal brake on offset success is the capability of Latin American countries to effectively absorb the technologies transferred. Offset can play a powerful role in the development of a technology base, but in the absence of appropriate engineering skills, innovative supply chains, advanced science and technology infrastructure, high-technology university partnerships and robust R&D resources, it is a safe bet that offset success will not be instant. Accordingly, whilst it will be challenging for these aspiring states to close the technology gap with advanced countries and break free from technological serfdom, they have made an impressive start. ■

Monica Herrera is a graduate of Cranfield University's Master's in Security Sector Management. She was awarded the prize for best dissertation for a study examining the impact of Chinese investment in the Brazilian energy sector. Monica works as an analyst in Colombia, evaluating political and security risk in Latin America.

Ron Matthews holds the Chair in Defence Economics at the Centre for Defence Management and Leadership at Cranfield University. He specialises in the economics of defence offset.

Notes

1 There are, in fact, two separate sets of negotiations involved in the procurement: first, the primary defence contract involving negotiation of through-life costs and technical aspects; and second, the associated offset package. The two deals are not formally linked.

2 As listed in IHS Jane's, 'Jane's Offsets Advisory Module', August 2013, <http://www.ihs.com/products/janes/defence-business/industry-markets-intelligence-centre/offsets-advisory-module.aspx>, accessed 18 November 2014; Guy Anderson and Ben Moores, 'The Growing Offset Burden: What A&D Businesses Need to Know', *IHS White Paper*, October 2013.

3 See Charles Kegley and Gregory Raymond, *The Global Future: A Brief Introduction to World Politics* (Boston, MA: Cengage Learning, 2012), p. 202; *Guardian*, 'Military Spending: How Much Does the Military Cost Each Country, Listed', 17 April 2012.

4 Global defence spending fell in real terms for a second consecutive year in 2012; after a 1.5 per cent real decrease in 2011, real defence spending declined by a further 2 per cent in 2012. Some 90 per cent of these real reductions in 2012 occurred in Europe and the US; the latter making up around 77 per cent of real global reductions in defence spending for the year. See Giri Rajendran's paper presented to the IISS Geo-Economics and Strategy Programme on Fiscal Stress, Global Military Balances and Regional Security, Bahrain, 6–8 October 2013.

5 Russia imports next to nothing in armaments; along with France, it is likely the only country that gets close to defence-industrial self-reliance. Recently, though, Russia signed its first major arms-import deal (the 2011 procurement of two French *Mistral*-class amphibious assault ships) since the dissolution of the Soviet Union in 1991. See Jakub Grygiel, 'Europe: Strategic Drifter', *National Interest* (No. 126, July/August 2013), pp. 33–34; *BBC News*, 'France and Russia Strike Mistral Warship Deal', 26 May 2011. The 2013 SIPRI Arms Trade database shows that Russia exported arms worth US$8,283 million while its imports were worth just US$148 million, generating the world's biggest arms-trading surplus.

6 'Buy American' legislation dates back to the 1930s: in the defence context, it means that all of the country's major foreign arms purchases must be licensed and produced in the US; here, note the examples of the British sales of the Hawk fighter (US version, the Goshawk) and the Harrier jet (US version, the AV-8B).

7 See *Official Journal of the European Union*, Directive 2009/81/EC, 13 July 2009. As per this regulation, offset is permitted only on national-security grounds (such as the preservation of supply and essential capabilities) under Article 346 of the Treaty on the Functioning of the European Union (TFEC). There are also six exclusion gateways, including international agreements covering NATO and OCCAR (Article 12A), government-to-government procurement (Article 13F), and co-operative cross-border development programmes (Article 13C).

8 Deloitte Global Service Limited, '2014 Global Aerospace and Defence Industry Outlook', 2014, pp. 10–12; see also David Lerman and Robert Wall, 'US Defence Contractors Focus on Foreign Buyers', *Bloomberg Business Week*, 14 November 2013.

9 See Ministry of Defence, *National Security through Technology*, Cm 8278 (London: The Stationery Office, November 2013).

10 Jamil Anderlini and Victor Mallet, 'China Joins Top Five Arms Exporters', *Financial Times*, 18 March 2013; SIPRI, 'China Replaces UK as World's Fifth Largest Arms Exporter', press release, 18 March 2013.

11 Center for Strategic and International Studies, 'Latin American Defense Spending Trends', *CSIS Current Issues* (No. 31, 11 February 2013); Inigo Guevara, 'Colombia's Defence Minister Outlines Offset Gains', *IHS Jane's Defence Industry*, 1 October 2014; Air Force Technology, 'Snapshot: Argentina's Defence Industry', 6 July 2011, <http://www.airforce-technology.com/features/feature123526/>, accessed 17 November 2014.

12 *Reuters*, 'Japan PM Says Ready to be More Assertive against China – Media', 26 October 2013.

13 Venezuela is omitted from evaluation because it has not launched an offset policy and also because its arms imports are dominated by acquisitions from Russia and China. In fact, military-technical co-operation contracts already signed between Russia and Venezuela are currently valued at US$11 billion, accounting for some 75 per cent of all Russian defence deliveries to Latin America. See *Jane's Defence Weekly*, 'Venezuela Contracts Worth US$11 Billion to Russia', 15 May 2013.

14 Resdal, *A Comparative Atlas of Defence in Latin America and Caribbean – 2012 Edition* (Buenos Aires: Resdal, 2012), pp. 34–35; José Higuera, 'Military Expenditures Keep Growing', *Defense News*, 25 March 2014; Rachel Glickhouse, 'Explainer: Defense Spending in Latin America', Americas Society-Council of the Americas, 7 June 2012, <http://www.as-coa.org/articles/explainer-defense-spending-latin-america>, accessed 17 November 2014.

15 GDP growth is based on constant 2005 prices, based on statistics provided by the World Bank and UN. The compound annual growth rate is used as the growth calculation.

16 Higuera, 'Military Expenditures Keep Growing'.

17 Colombia MILEX growth for the period of 2009–12 was 0.64 per cent, while for the same period Argentina experienced 7.48 per cent growth. MILEX growth is based on constant 2011 prices (SIPRI). The compound annual growth rate is used as the growth calculation.

18 It is likely that, as with Argentina, much of the increased MILEX has been spent on current expenditure. Note that South American total military expenditures rose from US$47.3 billion in 2002 to US$67.7 billion in 2012, but personnel costs, including wages and housing, represented an average of 82 per cent of military spending. See Higuera, 'Military Expenditures Keep Growing'.

19 Population data is taken from UN Statistics, GDP from the World Bank; Military Import Value from the World Bank, and MILEX from SIPRI, all for 2012.

20 GDP growth is calculated based on constant 2005 prices (World Bank and UN Statistics); MILEX growth is calculated based on constant 2011 prices (SIPRI); and Military Import Value is based on 1990 prices (World Bank). The compound annual growth rate is used as the growth calculation.

21 Yana Marull, 'Brazil's Defense Industry Booms', *AFP*, 22 August 2012.

22 Offset growth from 2011 to 2016 is estimated to be 10 per cent for Latin America, 8 per cent for the Middle East and 5 per cent for Asia. However, it should be recognised that Latin America's growth is from a smaller base. Thus, its US$2.8 billion worth of obligations in 2011 should be compared to US$12 billion for the Middle East and US$10 billion for Asia. See Avascent and Fleishman Hillard, 'The Half-Trillion Dollar Challenge: Designing Offset Strategies to Build Reputation, Promote Development', July 2012, p. 4, <http://www.avascent.com/wp-content/uploads/2013/02/Avascent-Offsets-2-White-Paper.pdf>, accessed 18 November 2014.

23 See Thomas Scheetz, 'The Argentine Defence Industry: An Evaluation', in Jurgen Brauer and J Paul Dunne (eds), *Arms Trade and Economic Development: Theory, Policy and Cases in Arms Trade Offsets* (London and New York, NY: Routledge, 2004), pp. 201–11.

24 Sam Perlo-Freeman, 'Offset and the Development of the Brazilian Arms Industry', in Brauer and Dunne (eds), *Arms Trade and Economic Development*, p. 191.

25 Similar sentiments were expressed in the early 1990s, but exogenous influences dented Brazil's defence-industrial drive, including the impact of the 2008 global financial crisis and the cut in MILEX by 26.5 per cent in 2011. See *MercoPress*, 'Brazil Cuts Defence Budget but Purchase of 36 New Jets Remains on the Agenda', 16 February 2011.

26 RnR Market Research, 'Future of Defense Industry: Argentina, Finland and Denmark Market Analysis in New Research Reports', <http://www.prnewswire.com/news-releases/future-of-defense-industry-argentina-finland--denmark-market-analysis-in-new-research-reports-211841321.html>, accessed 13 November 2014.

27 *Ibid.*

28 ICD Research, 'Team Defence Australia – The Brazilian Defense Sector – Market Opportunity and Entry Strategy, Analyses and Forecasts to 2015', Market Intelligence Report, June 2012.

29 *Ibid.*

30 *Ibid.*

31 *Jane's Defence Weekly*, 'Brazil Agrees KC-390 Offset Agreement with BAE Systems', 19 November 2013.

32 Diogenes Lima Neto – Brazil Ministry of Defence, 'Offset Strategy of the Brazilian Air Force', Offset Conference at Sofia, Bulgaria, 2011, <http://www.slideshare.net/brasiladmin/offset-strategy-of-the-brazilian-air-force-offsets-2011-conference-sofia-bulgary-diegnes-l-neto>, accessed 13 November 2014.

33 *Ibid.*

34 *Ibid.*

35 *Jane's Defense Weekly*, 'Boeing Beefs Up F-X2 Offset Bid with Brazilian Super Hornet Supplier Tour', 3 August 2012.

36 *Jane's Defense Weekly*, 'Brazil Selects Gripen to Meet FX-2 Requirement', 17 December 2013.

37 *Ibid.*

38 *Reuters,* 'Sweden Offers to Buy Brazilian Military Cargo Jet', 27 February 2014.

39 *Ibid.*

40 *Ibid.* Note also that Brazil undertook a similarly deferred counter-contract deal in 1988 when it procured helicopters from France; the latter entering into a US$248 million contract with Embraer to purchase fifty Tucano trainer aircraft. See Jean-Paul Hebert, 'Offset and French Arms Exports', in Stephen Martin (ed.), *The Economics of Offsets: Defence Procurement and Countertrade* (Amsterdam: Harwood Academic Publishers, 1996), p. 144. Grateful acknowledgement is made to an anonymous referee for highlighting this example.

41 Jose Maria Larru, *The Developmental Contribution of Offset Agreements: The Case of Colombia* (Madrid: Universidad CEU San Pablo, June 2013), p. 13.

42 Sikorsky Press Release, 'Sikorsky Aerospace Services to Establish Black Hawk Helicopter Training Center for Latin America', 24 March 2012, <http://www.sikorsky.com/About+Sikorsky/News/Press+Details?pressvcmid=20730cf2acc87210VgnVCM1000004f62529fRCRD>, accessed 17 November 2014.

43 *Infodefensa*, 'Aniss Aqallal, Thales Colombia: Participamos en el proceso de estudio para la creación de un sistema de defensa antiaérea', 31 October 2012.

44 ICD Research, 'Team Defence Australia'.

45 *Ibid.*

46 *Ria Novosti Defence RSS*, 'Russia Offers Peru Helicopter Maintenance Center', 16 October 2013; *United Press International News*, 'Peru Boosts Defence with Tactical Aircraft, Helos', 25 November 2013.

47 Republic of Korea Department of Global Communication, 'Korea, Peru Discuss Defence Cooperation', 29 November 2013, <http://www.korea.net/NewsFocus/Policies/view?articleId=115682>, accessed 17 November 2014.

48 Ron Matthews, 'Saudi Arabia's Defence Offset Programmes: Progress, Policy and Performance', *Defence and Peace Economics* (Vol. 7, No. 3, 1996); Kogi Balakrishnan and Ron Matthews, 'The Role of Offsets in Malaysian Defence Industrialisation', *Defence and Peace Economics* (Vol. 20, No. 4, 2009); J Paul Dunne, 'The Making of Arms in South Africa', *Economics of Peace and Security Journal* (Vol. 1, No. 1, 2006).